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EDITORIAL

Errors And Human Factors In Medical Care And Strategies To Address Them

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'Primum non nocere' - First and foremost do no harm. This is a dictum that all medical practitioners strive to follow. We build our knowledge base, develop and then hone our technical skills in order to give the best possible care to our patients. More often than not, that is what we do.

However, we do make mistakes. This is because 'To err is human'. No one in any walk of life is immune from human error. Unfortunately the price we pay in our profession for human error could mean harm to the patient and in the extreme, even death.

What is human error?

In simple terms it is doing the wrong thing when meaning to do the right thing.

Elaine Bromiley[1], a young mother of two children, went into hospital in the UK for an elective sinus surgery in March 2005. The anaesthetist was unable to ventilate and intubate her. But instead of following the 'Can't intubate, can't ventilate' protocol, he along with another anaesthetist who came to his assistance and the ENT surgeon persisted in trying to intubate her. Her oxygen saturations were dropping. The nurses brought in a tracheostomy trolley and booked an ICU bed and informed the doctors but they were ignored. The patient suffered hypoxic brain damage and died 13 days later. Lack of situational awareness on the part of the doctors, 'tunnel vision', failure to follow safety protocols, lack of leadership, breakdown of communication and lack of assertiveness from the nurses were the many human errors that led to this unfortunate incident. None of the members of the team ever intended harming the patient. Elaine's husband, Martin, an airline pilot was horrified to find the total lack of human factor training in the medical profession as compared to the airline industry. In 2007 Martin Bromiley established the first Clinical Human Factors Group in the UK to try and prevent such occurrences.

Across all specialties, across the world, medical errors continue to occur.

The British Medical Journal in 2012[2], reported 14000 preventable deaths per year in hospital in the UK and attributed 70-80% of these to human error. Analysing medical death rate data over an 8 year period, patient safety experts from Johns Hopkins Medicine have calculated that medical error is the third most common cause of death in US hospitals after heart disease and cancer[3].

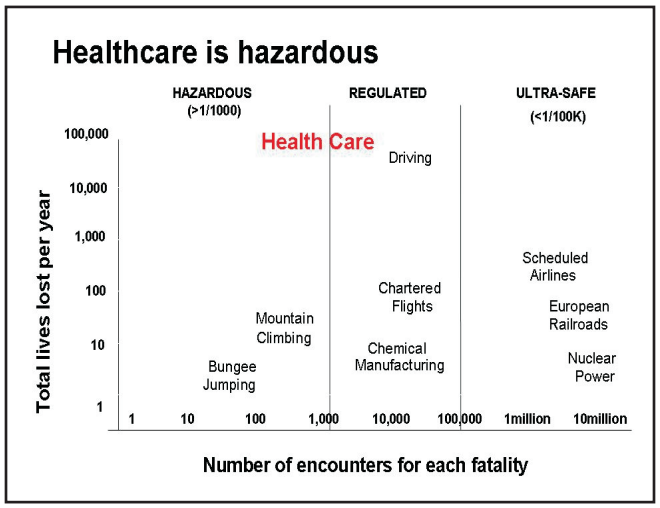
'NEVER EVENTS'- In 2016, the National Health Service in England published a list of 14 serious events that are wholly preventable as guidance or safety recommendations that provide strong systemic protective barriers are available at a national level and should have been implemented by all healthcare providers[4].

'NEVER EVENTS' list of NHS England 2015-16	
1.	Wrong site surgery
2.	Wrong implant/prosthesis
3.	Retained foreign object post-procedure
4.	Mis-selection of a strong potassium containing solution
5.	Wrong route administration of medication
6.	Overdose of insulin due to abbreviations or incorrect device
7.	Overdose of methotrexate due for non-cancer treatment
8.	Mis - selection of high dose midazolam during conscious sedation
9.	Mental health - failure to install functional collapsible shower or curtain rail
10.	Falls from poorly restricted windows
11.	Chest or neck entrapment in bedrails
12.	Transfusion or transplantation of ABO incompatible blood components or organs
13.	Mis-placed naso or oro gastric tubes
14.	Scalding of patient during washing/bathing

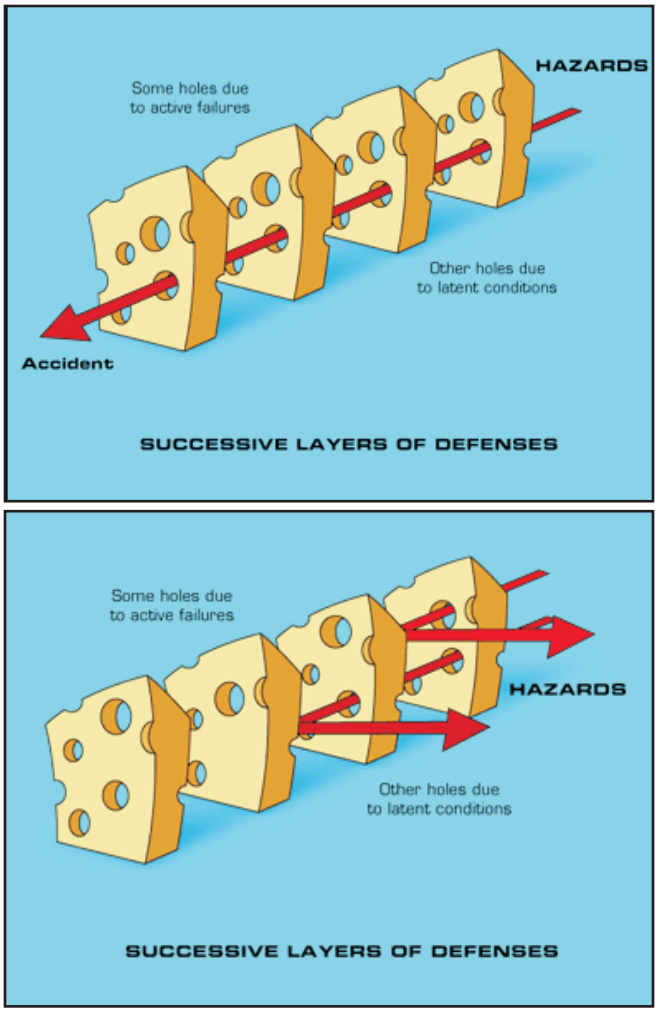
Human error as a leading cause of accidents was acknowledged by the aviation industry way back in the 1970s. The industry introduced crew resource training to improve communications, flatten team hierarchy and also implemented fail safe options so effectively that the

aviation industry is amongst the safest industries today. The medical profession is much more diverse yet there are lessons that the medical profession can learn from the aviation, military, nuclear and other high riskindustries with very good safety records to provide safer patient care.

Relative risk of different industries



To focus on medical practice, it is seldom one single act that causes harm to a patient. There are usually a series of latent conditions and active failures that lead to a catastrophe. James Reason in 1990 [4] compared this to the Swiss Cheese model. If several slices of cheese are stacked up together the holes in the slices will not allow a ray of light through unless they are aligned. The slices represent defences and the holes represent latent conditions or active failures. For example, there could be two ampoules of medication with similar labelling - atropine and adrenaline. They are placed on the same trolley. These are 2 latent conditions. A patient in the ICU develops bradycardia. The junior doctor gets panicky and looking for atropine he picks up the adrenaline. He does not read the label, he loads up a syringe and injects the adrenaline intravenously. The patient develops severe hypertension and has a stroke. A series of active failures on the part of the doctor have lined up with the latent conditions, letting an error through and ending in harm to the patient.



Swiss cheese model of James Reason 1990

What causes human error?

There are a host of **'Human Factors'** that can lead to errors in the workplace. Human factors refer to environmental, organisational and job factors as well as individual human characteristics which influence behaviour at work in a way which can affect health and safety. What are these human factors?

On an individual level, interruptions and distractions while doing complex tasks can cause errors. These distractions could come from other staff, patients, relatives, bleeps, mobile phones etc. Complacency, or an attitude that 'this cannot happen to me' can lead to over-confidence and end in error. Failing to check details carefully can lead to easily avoidable mistakes. The human brain tends towards pattern matching and can sometimes mismatch, for example when infusion bags, drug labels or patient names are similar. Checking twice or completing 2 person checks - as done by nurses in the

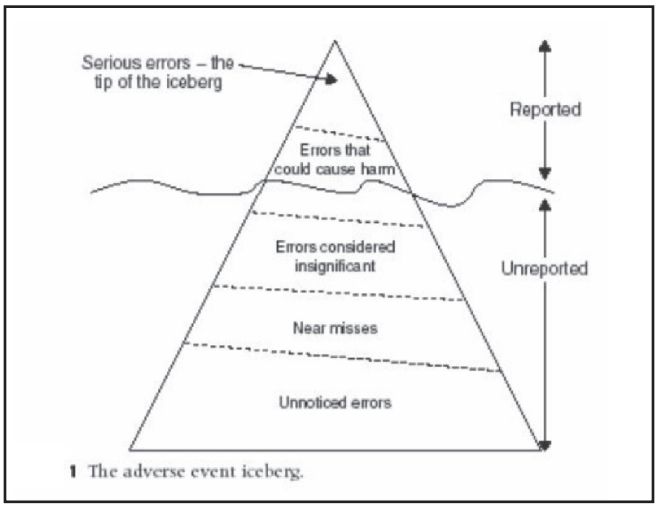
UK - can be a safeguard against this. Over-reliance on memory especially in stressful or busy situations can lead to errors. Human memory has a limited capacity that can get further reduced and concentration hampered by fatigue, stress, hunger, illness, language or cultural barriers and hostile environments. 20 hours of wakefulness impairs performance to a level equivalent to a blood alcohol level of 100mg/100ml blood[5]. The legal limit for driving in England is 80 mg/100ml blood. Failing to learn from mistakes is another factor that can lead to recurrent mistakes with adverse consequences.

As doctors we often work in teams especially when dealing with complex or critical situations. Poor communication between team members can lead to errors. Communication should be explicit, timely and assertive. At the same time there should be active listening by all team members. Assumptions must be avoided at all times as they can be erroneous and potentially disastrous. Authority gradients in teams where some members are afraid to speak up or be assertive or where some are unwilling to listen to others can be very counterproductive and lead to mistakes. Every team member has the right to speak up and be heard. There was an incident reported where the wrong kidney was removed from a patient. The medical student present was the only one aware of the mistake being committed but was too afraid to speak. Everyone has a duty to speak up in the interest of the patient. Hierarchical systems have no place in modern medicine. Lack of leadership too can cause confusion and errors when working in teams. It is important to designate and identify a team leader at the outset to avoid this.

How can the problem of human error in medicine be addressed?

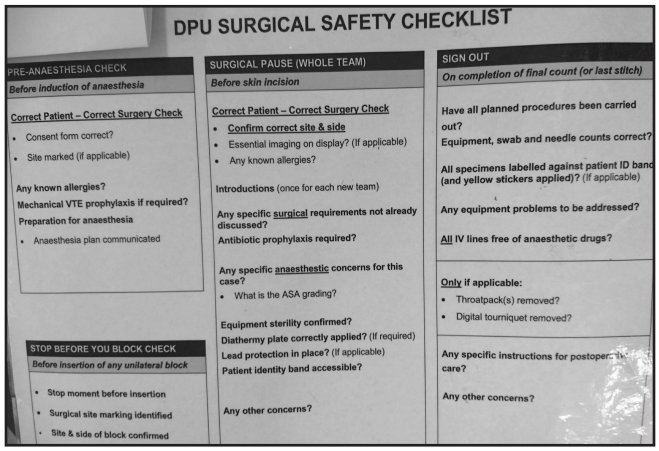
Changes need to start right at the organisational level and filter down to every individual involved in patient care. Patient safety rather than targets should be at the top of the agenda in every hospital.

Promoting a safety culture should be at the forefront of medical care. For the few incidents that end in harm to the patient, there are many more 'near misses' that occur as exemplified in the iceberg model. The focus of organisations should be to identify these near misses and do a root cause analysis (RCA) to determine what can be done to prevent a recurrence or a worse outcome. To eliminate latent conditions and avoid active failures requires an openness in reporting incidents and avoiding a 'blame culture'. This will encourage medical personnel to report and discuss incidents in order to learn and improve. Learning from mistakes by the individual and even those of others, will promote a safer patient-care culture. If major incidents occur, they should be investigated by an external body to help determine what went wrong and how things can be improved.



1 The adverse event iceberg.

Creating safety nets against human failings can aid in preventing errors. These include wider usage of safety checklists, protocols, guidelines and care bundles. These can act as aide memoirs, help align teams and assist in making decisions especially in challenging situations. The use of the WHO Surgical Safety Checklists has made a tremendous impact on reducing errors in operating theatres. It is an exercise in teamwork, briefing, checking, taking a time out and debriefing. In many Accident and Emergency Departments' Resuscitation Rooms in the UK, there is a wall display of paediatric emergency drug doses which helps the entire team to be on the same page when dealing with paediatric emergencies. There is also quick online access to treatment protocols for drug overdosages and other emergencies.


DPU SURGICAL SAFETY CHECKLIST

PRE-ANAESTHESIA CHECK
Before induction of anaesthesia
Correct Patient – Correct Surgery Check
- Consent form correct?
- Site marked (if applicable)

Any known allergies?
Mechanical VTE prophylaxis if required?
Preparation for anaesthesia
- Anaesthesia plan communicated

STOP BEFORE YOU BLOCK CHECK
Before insertion of any unilateral block
- Stop moment before insertion
- Surgical site marking identified
- Site & side of block confirmed

SURGICAL PAUSE (WHOLE TEAM)
Before skin incision
Correct Patient – Correct Surgery Check
- Confirm correct site & side
- Essential imaging on display? (If applicable)
- Any known allergies?

Introductions (once for each new team)
Any specific surgical requirements not already discussed?
Antibiotic prophylaxis required?
Any specific anaesthestic concerns for this case?
- What is the ASA grading?

Equipment sterility confirmed?
Diathermy plate correctly applied? (If required)
Lead protection in place? (If applicable)
Patient identity band accessible?
Any other concerns?

SIGN OUT
On completion of final count (or last stitch)
Have all planned procedures been carried out?
Equipment, swab and needle counts correct?
All specimens labelled against patient ID band (and yellow stickers applied)? (If applicable)
Any equipment problems to be addressed?
All IV lines free of anaesthetic drugs?
Only if applicable:
- Throatpack(s) removed?
- Digital tourniquet removed?

Any specific instructions for postoperative care?
Any other concerns?

WHO Surgical Safety Checklist

The use of automation, bar coding and computerisation wherever possible (for example, patient records, laboratory data etc.) can minimise human interface and is another organisational approach to reduce human errors.

Ergonomics (or Human factors engineering) which is designing the workplace and the equipment in it to accommodate for limitations in human performance can improve usability of the workspace. Standardisation of equipment across an organisation also makes it easier to use it effectively. There have been reports where medical staff were unable to defibrillate a patient quickly because the defibrillator made available was different from the one with which they were familiar.

Teaching **Non Technical Skills (NTS)** is increasingly being acknowledged as being important in reducing human error in high risk industries. NTS are cognitive, social and personal resource skills that complement technical skills and contribute to safe and efficient task performance. In the past it was expected that these 'soft' skills would be picked up by doctors from observing their peers or perhaps learning from mistakes. However the high incidence of avoidable medical errors indicates that it is time to address this formally. In the UK, anaesthetists and surgeons have already introduced these courses for doctors and other specialties are following suit. Where such courses have been adopted, results have shown improved NTS, better teamwork, reduced operating errors and reduced non-operating errors as well[6]. Tools to assess NTS of doctors are also being developed. NTS training courses provide an understanding of human factors and how they can impact on your professional work. They focus on cognitive skills like situational awareness and decision making as well as interpersonal skills including communication, team working and leadership, all of which should be in top gear to make a team of experts into an expert team particularly in crisis situations. These courses should be available across all specialties and at all levels of medical care including doctors, nurses, technicians and pharmacists all of whom contribute towards patient care in hospitals. It would not be out of place to introduce an awareness of NTS and human factors during undergraduate medical training itself. As in the aviation and other high risk industries, these courses should be refreshed periodically. Simulation is an effective though expensive way of imparting and assessing NTS training. Increasingly human factors training is being included in other courses like Advanced Life Support (ALS) and Advanced Paediatric Life Support (APLS) etc. too.

Conclusion

Human error is inevitable. But in our profession we have a responsibility towards our patients to minimise error. The guilt, emotional and psychological impact of an error as well as the medico-legal implications on the personnel involved cannot be underestimated. So we owe it to ourselves too to avoid error. An understanding of the human factors that lead to errors is a step towards reducing them. Organisations, teams and individuals in the medical profession can work together to make hospitals safer for patients as well as themselves.

References

1. Michael Harmer 'Independent Review on the care given to Mrs Elaine Bromiley on 29 Mach 2005' 20 July 2005
2. Hogan H et al 'Preventable deaths due to problem in healthcare in English Acute Hospitals' British Medical Journal Quality &Safety 2012
3. 'Medical error-the third leading cause of death in the US' British Medical Journal 2016; 353:2139
4. James Reason 'Human error:models of management' British Medical Journal 2000 Mar 18 320(7237) 768-770
5. Nancy Redfern 'Editorial' Anaesthesia News November 2016-Issue 352
6. PM McCullough, A Mishra, A Handa et al 'Effect of aviation style NTS training on technical performance and outcome in operating theatres' Qual Safety Healthcare 2009 18: 104-115

Review Article

Liver Transplantation

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Liver transplantation is the main treatment option for patients with acute liver failure, end-stage liver disease, and primary hepatic malignancy. However, it is not the initial or primary treatment modality for most liver diseases. With exceptions like abstinence from alcohol in decompensated alcoholic liver disease and antiviral therapy in advanced liver disease due to Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV) infections, overt cirrhosis usually is progressive and eventually needs liver transplantation. At times, a compensated cirrhotic patient can develop an acute deterioration leading to acute on chronic liver failure and multiorgan failure, thus necessitating a liver transplant.

Before listing a patient for liver transplantation, the risks of transplantation need to be weighed against the potential benefits of transplant. Risks include the inherent perils of surgery, recurrent disease and long-term immunosuppression. Benefits differ among patients, but generally include improved survival, prevention of long-term complications, and better health-related quality of life. In 2013, the American Association for the Study of Liver Diseases and the American Society of Transplantation developed guidelines regarding the indications for liver transplantation and the evaluation of patients being considered for liver transplantation[1,2]. A brief overview of liver transplantation is presented in this review.

INDICATIONS FOR LIVER TRANSPLATATION (Table 1):

Indications for liver transplantation include acute liver failure, complications of cirrhosis, liver-based metabolic conditions with systemic manifestations and systemic complications of chronic liver disease.

Indications for Liver Transplantation
Acute liver failure
Complications of Cirrhosis
Ascites
Chronic GI blood loss due to portal hypertensive gastropathy
Hepatic encephalopathy
Hepatocellular carcinoma
Refractory variceal hemorrhage
Synthetic Dysfunction
Liver-based metabolic conditions with systemic manifestations
Cystic Fibrosis
Familial amyloidosis
α1- Antitrypsin deficiency
Glycogen storage disease
Primary hyper oxaluriaTyrosinemia
Urea cycle enzyme deficiencies
Wilson disease
Systemic complications of chronic liver disease
Hepatopulmonary syndrome
Portopulmonary hypertension

Table 1: Indications for liver transplantation. Abbreviations: GI – Gastrointestinal

Patients with acute liver failure receive top priority for liver transplantation (United Network for Organ Sharing [UNOS] status 1). Timely referral to a transplant centre carries utmost importance as these patients either have a complete recovery of liver function or die within days. Patients with cirrhosis are classically candidates for liver transplantation once their biologic Model for End-stage Liver Disease (MELD) score is $\geqslant 15$. {MELD Score = 10 * [(0.957 * ln(Creatinine)) + (0.378 * ln(Bilirubin)) + (1.12 * ln(INR))] + 6.43}. In the survival analysis performed by Merion and colleagues, it was demonstrated that patients with MELD score 15 or more benefit the most from liver transplantation. MELD score <15 was associated with greater post-transplant mortality than waitlist mortality. Particularly, when MELD score was <11, post-transplant mortality was

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three times greater than the waitlist mortality.[3] Sometimes, patients with Child B cirrhosis and portal hypertension but a low MELD score may also be candidates for liver transplantation. Early referral is the key, so as to allow adequate time for the patient to complete the pretransplantation evaluation. Patients with primary liver neoplasms may be candidates for liver transplantation, provided the neoplasms meet specific criteria (eg, Milan criteria[4]). For acute liver failure, the King's College criteria[5] and Clichy criteria[6] are the most used scores to identify the need for transplantation (Table 2). Although a patient with acute liver failure who fits into the King's College criteria will likely require liver transplantation, not meeting these criteria does not accurately predict a lack of need for transplantation. The pediatric end-stage liver disease (PELD) score includes five factors (total bilirubin, albumin, INR, age less than 1, and growth failure) and, like MELD, it predicts short-term mortality in pediatric patients with chronic liver disease

Milan Criteria[4] to assess suitability in patients for liver transplantation with cirrhosis and hepatocellular carcinoma
Single tumour with diameter ≤5 cm, or up to 3 tumours each with diameter ≤3 cm No extra - hepatic involvement No major vessel involvement
Criteria of King's College, London[5]
Acetaminophen Cases Arterial pH < 7.25 more than 24 hours after drug ingestion All of the following: Prothrombin time > 100 sec or INR > 6.5 Serum creatinine level > 3.4 mg/dL (300 μmol/L) or anuria Grade 3 to 4 encephalopathy ***Non - acetaminophen Cases*** Prothrombin time > 100 sec or INR > 6.7 Any 3 of the following: Unfavourable etiology (seronegative hepatitis or drug reaction) Age < 10 or > 40 years Acute or subacute category (duration of jaundice > 7 days) Serum bilirubin level >17.5 mg/dL (300 μmol/L) Prothrombin time > 50 sec or INR > 3.5
Criteria of HospitalPaul - Brousse, Villejuif(Clichy criteria) [6]
Hepatic encephalopathy *and* Factor V level < 20% in patients < age 30 yr *or* Factor V level < 30% in patients ⩾ age 30 yr

Table 2: The Milan, Kings College and Clichy criteria

Certain conditions associated with chronic liver disease may reduce patient survival. However, such conditions are not directly accounted for in the MELD scoring system. Hence, exception points are awarded to these conditions which include hepatocellular carcinoma (HCC), hepatopulmonary syndrome, portopulmonary hypertension (provided the mean pulmonary arterial pressure can be maintained at <35 mmHg with treatment), primary hyperoxaluria, cystic fibrosis, familial amyloid polyneuropathy, hilar cholangiocarcinoma, and hepatic artery thrombosis (within 2 weeks of liver transplantation). Severe uncontrolled pulmonary hypertension (>60 mm Hg) has a prohibitively high mortality with liver transplantation

Some patients can have concurrent medical complications related to their liver disease but may not qualify for standard MELD exception points. Such patients can still be considered for liver transplantation. These include recurrent cholangitis in primary sclerosing cholangitis, refractory ascites, refractory variceal bleed, refractory hepatic encephalopathy, intractable pruritus in primary biliary cirrhosis and severe portal hypertensive gastropathy leading to chronic blood loss.

Simultaneous liver-kidney transplantation must be performed if patients with end-stage renal disease, cirrhosis, and symptomatic portal hypertension meet the following criteria:

(1) Chronic kidney disease with a glomerular filtration rate of 30 ml/min or less,

(2) Acute kidney insufficiency or hepatorenal syndrome with a creatinine more than 2.0 mg/dl and dialysis for 8 weeks or longer, or

(3) Chronic kidney disease and a kidney biopsy showing greater than 30% glomerulosclerosis or fibrosis

CONTRAINDICATIONS FOR LIVER TRANSPLANT (Table 3):

Absolute contraindications for liver transplantation
Severe advanced cardiopulmonary disease that are limiting factors for surgery Extrahepatic malignancy Active alcoholism or substance abuse Acute liver failure with a sustained intracranial pressure >50 mmHg or a cerebral perfusion pressure <40 mmHg

Anatomic abnormality that precludes liver transplantation
Hemangiosarcoma
Persistent nonadherence with medical care
Uncontrolled sepsis
Lack of adequate social support
Relative contraindications for liver transplantation
Advanced age
Acquired immune deficiency syndrome
Cholangiocarcinoma
Diffuse portal vein thrombosis

Table 3: Contra-indications for liver transplantation.

For patients with severe alcoholic liver disease, a minimum period of abstinence of at least six months, adherence to medical line of management, participation in a rehabilitation program and adequate social support are needed prior to listing for liver transplantation. If continued abuse is a concern, random toxicology screening tests are appropriate.

SURVIVAL BENEFITS AND FUTILITY RULES FOR LIVER TRANSPLANTATION:

"Survival benefit" is a comparison of a particular recipient's survival to that of comparable candidates who did not receive a transplant. Survival benefit was found to increase with increasing MELD score. With a MELD score of 40, a recipient's mortality risk was 96% higher than that of a comparable group of candidates. Recipients with MELD scores <15 had a recipient mortality risk higher than that of the other candidates. The decision to proceed with liver transplant rests not only on the patient's risk of death by the virtue of being on the transplant waitlist, but also on the likelihood whether transplant can reverse the disability due to complications arising from cirrhosis. A new liver can rapidly reverse portal hypertension and thus resultant ascites. However, it may not cure frailty rapidly enough for the patient to bear postoperative infections and extrahepatic organ dysfunction like ventilator support and acute kidney injury. Real-life transplant decision making at times can be challenging to pick a suitable patient from the spectrum of transplant requiring scenarios. Thus, identifying appropriate patients for transplant and avoiding "futile" liver transplantation is the key.

PRETRANSPLANTATION EVALUATION

The aim of pre-transplantation evaluation is to assess whether the patient would be able to tolerate the stress of surgery, immunosuppression, and post-transplantation care. Every patient undergoes extensive assessment, which includes but is not limited to the following:

Laboratory tests

Complete blood count with differential WBC count, liver biochemical and function tests (alanine aminotransferase, aspartate aminotransferase, alkaline phosphatase, bilirubin, international normalized ratio [INR]), ABO-Rh blood typing, creatinine clearance, serum alpha-fetoprotein, serologies for cytomegalovirus, Epstein-Barr virus, varicella, human immunodeficiency virus, hepatitis A, hepatitis B, hepatitis C and urine analysis and urine drug screen

Cardiopulmonary evaluation

Cardiac evaluation includes electrocardiography and 2-dimensional echocardiography; stress testing and cardiology consult if risk factors are present and/or the patient is ⩾ 40 years. Pulse oximetry, arterial blood gas and pulmonary function tests are ordered in all patients.

Cancer screening and hepatic imaging

A triple phase abdominal CT scan or MRI of the liver is mandatory to detect hepatocellular carcinoma and document portal vein patency. Screening for cervical cancer, breast cancer, and prostate cancer must be performed as per the age and sex of patient.

Infectious disease evaluation and vaccinations

Patients must be screened for tuberculosis and treated for the same either before or after transplantation depending upon the clinical status of the patient. Dental extractions should be carried out prior to transplantation. Inactivated vaccines recommended in liver transplantation recipients include annual influenza vaccine, tetanus vaccine every 10 years, PCV-13 pneumococcal vaccine and human papilloma virus vaccine (ages 11-26 years) as a single dose and Hepatitis A and B vaccines if patients are not immune. The live-attenuated vaccines are recommended only pre-transplant. The varicella vaccine should be administered if the patients are not immune and have no prior history of chicken pox or herpes zoster infection. The measles, mumps and rubella vaccine (MMR) should be administered only pre-transplant, if the recipients are not immune or if born before 1957.[7]

Upper GI endoscopy

It is performed in cirrhotic patients to evaluate for

varices.

Psychosocial evaluation and education

If there is a history of substance abuse, psychiatric illness or adjustment difficulties, psychiatry and psychology consultation must be performed. Efforts must be made to address potential psychosocial issues and the possible effect of transplantation on the patient's personal and social supports. Financial and insurance counselling must also be imparted.

Nutritional assessment

Patient's nutritional status must be assessed and patient should be educated regarding nutritional health.

SURGICAL OVERVIEW:

Liver transplants can be orthotopic (removing diseased liver from the recipient and replacing donor liver) or piggy back (not removing the diseased liver and placing the donor liver). Most of the transplants are orthotopic. Liver transplant can be deceased donor (DDLT) or living liver transplantation (LDLT). DDLT can be further divided into heart beating donor (brain dead) or non-heart beat donor and split donor. Donor-recipient matching is primarily based on ABO blood compatibility and recipient weight. The team that harvests the donor organ makes a visual and if required, a histologic assessment of the liver. Once donor circulation is stopped, the organ is rapidly infused with cold preservation solution. Donor iliac arteries and veins are also retrieved and used as vascular grafts, if needed. Further vascular dissection with arterial reconstruction is performed if necessary. Splitting cadaveric donor liver allows 2 recipients to receive portions of the organ. Adequacy of graft in terms of volume and quality are assessed prior to implantation. The left lateral segment (segments 2 and 3) is used for a pediatric recipient, and segments 4 to 8 are used for an adult recipient.

Native hepatectomy is the most challenging aspect of DDLT. Devascularisation of the liver is performed by accessing the liver vasculature with hilar dissection. Usually in adults, a venovenous bypass is achieved by cannulation of the portal vein and inferior vena cava via the femoral vein and return of blood via the axillary vein to the right side of the heart. In some recipients, only a suprahepatic anastomosis to the vena cava is performed - the "piggyback" technique. This technique helps to maintain cardiac stability in select patients. The portal venous anastomosis is performed followed by the hepatic arterial anastomosis. Bile duct continuity is ensured by direct anastomosis. Hepaticojejunostomy is preferred in cases of primary sclerosing cholangitis with severe ductal disease and when there is a major discrepancy in donor and recipient bile duct diameters.

IMMUNOSUPRESSION POST LIVER TRANSPLANT:

Historically, acute cellular rejection was a major obstacle to patient survival. However, in recent years it has become a relatively minor issue. Most transplant centres use two or three agents to prevent allograft rejection in the immediate post-transplantation. The calcineurin inhibitors (CNI) cyclosporine and tacrolimus form the foundation for common induction and maintenance immunosuppressive regimens. The third agent is usually mycophenolate mofetil, azathioprine, or sirolimus. Once adequate liver function is achieved without presence of graft rejection, immunosuppression is generally tapered to monotherapy, typically with a CNI. Slowly worsening renal disease in the late post-orthotopic liver transplant period can be managed by reducing the CNI dose, with the addition of mycophenolate mofetil (MMF) or by switching to sirolimus or everolimus. Basiliximab is a monoclonal antibody directed against the alpha subunit of the IL-2 receptor (CD25) and may be an alternative to glucocorticoids as an induction agent.[8] Induction immunosuppression is tapered in the months following transplantation to avoid toxicity.

POST-OPERATIVE COMPLICATIONS OF LIVER TRANSPLANTATION:

Primary nonfunction - Primary nonfunction (PNF) occurs in 2% to 6% of transplants.[9] It is characterized by massive hepatocyte injury and decreased regenerative activity. Risk factors are donor-related and include increased donor age, prolonged intensive care unit stay, uncorrected hyponatremia, prolonged cold preservation time and hepatic steatosis.[10] PNF clinically manifests with encephalopathy, coagulopathy, elevated transaminases, acidosis, hemodynamic instability and multiorgan system failure. Retransplantation is the procedure of choice for this surgical emergency.

Vascular complications

Hepatic artery thrombosis (HAT) occurs in 2% to 6% of

recipients. Risk factors for HAT include arterial reconstruction, delayed arterial reperfusion, aortic conduit use, multiple anastomoses and pediatric recipients. It can present with any biochemical profile of abnormal liver tests. Usually, elevation of aminotransferases in the early postoperative period is the most common presentation. Initial investigation of choice is a duplex ultrasound. An urgent angiogram or surgical exploration is essential when suspicion of HAT is high.

Hepatic vein stenosis/vena caval stenosis can develop at sites of vascular anastomosis or due to rotation of the liver graft. It presents with outflow obstruction and frequently requires surgical reconstruction and/or venous stent placement with subsequent anticoagulation. Portal vein thrombosis can present similarly to HAT with respect to liver injury tests.[11]

Immune-mediated graft dysfunction

Acute cellular rejection (ACR) occurs in 20-25% of transplant recipients, usually within 90 days of liver transplant. Early acute rejection episodes do not adversely affect graft or patient survival. Late cellular rejection episodes are linked to reduced graft survival and are often associated with low blood immunosuppressant levels. Rejection can present with any pattern of biochemical abnormality. Arteriopathy and loss of bile ducts along with cholestasis characterize chronic rejection. Diagnosis is histological. As other causes of rejection can present similarly, empirical treatment should be avoided.[12]

Postoperative bleeding

Risk factors include coagulopathy, thrombocytopenia, extensive dissection and advanced cirrhosis. Evidence of brisk blood loss, hemodynamic instability, and/or abdominal compartment syndrome merits urgent reexploration. During reexploration, a thorough reinspection for surgically correctable sources of bleeding should be performed.

Biliary complications

Biliary complications are more common than vascular complications, occurring in 10% to 30% of recipients usually within six months of liver transplant. They can be classified as leaks or strictures.[13] Partial liver transplants in particular are associated with an increased risk of biliary complications. The symptoms and laboratory parameters include abdominal pain and elevated levels of liver biochemical tests. An ultrasound of the abdomen with doppler examination is the first investigation of choice due to the frequent association of biliary complications with HAT.

Clinically substantial bile leaks result in abdominal fluid collections. Cross-sectional imaging and cholangiography should be performed in all cases of suspected bile leaks. Management approaches include bile duct decompression and drainage of biloma. Biliary strictures account for two thirds of biliary complications. Biliary obstruction can result in ascending cholangitis or intrahepatic abscess formation. Early anastomotic stricture is usually surgical technique related. Late strictures are secondary to ischemia. The primary types of stricture are anastomotic and nonanastomotic. Most anastomotic strictures can be treated by endoscopic techniques (biliary stenting and ballooning). One fourth may require eventual surgical revision to a Roux-en-Y anastomosis. Nonanastomotic strictures / cholangiopathy can be focal or diffuse, mimicking primary sclerosing cholangitis. Diagnosis is usually made with cholangiography. Presentation of biliary strictures is highly variable but they most frequently present with a predominantly cholestatic biochemical profile.[14]

Infectious diseases

Activation and exacerbation of latent or chronic infections in the donor and/or the recipient can occur at any time after liver transplantation. Extended-*spectrum beta-lactamase (ESBL)* producing organisms; Methicillin-resistant *Staphylococcus aureus (MRSA) and Va*ncomycin - resistant *enterococcus* (VRE) are common causes of post-operative biliary strictures with cholangitis. Donor derived infections include LCMV, human immunodeficiency virus, West Nile virus, HCV, HBV, Cytomegalovirus (CMV), Herpes simplex virus (HSV) and Epstein-Barr virus (EBV). Recipient nosocomial or community derived infections include *Clostridium difficile*, HBV, HCV, CMV, candida and other fungal species, HSV, EBV, adenovirus, aspergillus, histoplasmosis, *Pseudomonas*, blastomycosis, and cryptococossis.[15]

Infections should be part of the differential diagnosis for all patterns of abnormal liver biochemistries. Bacterial infections usually occur in the first days after transplant

up to 2 months, but can also occur throughout the lifetime of the organ recipient. Fungal infections occur in up to 10% of transplant recipients. *Candida* species are the most common cause of fungal infection. Other fungal infections seen include aspergillosis, cryptococossis and regional mycosis. *Pneumocystis jiroveci* infection usually occurs at 2 to 6 months after transplant and presents with a non-productive cough, fever, elevated liver biochemistry and an interstitial pattern of abnormality on a chest radiograph. Viral infections are common within six months of transplant but patients are at increased risk throughout their lives especially if immunosuppression is increased in scenarios like acute cellular rejection or retransplantation. Recurrence of HCV infection is universal,[16] and is managed with highly efficacious direct acting antiviral agents. A caveat in treatment is the drug-drug interactions between immunosuppressant drugs and direct acting antiviral agents. Less common viral infections include influenza, adenovirus, human immunodeficiency virus, parvovirus, and hepatitis A and B.[15]

Recurrence of Disease

Many diseases, for which a liver transplant is performed, recur after the transplant procedure. Common recurrent diseases include hepatitis B and C, primary biliary cirrhosis, primary sclerosing cholangitis, non-alcoholic steatohepatitis, alcoholic liver disease and autoimmune hepatitis. Diagnostic criteria are broadly similar to the nontransplant setting.[16] Table 4 broadly enlists the major medical complications in the post-transplantation period.

Medical Complications in the Immediate Post - Transplantation Period
Infections
Bacterial
Viral
Fungal
Aspergillosis, mucormycosis
Candidiasis, torulopsosis
Pneumocystis jiroveci pneumonia
Cytomegalovirus
EBV
Respiratory Complications
Pneumonia
Portopulmonary hypertension
Pulmonary edema
Acute respiratory distress syndrome
Hepatopulmonary syndrome
Acute Kidney Injury
Cardiovascular Diseases
Cardiomyopathy
Hypertension
Myocardial ischemia
Hemochromatosis
Idiopathic hypertrophic subaortic stenosis
Valvular heart disease
Neurologic Complications
Central nervous system hemorrhage
Seizures
Central pontine myelinolysis
Ischemic events
Coagulopathies
DIC
Thrombocytopenia
Diabetes Mellitus

Table 4: Medical complications in the post-transplantation period.

ROLE OF THE PRIMARY CARE CLNICIAN

In the immediate period following liver transplantation, patients are managed by transplant surgeons and/or transplant hepatologist. Several months after transplantation, the general medical care of a liver transplant recipient is usually managed by the primary care clinician.[18]

Preventive medicine

The general health management of transplant recipients is similar to the general population. However, some disorders require intensive screening because they appear more commonly following liver transplantation (eg, diabetes, hypertension, renal disease, dyslipidemia and malignancy). The drug history (especially consumption of over-the-counter medications, complementary and alternative medications and supplements) must be elicited during each visit as there are multiple drug-drug interactions with immunosuppressants.

Screening for non-malignant disease

General assessment and disease specific evaluation consists of annual history, physical and dental examination. Blood pressure monitoring must be performed every month post-transplant and atleast

biannually after six months. Screening for diabetes mellitus must be done every six months (typically with either fasting plasma glucose or a haemoglobin A1C). Annual fasting lipid profile and cardiovascular examination must be performed. Urinalysis should be performed regularly (biannually) to screen for renal disease. Bone mineral density measurement should be done prior to transplantation and every other year after transplantation.

Screening for malignancies

Screening for both skin cancer and non-skin malignancies must be done.

Physical activity and Lifestyle

Physical activity reduces development of metabolic complications after liver transplantation. All patients should be advised to avoid alcohol consumption following liver transplantation.

Complications of Immunosuppression:Infections
Infections is a leading cause of mortality post transplantation. Fever or any other signs of infection developing after transplant warrants immediate evaluation. Common infections like upper respiratory tract infections, urinary tract infections, pharyngitis can rapidly progress to sepsis with multiorgan failure.[19] Laboratory evaluation consists of complete blood count, comprehensive metabolic panel, urinalysis, urine culture, sputum Gram stain and blood cultures. Radiological investigation consists of a chest radiograph initially. Abnormalities on chest radiograph or persistent pulmonary symptoms are evaluated by chest computed tomography (CT) and/or bronchoscopy, and abdominal symptoms are evaluated by expanded abdominal imaging such as CT or magnetic resonance imaging with magnetic resonance cholangiopancreatography (MRCP). CMV testing and a lumbar puncture are performed based on the clinical setting. Fever can also be the presenting symptom of graft rejection or the development of malignancy.

Metabolic syndrome

Hypertension, dyslipidemia, obesity and insulin resistance/diabetes are components of the metabolic syndrome which is strongly associated with increased morbidity and mortality in liver transplant recipients.[20] Immunosuppressive medications (glucocorticoids, cyclosporine, and tacrolimus) can aggravate an already underlying pre-transplant metabolic syndrome.

Hypertension develops in 65-70% recipients following transplantation. CNIs act by increasing both systemic vascular resistance and renal vascular resistance (through increased release of vasoconstrictor endothelin) thus leading to hypertension. Glucocorticoids may play a contributory role - gradual tapering and withdrawal of glucocorticoid therapy results in reduction of high blood pressure. Limiting salt intake, assessing CNI serum levels and modulating CNI dose if the level is inappropriately elevated are first-line measures to treat hypertension. Calcium channel blockers are preferred. First-generation calcium channel blockers (eg, nifedipine or verapamil) may inhibit cytochrome P450, increasing CNI levels, and should be avoided. Cardio selective beta blocker such as metoprolol or atenolol, angiotensin-converting enzyme (ACE) inhibitor or angtioensin-2 receptor blocker (ARB) can also be used in patients with difficult-to-control hypertension. Potassium levels must be monitored regularly in patients treated with ACE inhibitors and ARBs. Diuretics can potentially exacerbate electrolyte disturbances and dyslipidemias.

Glucocorticoids, cyclosporine, tacrolimus and weight gain predispose to the development of diabetes following liver transplantation, especially in patients transplanted for hepatitis C virus and those receiving tacrolimus.[21] Diabetes does not adversely affect survival in the first year following transplantation, but it is associated with decreased survival after 5 to 10 years.[22] Treatment of diabetes post-transplantation comprises of medical and nutritional therapy, modulation of immunosuppression (lowering/stopping glucocorticoids) and initiation of pharmacologic agents for treatment of diabetes.[23] Substitution of tacrolimus to cyclosporine is an option for refractory diabetes following liver transplantation.[24]

Over one-third of patients receiving a liver transplant are obese. Improved health after transplant and treatment with glucocorticoids or cyclosporine prompt further gain of weight gain. Glucocorticoid therapy is an independent risk factor for obesity. Cyclosporine is more likely to cause weight gain than tacrolimus. Treatment of obesity comprises of restricted caloric intake, physical exercise and reduction of glucocorticoids. Additional treatment options include

substituting cyclosporine to tacrolimus and possibly bariatric surgery, albeit the feasibility of surgery (especially Roux-en-Y gastric bypass) is technically difficult due to altered anatomy.

Dyslipidemia is common after liver transplantation and can develop in around 40% of patients, usually within the first year post transplant.[25] Immunosuppression consisting of tacrolimus monotherapy with early glucocorticoid withdrawal is associated with lower rates of hypercholesterolemia and hypertriglyceridemia.[26] Treatment consists of dietary modification, statins and reducing the dose of or discontinuing glucocorticoids.

The preventive strategies and management are summarized in table 5.

Table 5: The preventive and management strategies for metabolic syndrome.

Preventive Strategies	Risk factor management
Weight reduction Smoking cessation	**Hypertension:** Drug therapy: Calcium-channel blocker (first line), ACE inhibitors, angiotensin-receptor blocker; Beta blocker (second line) Blood pressure goals: 140/90 mmHg
Dietary modification Avoidance of alcohol	**Diabetes:** Drug therapy: Metformin (first line); Additional drugs (second line); Insulin (third line) Blood sugar goals: Fasting sugar <120 mg/dl, peak glucose <160 mg/dl, HbA1C <7%
Physical exercise Sodium restriction	**Hyperlipidemia:** Drug therapy: Statin (first line); Ezetimibe (second line) Hypertriglyceridemia: fish oil, fibrates Treatment goals: • 10-year risk 10–20% (or ⩾2RF): LDL<130 mg/dl • 10-year risk >20%, ⩾ 2RF, or any of diabetes mellitus, peripheral vascular disease, carotid disease, abdominal aortic aneurysm: LDL <100 mg/dl • Recent cardiovascular disease, peripheral vascular disease, cerebral vascular accident or diabetes mellitus plus 1 risk: LDL <70 mg/dl • Triglycerides <200 mg/dl

Risk factors in hyperlipidaemia are cigarette smoking, hypertension (BP >140/90 mmHg or on antihypertensive medication), low HDL cholesterol (<1.0 mmol/l), family history of premature heart disease (male first-degree relative <55 years, female first-degree relative <65 years), age (men >45 years; women >55 years). HDL cholesterol >1.5 mmol/l counts as a 'negative' risk factor; its presence removes one risk factor from the total count.

Cardiovascular risk

Factors associated with increased cardiovascular events include older age at transplantation, male sex, post-transplantation hypertension and diabetes, history of coronary artery disease, and use of mycophenolate mofetil (MMF).[27] The relative risk of death due to cardiovascular disease in liver transplant recipients was 2.6 (95% CI 1.5-4.0) compared with controls. Coronary heart disease is a common cause of death following liver transplantation. Modification of risk factors (obesity, hyperlipidemia, diabetes, and hypertension) both before and after liver transplantation forms the cornerstone to maximize outcomes.

Acute and chronic renal disease

The incidence of chronic kidney disease (defined as an estimated GFR <30 mL/min per 1.73 m^2) is 18% at 5 years. Risk factors for chronic renal failure include older age, CNI therapy, lower pretransplant GFR, female sex, postoperative acute renal failure, baseline diabetes, obesity and hypertension, high pretransplant serum creatinine, bilirubin and MELD scores, hepatitis B and C virus infection, and transplantation before 1998.[28] CNI-related acute renal failure is secondary to renal vasoconstriction and tapering CNI doses improves the renal dysfunction. CNIs can also induce chronic renal disease which is less amenable to recovery following CNI taper. Treatment with MMF and sirolimus carries a lower risk of renal injury, but monotherapy with any of these agents can result in an increased risk of acute rejection. Everolimus as an alternative agent is under investigation. Care should be taken to avoid nephrotoxic agents (eg. Nonsteroidal anti-inflammatory drugs (NSAIDs), aminoglycoside antibiotics) that can exacerbate renal injury.

Metabolic bone disease

Majority of bone loss and fractures occur within the first six months following transplantation, and fractures frequently involve the spine, especially in patients with underlying cholestatic liver disease.[29] Risk factors for osteopenia includes the use of glucocorticoids, immobility, hypogonadism, and chronic liver diseases like primary biliary cirrhosis, alcoholic liver disease and autoimmune hepatitis treated with glucocorticoids. Preventive strategies and risk factor management are summarized in table 6.

Preventive Strategies	Risk Factors Management
Weight-bearing exercise	Calcium and vitamin D supplementation
Calcium	Bisphosphonates
Vitamin D intake	Weight bearing exercises
Reduction in steroid intake	Testosterone replacement if indicated
Euthyroid status	Denosumab (if no renal dysfunction)

Table 6: The preventive and management strategies for metabolic bone disease post-transplantation.[7]

De novo malignancy — The incidence of malignancy is increased in liver transplant recipients.[30] Skin cancers, post-transplant lymphoproliferative disorder (PTLD), colorectal cancer, head and neck cancer, cancers involving the lung, breast, uterus, prostate and kidneys are more common in transplant recipients than age-matched general population. The probability of developing any non-skin malignancy was highest in patients with primary sclerosing cholangitis and alcohol-related liver disease. Primary sclerosing cholangitis is associated with a higher risk of ulcerative colitis and thus colon cancer. Alcoholic cirrhosis is commonly associated with oropharyngeal and esophageal squamous cell carcinomas. Because of the increased risk of cancer in liver transplant recipients, the following screening recommendations have been suggested (Table 7):

Recommendations for cancer screening in liver transplant recipients			
Cancer type	**Population at risk**	**Strategy**	**Frequency**
Skin	All	Full body s kin examination, UVB protection	Annual
Lung	Smokers (current and ex)	CT Chest, quit smoking	Annual
	Others	X-ray Chest	Annual
Colon	IBD ± PSC	Colonoscopy	Annual
	PSC alone	Colonoscopy	First year after procedure, then every five years
	Others	Colonoscopy	As for general population
Oropharyngeal	Current smokers, ex smokers, patients with alcohol-related liver disease	ENT examination, quit smoking and consumption of alcohol	Annual
Breast	Women	Mammography	As for general population
Prostate	Men	Prostate specific antigen (PSA) level	As for general population
Gynaecological	Women	Pelvic exam, Papanicolaou smear	Annual

Table 7: Recommendations for cancer screening in liver transplant recipients.[7]

Neurologic events

Neurologic complications, such as vascular damage, seizures, infections, immunosuppressive-associated leukoencephalopathy, osmotic demyelination syndrome and other metabolic abnormalities occur in 16-80% of liver transplant recipients.[31] The clinical symptoms are usually mild, but major neurologic sequelae are observed in some patients. Pretransplant variables associated with an increased risk of CNS complications included the presence of portosystemic encephalopathy, higher peak serum bilirubin levels, and lower serum cholesterol levels.

Hearing impairment

Common complaints include hearing loss, tinnitus and otalgia. Tacrolimus-based immunosuppression is implicated in hearing impairment.[32]

Hyperuricemia and gout

Hyperuricemia is common in liver transplant recipients, although clinical evidence of gout occurs in only a minority. Asymptomatic hyperuricemia is not treated. Acute gout is treated with colchicine and steroids are used as second line therapy. NSAIDs must be used with caution with careful monitoring of renal parameters.

Dermatologic complications

Infections and drug-induced lesions are common in post-transplant setting and are treated symptomatically.

Fatigue

Fatigue is a common nuisance symptom after liver transplantation and causes impaired quality of life. Structured exercise programs might benefit patients with fatigue.[33]

Sexual dysfunction — Sexual dysfunction is common prior to liver transplantation and frequently lingers post-transplant.[34]

Pregnancy — Amenorrhea and decreased fertility are common among women with end-stage liver disease.[35] However, premenopausal women often recover fecundity. Avoidance of teratogenic immunosuppressive medications (eg. MMF) is of paramount importance along with counselling about pregnancy.

CURRENT STATUS OF LIVING DONOR LIVER TRANSPLANTATION (LDLT):

LDLT is a technically complex procedure. Furthermore, donor safety and biliary complications continue to be a major obstacle in LDLT.[36] Nevertheless, over the past decade, LDLT has evolved considerably due to the scarcity of deceased donor liver graft. A significant contribution has been made by advancement in the understanding of partial graft regeneration and surgical techniques. This has led to improvement in patient and donor outcomes in LDLT. Strict donor selection criteria are mandatory in every LDLT program. The right lobe graft is the most suitable graft type with respect to recipient's outcomes. 30% of total liver volume is considered as a safety margin for minimal residual liver volume by the most LDLT programs.[37,38] Inadequate volume, steatosis, and medical comorbidities are important reasons for donor rejection.

Various strategies adopted to expand donor pool in LDLT include dual graft LDLT (when the available single right lobe graft cannot meet the recipient's metabolic demand), donor exchange program (to cope with ABO incompatibility) and ABO incompatible LDLT.[39] Given the morbidity associated with the open operation for a living liver donor, there have been extensive advancement in techniques of laparoscopic-assisted donor hepatectomies.[40]

CURRENT CHALLENGES IN LIVER TRANSPLANTATION:

Donor shortage is a chief concern which can be managed by accepting split liver grafts and organs from older donors, living donors and donors after cardiac death. With the advent of highly effective directly acting antiviral agents against hepatitis C virus, there exists a possibility of accepting organs from anti-HCV positive donors in the future. In areas where hepatitis C is widely prevalent, use of anti-HBc positive donors with subsequent treatment of recipients with antiviral agents against hepatitis B is also acceptable. Reducing immunosuppression to the minimum possible dose or eliminating immunosuppression altogether will reduce complications related to immune suppression.

LIVER TRANSPLANTATION - THE INDIAN PERSPECTIVE:

At present, in India, 20/million population need liver transplantation (roughly 25,000 LT per year). The present-day rate of liver transplantation performed in India is about 1.2/million population. 2013 and 2014 saw around 1200 and 1400 liver transplantations performed in India respectively. Of the total 7085 LT performed in India, 5717 (80.7%) have been LDLTs.[41] Currently, Southern India has been in the forefront of deceased donor liver transplantation largely due to significant changes in the certification of brain death and simplified procedures required for certification. In Maharashtra, Karnataka, Bengaluru and Tamil Nadu, zonal coordinating bodies have been established and entrusted with policy making, maintaining patient waiting lists, and coordinating sharing of organs. However, there still exists an enormous gap between demand and supply of organs. Over the last 17 years, the liver transplant scenario in India has positively evolved with survival data comparable to the best centres in the world.[41]

References

1. Martin P, DiMartini A, Feng S, et al. Evaluation for liver transplantation in adults: 2013 practice guideline by the American Association for the Study of Liver Diseases and the American Society of Transplantation. Hepatology. 2014; 59:1144.
2. Murray KF, Carithers RL Jr, AASLD. AASLD practice guidelines: Evaluation of the patient for liver transplantation. Hepatology. 2005; 41:1407.
3. Merion, R. M., Schaubel, D. E., Dykstra, D. M., Freeman, R. B., Port, F. K. and Wolfe, R. A. (2005), The Survival Benefit of Liver Transplantation.

American Journal of Transplantation. 2005; 5:307–313.

4. V. Mazzaferro, E. Regalia, R. Doci et al., "Liver transplantation for the treatment of small hepatocellular carcinomas in patients with cirrhosis," N Engl J Med. 1996; 334(11):693–699.
5. O'Grady JG, Schalm SW, Willliams R. Acute liver failure: redefining the syndromes. *Lancet.* 1993;**342**:273–275.
6. Bernuau J, Benhamou JP. Fulminant and subfulminant liver failure. In: McIntyreN, BenhamouJP, BircherJ, RizzetoM, RodesJ, editors. *Oxford Textbook of Clinical Hepatology*. Oxford: Oxford Medical Publications, 1991:923–942.
7. Watt, K. D. Keys to long-term care of the liver transplant recipient. *Nat. Rev. Gastroenterol. Hepatol. 2015;* 12:639–648.
8. Lupo L, Panzera P, Tandoi F, et al. Basiliximab versus steroids in double therapy immunosuppression in liver transplantation: A prospective randomized clinical trial. Transplantation. 2008; 86:925-31.
9. Uemura T, et al. Liver retransplantation for primary nonfunction: analysis of a 20-year single-center experience. Liver Transpl 2007;13:227–233.
10. Detre KM, et al. Influence of donor age on graft survival after liver transplantation—United Network for Organ Sharing Registry. Liver Transpl Surg. 1995;1:311–319.
11. Duffy JP, Hong JC, Farmer DG, Ghobrial RM, Yersiz H, Hiatt JR, et al. Vascular complications of orthotopic liver transplantation: experience in more than 4,200 patients. 2009;208:96-903.
12. Abraham SC, Furth EE. Receiver operating characteristic analysis of serum chemical parameters as tests of liver transplant rejection and correlation with histology. Transplantation. 1995;59:740.
13. Wojcicki M, Milkiewicz P, Silva M. Biliary tract complications after liver transplantation: a review. Dig Surg. 2008;25:245–257.
14. Guichelaar MM, Benson JT, Malinchoc M, Krom RA, Wiesner RH, Charlton MR. Risk factors for and clinical course of non-anastomotic biliary strictures after liver transplantation. Am J Transplant. 2003;3:885-890.
15. Romero FA, Razonable RR. Infections in liver transplant recipients. World J Hepatol. 2011;3:83-92.
16. Garcia-Retortillo M, Forns X, Feliu A, Moitinho E, Costa J, Navasa M, et al. Hepatitis C virus kinetics during and immediately after liver transplantation. Hepatology. 2002;35:680-687.
17. Busutil R., Klintmalm G. Transplantation of the Liver. Philadelphia: Elsevier Saunders; 2015:870.
18. McCashland TM. Posttransplantation care: role of the primary care physician versus transplant center. Liver Transpl. 2001; 7:S2.
19. Watt KD, Charlton MR. Metabolic syndrome and liver transplantation: a review and guide to management. J Hepatol. 2010; 53:199.
20. Stegall MD, Everson G, Schroter G, et al. Metabolic complications after liver transplantation. Diabetes, hypercholesterolemia, hypertension, and obesity. Transplantation. 1995; 60:1057.
21. Younossi Z, Stepanova M, Saab S, et al. The association of hepatitis C virus infection and post-liver transplant diabetes: data from 17,000 HCV-infected transplant recipients. Aliment Pharmacol Ther. 2015; 41:209.
22. Younossi ZM, Stepanova M, Saab S, et al. The impact of type 2 diabetes and obesity on the long-term outcomes of more than 85 000 liver transplant recipients in the US. Aliment Pharmacol Ther. 2014; 40:686.
23. Wilkinson A, Davidson J, Dotta F, et al. Guidelines for the treatment and management of new-onset diabetes after transplantation. Clin Transplant. 2005; 19:291.
24. Dumortier J, Bernard S, Bouffard Y, Boillot O. Conversion from tacrolimus to cyclosporine in liver transplanted patients with diabetes mellitus. Liver Transpl. 2006; 12:659.
25. Gisbert C, Prieto M, Berenguer M, et al. Hyperlipidemia in liver transplant recipients: prevalence and risk factors. Liver Transpl Surg. 1997; 3:416.

26. Moench C, Barreiros AP, Schuchmann M, et al. Tacrolimus monotherapy without steroids after liver transplantation--a prospective randomized double-blinded placebo-controlled trial. Am J Transplant. 2007; 7:1616.

27. Albeldawi M, Aggarwal A, Madhwal S, et al. Cumulative risk of cardiovascular events after orthotopic liver transplantation. Liver Transpl. 2012; 18:370.

28. Ojo AO, Held PJ, Port FK, et al. Chronic renal failure after transplantation of a nonrenal organ. N Engl J Med. 2003; 349:931.

29. Haagsma EB, Thijn CJ, Post JG, et al. Bone disease after orthotopic liver transplantation. J Hepatol. 1988; 6:94.

30. Watt KD, Pedersen RA, Kremers WK, et al. Long-term probability of and mortality from de novo malignancy after liver transplantation. Gastroenterology. 2009; 137:2010.

31. Vizzini G, Asaro M, Miraglia R, et al. Changing picture of central nervous system complications in liver transplant recipients. Liver Transpl. 2011; 17:1279.

32. Rifai K, Bahr MJ, Cantz T, et al. Severe hearing loss after liver transplantation. Transplant Proc. 2005; 37:1918.

33. Anastácio LR, Diniz KG, Ribeiro HS, et al. Prospective evaluation of metabolic syndrome and its components among long-term liver recipients. Liver Int. 2014; 34:1094.

34. Ho JK, Ko HH, Schaeffer DF, et al. Sexual health after orthotopic liver transplantation. Liver Transpl. 2006; 12:1478.

35. Christopher V, Al-Chalabi T, Richardson PD, et al. Pregnancy outcome after liver transplantation: a single-center experience of 71 pregnancies in 45 recipients. Liver Transpl. 2006; 12:1138.

36. Song GW, Lee SG. Living donor liver transplantation. Curr Opin Organ Transplant 2014; 19:217-22.

37. Shi JH, Huitfeldt HS, Suo ZH, et al. Growth of hepatocellular carcinoma in the regenerating liver. Liver Transpl 2011; 17:866-74.

38. Hwang S, Lee SG, Ahn CS, et al. Small-size liver graft does not increase the risk of hepatocellular carcinoma recurrence after living donor liver transplantation. Transplant Proc 2007; 39:1526-9.

39. Park CG, Song WG, Moon DB et al. A review of current status of living donor liver transplantation. HepatoBiliary Surg Nutr. 2016;5(2):107-117.

40. Koffron AJ, et al. Laparoscopic-assisted right lobe donor hepatectomy. Am J Transplant. 2006; 6:2522–2525.

41. Soin A S, Thiagarajan S. Liver transplant scene in India. MAMC J Med Sci. 2016; 2:6-11.

SHORT COMMUNICATION

Intracytoplasmic Sperm Injection

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Intracytoplasmic sperm injection (ICSI) refers to technique in which a single spermatozoon is injected directly into the cytoplasm of a mature oocyte to treat male factor infertility. The ability of ICSI to permit almost any type of spermatozoa to fertilize oocyte has made it the most successful treatment for male factor infertility. The normal fertilization rate following ICSI is approximately 50 to 80%.[1] The marked increase in proportion of ICSI cycles seems primarily due to increased use in couples classified as having mixed causes of infertility, unexplained infertility and advanced age together with relative decline in tubal factor infertility.[2] ICSI is now indicated for male factor infertility when success with standard IVF regimens is considered unlikely, however, in most countries, ICSI is used as first line treatment to overcome many of the other infertility causes.[3]

ICSI versus IVF for Unexplained Total Fertilization Failure after Conventional IVF-

In case of normozoospermia, total fertilization failure and low fertilization (defined as <25% fertilization) occurs in 5 to 15% and 20%, respectively of couples undergoing IVF with recurrence rate of about 30-50%.[4-6] This failure of oocyte of female patient to be fertilized by spermatozoa of the male partner undergoing infertility treatment may be explained by lack of penetration of zona pellucida, an oocyte activation failure, or a defect in the oocyte. Intracytoplasmic sperm injection circumvents those obstacles and might therefore, be effective.[7] For couples with failed fertilization in previous IVF attempts with increased insemination concentration, ICSI should be treatment of choice.

ICSI versus IVF for Unexplained Infertility after Failed Insemination-

Unexplained Infertility accounts for approximately 15% of infertility cases, and is defined as failure to conceive with no known reason with routine fertility examinations show no abnormality in either partner. These patients are first treated with controlled ovarian stimulation (COH) combined with intrauterine insemination (IUI) up to 3 cycles. [8] Patients who fail to become pregnant are referred for assisted reproduction. The routine use of ICSI is indicated in low responders with unexplained infertility to avoid the high rate of total fertilization failure. Considering patients with less than six oocytes retrieved per cycle, the fertilization rate in IVF cycles was 53.3% as compared to 60.7% per inseminated oocyte in the ICSI cycles. Complete fertilization failure was higher in conventional IVF (34.3%) than ICSI cycles (10.3%).[9] In patients with unexplained infertility with a failed IVF attempt after failure to conceive with 4 to 6 cycles of superovulation and direct intraperitoneal insemination, ICSI should be method of choice in a second attempt to avoid failed fertilization or a low fertilization rate, because failure in couples with unexplained infertility appears to be more likely to recur than in tubal factor patients.[10]

ICSI versus IVF for Male Factor Infertility-

Most couples with severe male factor infertility can be treated with ICSI. In order to generate normally fertilized oocytes after ICSI, a spermatozoon containing a functional genome and centriole is required. ICSI can also be applied with sperm from the epididymis and testis in case of obstruction of the seminal excretory ducts. ICSI can be applied in case of azoospermia caused by impaired spermatogenesis if sufficient sperm can be retrieved from testicular tissue.[3,11] Originally, the indication for ICSI was very poor sperm parameters (severe OAT : less than 50,000 total motile spermatozoa after sperm preparation. [12] ICSI can be applied with sperm from the epididymis in case of obstructive azoospermia, congenital absence of the vas deferens, Young's syndrome, failed vasoepididymostomy, failed

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vasovasostomy, and a bilateral (iatrogenic) inguinal obstruction of both ejaculatory ducts.[11] In patients with mild male factor infertility, the treatment of sibling oocytes with both IVF and ICSI remains the optimal tool to prevent total fertilization failure after conventional IVF. In couples with severe teratozoospermia as the only male factor, there is a benefit in subjecting sibling oocytes to both IVF and ICSI in the first cycle [14] as 28.3% cycles of total fertilization failure were avoided. It also revealed that, despite initially significant higher fertilization rates in ICSI than IVF oocytes, embryo development from > 6 cells up to blastocyst formation was similar, implying that ICSI should be used with caution because after day 3, ICSI- derived embryo development was compromised. [13] High inseminating concentrations in IVF resulted in a higher fertilization rate than ICSI in patients with severe teratozoospermia, however, ICSI produced a significantly higher proportion of morphologically superior embryos with a tendency towards higher implantation potential.[16]

ICSI versus IVF for Tubal Factor Infertility-

Prospective randomized [15,16] and retrospective [17] studies in the literature that compared the results of ICSI and IVF in a patients with a tuboperitoneal factor as their sole cause of infertility showed that ICSI did not offer any advantage over conventional IVF in such patients. It was suggested that ICSI should not be recommended in patients with strictly tubal factor infertility and that IVF should be the initial treatment of choice.

ICSI versus IVF for Poor Responders-

ICSI provides similar fertilization, pregnancy and implantation rates as conventional IVF in poor responders without a male factor. Also, the number and quality of embryos obtained by both procedures did not differ.[18] ICSI should not be considered as a possible strategy in order to improve the number of embryos available in low responder patients. ICSI should be method of choice in a second attempt when previous fertilization failure with IVF has occurred in order to determine if the fertilization failure was due to lack of penetration of zona pellucida or a defect in the oocyte. In a recent study, the efficiency of IVF and ICSI when few oocytes are available for insemination, was investigated.[19] As pregnancy, implantation and spontaneous abortion rates do not differ significantly between the groups, adopting ICSI in all cases does not seem to be useful and abandoning IVF appears to be a questionable choice.

ICSI versus IVF in patients with PCOS-

In one prospective randomized study, it is found that

(1) The percentage of mature oocytes were not different between patients who had complete fertilization failure or no fertilization failure following IVF.

(2) The oocytes inseminated by ICSI had a significantly higher fertilization rate than those inseminated by conventional IVF.

(3) Complete fertilization failure following conventional IVF was as high as 15%, whereas there was no fertilization failure in oocytes inseminated by ICSI.

(4) Despite the insemination method, the developmental potential in terms of day 2 embryonic morphology and rate of cellular cleavage were same.

ICSI versus IVF for Patients with Increased Oocyte Immaturity -

During ICSI, only mature oocytes are injected, while immature oocytes are set aside to await completion of maturation. Because oocyte maturation is unpredictable, most in vitro matured oocytes are injected irrespective of the time when they mature. Thus, the timing of the ICSI may not always optimal, especially since research indicates that expulsion of the polar body alone is not enough to determine maturity and that the amount of time between polar body extrusion and time of insemination influences fertilization rates.[20,21]

ICSI for Other Indications-

Intracytoplasmic sperm injection, using ejaculated sperm, can be applied in the presence of oligoasthenoteratozoospermia (OAT), in cases of repeated fertilization failure after conventional IVF (20% fertilization with conventional IVF previously), in the presence of a high concentrations of antisperm antibodies, in cancer patients in remission where sperm were cryopreserved prior to chemo- and radiotherapy, in patients with spinal cord injury, in patients with ejaculatory disturbance, in patients with retrograde ejaculation, and in patients where semen was banked prior to vasectomy. ICSI also indicated when preimplantation genetic diagnosis is applied for monogenetic diseases and polymerase chain reaction is

used.[3,22]

The effect ICSI versus IVF on Embryo Quality-

In one study it is demonstrated that no significant differences found between IVF and ICSI groups in the rate of high quality embryos. Embryo quality depends on intrinsic factors of the gametes involved rather than on the fertilization process per se. Conventional IVF should be the option of choice for every couple requiring ART treatment to avoid the disadvantages of the ICSI.[23]

The Effect ICSI versus IVF on the Obstetric Outcome -

For singleton pregnancies, a slightly higher incidence of prematurity could be observed in the IVF group. This did not result in a significantly worst outcome in terms of perinatal morbidity and mortality. The obstetrics and perinatal outcome of twin pregnancies following IVF and ICSI were also comparable with only exception of increased still birth rate in the ICSI group. A detailed study of the still birth in both groups showed a higher incidence of pregnancy induced hypertension and/or IUGR in the ICSI group.[24] With regard to the risk of congenital malformations it can be concluded that there is no significance differences between ICSI and IVF. However the increased incidence of congenital malformations found in ICSI and IVF pregnancies compared with general populations is of general concerned. Thus, the genetic counselling and meticulous prenatal care should be offered to all couples treated by ICSI.[25]

Conclusion

ICSI is a method of choice in cases of severe oligoasthenoteratozoospermia (OAT) obstructive and non-obstructive azoospermia. Because of the high fertilization and pregnancy rates achieved in ICSI, the scope of the procedure has been to include the couples with unexplained infertility, borderline semen, immunologic infertility, tubal factor infertility, PCOS, poor responders and previous fertilization failure following conventional IVF. However there is not enough data to suggest ICSI for all cases and performing ICSI in the presence of normal sperm parameters is still in debate.

References

1. Van Steirteghem AC, Liu J, Joris H, Nagy Z, Janssenwillen C, Tournaye H, et al. Higher success rate by intracytoplasmic sperm injection than by subzonal insemination. Report of a second series of 300 consecutive treatment cycles. Hum Reprod 1993;8:1055-60.
2. Nyboe Anderson A, Carlsen E, Loft A. Trends in use of intracytoplasmic sperm injection marked variability between countries. Hum Reprod Update 2008;14:593-604.
3. Devroey P, Van Steirteghem A. A review of ten years experience of ICSI. Hum Reprod Update 2000;10:19-28.
4. Barlow P, Englert Y, Puissant F, Lejeune B, Delvigne A, Van Rysselberge M, et al. Fertilization failure in IVF: Why and what next? Hum Reprod 1990;5:451-6.
5. Molloy D, Harrison K, Breen T, Hennessey J. The predictive value of idiopathic failure to fertilize on the first *in vitro* fertilization attempt. Fertil Steril 1991;56:285-9.
6. Roest J, Van Heusden AM, Zeilmaker GH, Verhoeff A. Treatment policy after poor fertilization in the first IVF cycle. J Assist Reprod Genet 1998;15:18-21.
7. van der Westerlaken L, Helmerhorst F, Dieben S, Naaktgeboren N. Intracytoplasmic sperm injection as a treatment for unexplained total fertilization failure or low fertilization after conventional *in vitro* fertilization. Fertil Steril 2005;83:612-7.
8. Aboulghar MA, Mansour RT, Serour GI, Amin Y, Ramzy AM, Sattar MA, et al. Management of long-standing unexplained infertility: A prospective study. Am J Obstet Gynecol 1999;181:371-5.
9. Jaroudi K, Al-Hassan S, Al-Sufayan H, Al-Mayman H, Qeba M, Coskun S. Intracytoplasmic sperm injection and conventional *in vitro* fertilization are complementary techniques in management of unexplained infertility. J Assist Reprod Genet 2003;20:377-81.
10. Takeuchi S, Minoura H, Shibahara T, Shen X, Futamura N, Toyoda N. *In vitro* fertilization and intracytoplasmic sperm injection for couples with unexplained infertility after failed direct intraperitoneal insemination. J Assist Reprod Genet 2000;17:515-20.
11. Tournaye H, Devroey P, Liu J, Nagy Z, Lissens W, Van Steirteghem A. Microsurgical epididymal sperm aspiration and intracytoplasmic sperm injection: A new effective approach to infertility as a result of congenital bilateral absence of the vas deferens. Fertil Steril 1994;61:1045-51.

12. Ubaldi F,Liu J, Nagy Z, Tournaye H, Camus M, Van Steirteghem A, et al. Indications for and results of intracytoplasmic sperm injection (ICSI). Int J Androl 1995;18 (Suppl 2):88-90.

13. Kihaile PE, Misumi J, Hirotsuru K, Kumasako Y, Kisangaa RE, Utsunomiya T. Comparison of sibling oocyte outcomes after intracytoplasmic sperm injection and *in vitro* fertilization in severe teratozoospermic patients in the first cycle. Int J Androl 2003;26:57-62.

14. Oehninger S, Kruger TF, Simon T, Jones D, Mayer J, Lanzendorf S, et al. A comparative analysis of embryo implantation potential in patients with severe teratozoospermia undergoing *in vitro* fertilization with a high insemination concentration or intracytoplasmic sperm injection. Hum Reprod 1996;11:1086-9.

15. Aboulghar MA, Mansour RT, Serour GI, AminYM, Kamal A. Prospective controlled randomized study of *in vitro* fertilization versus intracytoplasmic sperm injection in the treatment of tubal factor infertility with normal semen parameters. Fertil Steril 1996;66:753-6.

16. Bukulmez O, Yarali H, Yucel A, Sari T, Gurgan T. Intracytoplasmic sperm injection versus *in vitro* fertilization for patients with a tubal factor as their sole cause of infertility: A prospective, randomized trial. Fertil Steril 2000;73:38-42.

17. Staessen C, Camus M, Clasn K, De Vos A, Van Steirteghem A. Conventional *in vitro* fertilization versus intracytoplasmic sperm injection in sibling oocytes from couples with tubal infertility and normozoospermic semen. Hum Reprod 1999;14:2474-9.

18. Moreno C, Ruiz A, Simon C, Pellicer A, Remohi J. Intracytoplasmic sperm injection as a routine indication in low responder patients. Hum Reprod 1998;13:2126-9.

19. Borini A, Gambardella A, Bonu MA, Dal Prato L, Sciajno R, Bianchi L, et al. Comparison of ICSI and IVF when only few oocytes are available for insemination. Reprod Biomed Online 2009;19:270-5.

20. Balakier H, Sojecki A, Motamedi G, Librach C. Time-dependant capability of human oocytes for activation and pronuclear formation during metaphase 2 arrest. Hum Reprod 2004;19:982-7.

21. Hyun CS, Cha JH, Son WY, Yoon SH, Kim KA, Lim JH. Optimal ICSI after first polar body extrusion in in vitro matured human oocytes. Hum Reprod 2007;22:1991-5.

22. Liebaers I, Sermon K, Staessen C, Joris H, Lissens W, Van Assche E, et al. Clinical experience with preimplantation genetic diagnosis and intracytoplasmic sperm injection. Hum Reprod 1998;13(Suppl 1):186-95.

23. Yoeli R, Orvieto R, Ashkenazi J, Shelef M, Ben-Rafael Z, Bar-Hava I. Comparison of embryo quality between intracytoplasmic sperm injection and *in vitro* fertilization in sibling oocytes. J Assist Reprod Genet 2008;25:23-8.

24. Ombalet W, Cadron I, Gerris J, De Sutter P, Bosmans E Martens G, et al. Obstetric and perinatal outcome of 1665 ICSI and 3974 IVF singleton and 1102 ICSI and 2901 IVF twin births: A comparative analysis. Reprod Biomed Online 2005;11:76-85.

25. Hourvitz A, Pri-Paz S, Dor J, Seidman DS. Neonatal and obstetric outcome of pregnancies conceived by ICSI or IVF. Reprod Biomed Online 2005;11:469-75.

ORIGINAL ARTICLE

A Comparative Study Of Perioperative Effects Of Preemptive Dose Of Dexamethasone Versus Clonidine In Lower Abdominal Surgeries Under Spinal Anaesthesia

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ABSTRACT

Introduction:

This study is an effort to compare the effects of IV Dexamethasone and Clonidine for prolongation of analgesic action of Spinal anaesthesia for lower abdominal surgeries.

AIM & OBJECTIVES : To compare the effect of preemptively administered IV Dexamethasone on bupivacaine induced neural blockade with the effect of IV Clonidine on the same as compared to plain bupivacaine with respect to:Time of onset of sensory block,time of onset of motor block,total duration of sensory block,total duration of motor block,duration of post operative analgesia,post operative nausea and vomiting,post operative sedation,complication or side effects (if any).

METHODS : This double blind study was conducted in three groups of 30 patients each(total 90):

Group A patients received Intrathecal Bupivacaine 0.5% heavy + IV Dexamethasone(8 mg)

Group B patients received Intrathecal Bupivacaine 0.5% heavy + IV Clonidine

(3 microgram[μg]/kg)

Group C patients received Intrathecal Bupivacaine 0.5% heavy + IV normal saline (2 cc)

RESULTS : The duration of sensory and motor block and analgesia was more in both Clonidine and Dexamethasone groups than normal saline group where prolongation with Clonidine was of longer duration. Dexamethasone and Clonidine both had beneficial effects of reducing Post Operative Nausea and Vomiting with Clonidine providing significant sedation.

CONCLUSIONS : Both Clonidine and dexamethasone provide prolongation of sensory and motor blockade and analgesia when given alongwith Spinal anaesthesia. Clonidine is more effective but is associated with side effects like bradycardia ,hypotension(clinically insignificant in our study) and sedation.

KEY WORDS : Dexamethasone, Clonidine, Spinal Anaesthesia

Introduction

Postoperative pain control is a major problem in surgeries under regional anaesthesia as local anaesthetics have a relatively short duration of action. Clonidine prolongs duration of intrathecally administered local anaesthetics & has potent antinocieptive properties.[1,2]. Dexamethasone is long acting glucocorticoid. It has anti-inflammatory and analgesic effects.This study is an effort to compare the effects of Intravenous Clonidine and Intravenous Dexamethasone in preemptive doses for prolongation of analgesic action of Spinal anaesthesia for lower abdominal surgeries.

Aims and Objectives

To compare the effect of IV Dexamethasone on 0.5% heavy bupivacaine induced neural blockade with the effect of IV Clonidine on the same as compared to plain bupivacaine. In the study following parameters will be studied:

1. Time of onset of sensory block
2. Time of onset of motor block
3. Total duration of sensory block
4. Total duration of motor block
5. Duration of post operative analgesia
6. Post operative nausea and vomiting
7. Post operative sedation
8. Complication or side effects(if any)

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Materials And Methods

Study design:

This study is a randomized, prospective,placebo controlled, single center study. A synopsis of the study protocol was submitted to the Institutional Review Board/Ethics Committee and approval was obtained.

Inclusion and exclusion criteria

Inclusion criteria

1) Age 16 to 60 years.
2) ASA grade I & II.
3) Sex :male or female
4) Patient undergoing various lower abdominal surgeries
5) Duration of Surgery- minimum 30 minutes to maximum 70 minutes

Exclusion criteria

1) Known allergic to any of the study medication
2) Bleeding disorders
3) Local infection at Injection site
4) Known case of Diabetes
5) Known case of Hypertension
6) Known case of Ischemic Heart Disease, arrythmias
7) Uncooperative patient
8) Known history of acid peptic disease
9) Coagulation abnormalities
10) Peripheral vascular disease
11) Liver and kidney disease

Patients included in the study underwent thorough preoperative assessment including detailed case history, clinical examination and all necessary investigations.

Consent :

Prior to inclusion in the study,a written informed consent was obtained from each subject

ANAESTHESIA PROCEDURE

The study was conducted in three groups of 30 patients each(total 90).

Group A- Patients received Intrathecal Bupivacaine 15 mg(3cc) of 0.5 % hyperbaric solution and 8 mg IV dexamethasone(2 ml)

Group B- Patients received Intrathecal Bupivacaine 15 mg(3cc) of 0.5 % hyperbaric solution and IV Clonidine(3 microgram/kg)

Group C- Patients received Intrathecal Bupivacaine 15 mg(3 cc) of 0.5 % hyperbaric solution and 2 ml IV normal saline

PREMEDICATION

1. Inj Glycopyrrolate 5 ug/kg im
2. Inj Ondansetron 0.08mg/kg

Lumbar puncture was done in L3- L4 space with 25 G spinal needle. Spinal Anaesthesia was given with 3ml of 0.5% Bupivacaine. After performance of Spinal Anaesthesia patients were kept in supine position and oxygen 3-5 L/min was given through face mask. Sensory block was assessed by pinprick method in areas supplied by T8 and below dermatomes. It was graded by the Hollmen score. Motor Block was assessed by Modified Bromage scale.Sedation was assessed by a modified Ramsay sedation scale.

POST OPERATIVE MONITORING

Patients' vitals were monitored and looked for any complications or side effects hourly till 24 hours.

DURATION OF ANALGESIA

Duration of analgesia was assessed using standard VAS(Visual Analogue Scale). Time between onset of complete block to time of first request for analgesia i.e. VAS $\geqslant$ 4 constituted the duration of analgesia.Patients were supplemented with analgesic Diclofenac 1-1.5mg/kg if VAS $\geqslant$ 4 and monitored for the time to first analgesic usage.

Results

Table no I-Table showing comparison of mean duration of sensory blockade (minutes) in Group A, Group B and Group` C

	Number of patients	Duration of sensory block		P-value
		Mean	SD	
Group A	30	237.10	5.68	
Group B	30	345.87	10.85	< 0.001
Group C	30	208.20	4.32	

Table no II- p-value by using Tukey's test for pair wise comparison of mean duration of Sensory block

	Group A	Group B	Group C
Group A	-	< 0.001	< 0.001
Group B	-	-	< 0.001
Group C	-	-	-

Table no III-Table showing comparison of mean duration of motor blockade (minutes) in Group A, Group B and Group C

	Number of patients	Duration of Motor block		P-value
		Mean	SD	
Group A	30	205.20	4.08	
Group B	30	300.50	4.83	< 0.001
Group C	30	188.53	3.80	

Table no IV-P-value by using Tukey's test for pair wise comparison of mean duration of motor block

	Group A	Group B	Group C
Group A	-	< 0.001	< 0.001
Group B	-	-	< 0.001
Group C	-	-	-

Table no V-Table showing comparison of mean duration of analgesia (minutes) in Group A, Group B and Group C

	Number of patients	Duration of Analgesia		P-value
		Mean	SD	
Group A	30	275.97	7.84	
Group B	30	382.37	10.62	< 0.001
Group C	30	230.17	5.28	

Table no VI- p-value by using Tukey's test for pair wise comparison of mean duration of analgesia

	Group A	Group B	Group C
Group A	-	< 0.001	< 0.001
Group B	-	-	< 0.001
Group C	-	-	-

Discussion

All the three groups were comparable in terms of age(p value = 0.781), weight(p value=0.938), sex, ASA grade, height(p=0.599) and duration of surgery(p value=0.714)

Effect on Vitals (Pulse rate, Sytolic Blood Pressure and Diastolic Blood pressure)

Pulse Rate - There was a significant difference in mean pulse rate in the three groups from 30 mins after induction of anaesthesia till the end of surgery (p<0.001). However it was clinically insignificant as none of the patients in our study had bradycardia.

Blood Pressure - The lowest mean systolic and diastolic blood pressure was significantly lower in Group B than Group A and Group C, but it was clinically insignificant as no patient developed clinically significant hypotension requiring a vasopressor support.

Effect on Sensory blockade

Time required for onset of sensory blockade in all the three groups was statistically insignificant. p=0.562.Duration of Sensory block was significantly prolonged in Dexamethasone group and Clonidine group as compared to control group[p<0.001](Table no I). There was also significant difference in duration of sensory block between Clonidine and Dexamethasone group[p<0.001,tukey's test] with Clonidine providing increased duration of sensory block.K. Rhee[1] and Shah PN et al[2] reported similar results.The supra-spinal action of Clonidine may explain the prolongation of sensory blockade after Intravenous administration of Clonidine.Prolongation of sensory block by dexamethasone after spinal anesthesia was also reported by others like Movafegh et al[3].

The mechanism of prolongation by dexamethasone has got following explanations

1) vasoconstriction mechanism- Dexamethasone in healthy volunteers has been shown to produce vasoconstriction after epicutaneous injection.[4,5]In endothelial cells, glucocorticoids suppress the production of vasodilators, such as prostacyclin and nitric oxide.[6,7]

2) traditional theory of steroid action; steroids bind to intracellular receptors and modulate nuclear transcription.

Hence we postulated that in our study intravenous dexamethasone caused an increase in sensory and motor blockade by the same mechanism as epinephrine which prolongs the effect of local anaesthetics via vasoconstriction.

Effect on motor blockade

The mean duration of onset of motor block in all the groups was clinically insignificant.In the present study there was a significant prolongation of motor block in Dexamethasone group and Clonidine group as compared to control group [p<0.001](Table no III) . There was a significant prolongation in Clonidine group as compared to Dexamethasone group[p<0.001](Tukey's test,Table no. IV)Similar results with Intravenous Clonidine were reported by K Rhee et al[1] and Shah PN et al[2] and with Intravenous Dexamethsone by Parveen S et al[8] .The mechanism of motor block produced by α_2-agonist is direct inhibition of impulse conduction in the large, myelinated A-α fibers.[9]

Effect on duration of Analgesia

The time to first request for postoperative analgesic was significantly prolonged in both Dexamethasone group and Clonidine group than the normal saline group. [p<0.001] (Table no V). It was found that the duration of analgesia was significantly prolonged in Clonidine group p<0.001(Table no VI),similar to other studies(Mannion et al[10] Cao J et al[11]). The underlying mechanism is stimulation of alpha 2a adrenoceptors in the substantia gelatinosa inhibiting the firing of nociceptive neurons stimulated by Aδ and C fibers[12].

Studies have also shown the efficacy of Intravenous Dexamethasone as an effective analgesic(Kaan MN et al[13],Movafegh et al[14],Shahraki et al[15]) Corticosteroids are capable of reducing prostaglandin synthesis by inhibition of phospholipase A2 through the production of calcium-dependent phospholipid binding proteins called annexins and by the inhibition of cyclooxygenases during inflammation[16] .

Effect on Nausea and vomiting

In the present study there was significant difference in the incidence of nausea and vomiting in Dexamethasone group and Clonidine group as compared to normal saline group(p<0.001).

Antiemetic action of Clonidine is due to reduction in sympathetic outflow and significantly reduced need for opioid administration[17]. Dexamethasone is an effective antiemetic through central inhibition of the nucleus tractus solitarii[18].

Effect on Sedation

In our study, Clonidine group had higher grades of sedation than Group A and Group C(p<0.001) due its action on alpha 2a receptors.

Side effects and complications

There were no side effects viz bradycardia, hypotension or respiratory depression in either of the three groups intraoperatively or postoperatively.

Conclusion

1) Both Clonidine and dexamethasone provide prolongation of sensory as well as motor blockade in addition to providing longer period of analgesia when given alongwith Spinal anaesthesia.

2) Out of the two clonidine is more effective but is associated with side effects like bradycardia and hypotension(though it was clinically insignificant in our study) and sedation.

3) Dexamethasone is not associated with such side effects. Also Dexamethasone with it's anti-inflammatory effect can mitigate any adverse drug reactions that may occur owing to administration of various drugs viz antibiotics given intraoperatively.

4) Hence Dexamethasone is a viable alternative for prolongation of Spinal anaesthesia and providing analgesia over and above that provided by regional anaesthesia and clonidine can be preferred for surgeries with expected long duration.

CONFLICT OF INTEREST: Nil

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References

1. Rhee K, Kang K, Kim J, Jeon Y. Intravenous clonidine prolongs bupivacaine spinal anesthesia. Acta Anaesthesiol Scand. 2003;47(8):1001–5.
2. Shah PN PD. Use of Intravenous Clonidine for Prolonging Spinal Anaesthesia. Glob J Med Res I Surgeries Cardiovasc Syst. 2014;14(1).

3. Movafegh A GM. A comparison of the sensory and motor blockade duration of Intrathecal Lodocaine 5%, Lidocaine 5% plus Epinehrine and Lidocaine 5% plus Dexamethasone: A Double Blind Randomised Clinical Trials Study. International Journal of Pharmacology. 2005.
4. Marks R, Barlow J W FJW. Steroid-Induced Vasoconstriction: Glucocorticoid Antagonist Studies: The Journal of Clinical Endocrinology & Metabolism: Vol 54, No 5. 1982.
5. Seidenari S, Di Nardo A, Mantovani L, Giannetti A. Parallel intraindividual evaluation of the vasoconstrictory action and the anti-allergic activity of topical corticosteroids. Exp Dermatol. 1997 Apr;6(2):75–80.
6. Cicarelli DD, Vieira JE, Benseñor FEM. Early dexamethasone treatment for septic shock patients: a prospective randomized clinical trial. Sao Paulo Med J . 2007;125(4):237–41.
7. Yang S. ZL. Glucocorticoids and Vascular reactivity. Curr Vasc Pharmacol. 2004;2(1):12.
8. Parveen S, Athaluri VV LB. Effect of Intravenous Dexamethasone in Prolonging the Duration of Supraclavicular Brachial Plexus Block with 0.5% Ropivacaine: A Prospective, Randomized, Placebo Controlled Study. Int J Sci Stud. 2015;2(10):56–60.
9. Al-Metwalli RR, Mowafi H a., Ismail S a., Siddiqui a. K, Al-Ghamdi a. M, Shafi M a., et al. Effect of intra-articular dexmedetomidine on postoperative analgesia after arthroscopic knee surgery. Br J Anaesth. 2008;101(3):395–9.
10. Mannion S, Hayes I, Loughnane F, Murphy DB, Shorten GD. Intravenous but not perineural clonidine prolongs postoperative analgesia after psoas compartment block with 0.5% levobupivacaine for hip fracture surgery. Anesth Analg. 2005;100(3):873–8.
11. Cao J-P, Miao X-Y, Liu J, Shi X-Y. An evaluation of intrathecal bupivacaine combined with intrathecal or intravenous clonidine in children undergoing orthopedic surgery: a randomized double-blinded study. Paediatr Anaesth. 2011;21(4):399–405.
12. Howe JR, Wang JY, Yaksh TL. Selective antagonism of the antinociceptive effect of intrathecally applied alpha adrenergic agonists by intrathecal prazosin and intrathecal yohimbine. J Pharmacol Exp Ther. 1983;224(3):552–8.
13. Kaan MN, Odabasi O, Gezer E, Daldal A. The effect of preoperative dexamethasone on early oral intake, vomiting and pain after tonsillectomy. Int J Pediatr Otorhinolaryngol. 2006;70(1):73–9.
14. Movafegh A, Soroush AR, Navi A, Sadeghi M, Esfehani F A-TN. The Effect of Intravenous Administration of Dexamethasone on Postoperative Pain, Nausea, and Vomiting After Intrathecal Injection of Meperidine.
15. A.D. S, A. F, M. J, S. N. The effect of intravenous Dexamethasone on post-cesarean section pain and vital signs: A double-blind randomized clinical trial. J Res Pharm Pract. 2013;2(3):99–104.
16. Yao XL, Cowan MJ, Gladwin MT, Lawrence MM, Angus CW, Shelhamer JH. Dexamethasone alters arachidonate release from human epithelial cells by induction of p11 protein synthesis and inhibition of phospholipase A2 activity. JBiol Chem. 1999;274(0021-9258 (Print)):17202–8.
17. Oddby-Muhrbeck E, Eksborg S, Bergendahl HT, Muhrbeck O, Lönnqvist PACN-C-00379805. Effects of clonidine on postoperative nausea and vomiting in breast cancer surgery. Anesthesiology. 2002;96(5):1109–14.
18. Apfel CC. Miller's Anesthesia. 8th ed. 2015. 2967 p.

ORIGINAL ARTICLE

Managing Unruptured Ectopic Pregnancy With Systemic Methotrexate: Our Experience

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ABSTRACT

Ectopic pregnancies account for approximately 2% of pregnancies. The incidence of ectopic pregnancy has risen all over the world. It is higher following use of assisted reproductive technologies. Currently, the two treatment options for ectopic pregnancy include surgical management or medical management with methotrexate. If the diagnosis of ectopic pregnancy can be made earlier non-invasively, medical treatment with systemic intramuscular methotrexate (MTX) is found to be effective. It is aimed at reducing mortality, morbidity and reducing costs. Minimal intervention is found to be effective with preservation of fertility. Here we present a study of twenty cases of unruptured ectopic pregnancy which were treated successfully by systemic methotrexate at our institute

Key words : Ectopic pregnancy, medical management, methotrexate.

Introduction

An ectopic pregnancy refers to the pregnancy occurring outside the uterine cavity usually in the fallopian tube. Etiology includes tubal damage from different reasons like inflammation, infections and surgical interventions. Risk factors include previous tubal surgery, previous ectopic pregnancy, previous abortions, previous genital infections, assisted reproductive technology, smoking, increasing age (over 40 years), intrauterine device (IUD), progesterone only pills and multiparity.[1]

Early diagnosis made using high index of clinical suspicion, transvaginal sonography and hormonal estimation has led to a timely intervention and prevention of complication of ectopic pregnancy. Currently over 90% of ectopic pregnancies can be visualized on Transvaginal scan (TVS).[2]

The treatment of ectopic pregnancy includes medical or surgical methods depending on clinical situation, localization of ectopic pregnancy and diagnostic tools. After following the strict inclusion criteria these ectopic pregnancies can be treated with systemic methotrexate. Methotrexate is a folic acid antagonist, highly toxic to rapidly replicating trophoblastic cells. There are two commonly used protocols for the administration of this drug. It can be given using a "multidose" regimen of 1 mg/kg intramuscularly, alternating with 0.1 mg/kg of leucovorin intramuscularly for up to four doses of each drug. Alternatively, methotrexate can be administered using a "single dose" method, based on body surface area, at 50 mg/m^2 without the need for leucovorin rescue. The follow up of the medical management is carried out with estimation of serum beta human Chorionic Gonadotropin (β-hCG) values. Methotrexate therapy is continued until β-hCG falls by 15% from its peak concentration. The results achieved using medical management in correctly selected ectopic pregnancies is comparable to surgery.

Material & Methods

This study is a retrospective observational study conducted in Sassoon General Hospitals which is a tertiary referral center. The patients included in this study were treated from October 2015 to October 2016 over a span of one year. The study group included patients who had conceived either spontaneously or with ovulation induction. The criteria used for administering medical therapy included:

1) Hemodynamically stable patient.
2) Patients who desired future fertility.
3) Unruptured tubal ectopic with a sac size < or = to 3.5cm.
4) Serum β-hCG level < or = to 5000mIu/ml.

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5) Patient who was reliable, and able to be compliant with necessary follow up visits

6) Patient who had access to prompt medical care and surgical intervention.

The patients were excluded from the study if they were hemodynamically unstable, had severe pain or signs of rupture, concomitant intrauterine pregnancy, deranged liver or renal function tests, embryonic cardiac activity detected by Transvaginal sonography (TVS), high initial β-hCG concentration (>5000 mIU/ml), ectopic pregnancy >3.5cm in size as imaged by TVS or inability to participate in follow up. We used the single dose regimen with calculation of dosage based on body surface area. Methotrexate dose = 50 mg/m^2 .

Body Surface Area (BSA) is calculated using the patient's measured height and weight:

$BSA\,(m^2) = ([Height\,(in) \times Weight\,(lbs.)]/\,3131)^{1/2}$

Dosage (50 mg) X BSA = Total mg dose

There are 50mg/2cc in the usual dilution of methotrexate. A single injection should not exceed 2cc per injection site. Most patients did not require more than one dosage. Baseline laboratory investigations like Serum quantitative β-hCG level, Serum creatinine, SGOT, CBC, Blood grouping was done for all the patients. After taking the informed consent, the following treatment regimen was followed:

Day 1- Received methotrexate 50mg/m^2 IM.

Day 4- Quantitative β-hCG level.

Day7- Quantitative β-hCG level to be measured. If there has been a decline of > or = to 15% from the Day 4 level, follow serum βhCG levels weekly until <10mIU/ml

In cases where the decline in β-hCG level was not satisfactory, second dosage of methotrexate was given with monitoring on 4^{th} and 7^{th} day. In cases where the symptoms worsened or pain persisted, surgical management was sought. The patients were instructed to avoid intercourse and refrain from taking food and multivitamins containing folic acid. Repeated pelvic examination and Trans vaginal sonography was also not resorted to, until the β-hCG was undetectable during surveillance. β-hCG levels becoming negative after administration of one or more MTX dose was considered as successful treatment. In cases of persistent severe abdominal pain, hemodynamic instability and unsatisfactory decline of βhCG levels surgical intervention was done.

Results

The ages of the patients varied from20 yrs to 37 yrs Maximum number of patients were in age group of 25-30 yrs as shown in table I. 14 patients were primigravida and three had conceived by ovulation induction. Three patients were second gravida. One patient had a previous caesarean section.

Age group(yrs)	Number of Patients(n)
19-24 yrs	5
25-30 yrs	8
31-36 yrs	3
37-42 yrs	1

Table I: Age distribution of the patients.

Of the 20 cases who underwent methotrexate therapy, 17 were successfully treated whereas three patients were taken up for surgery following failed medical management. One patient had rapidly rising β-hCG values over two days whereas two had persistent abdominal pain with tachycardia. The success rate has been found to be 85% in our study. Out of the 17 successfully treated patients, two patients were given a repeat dosage of methotrexate as seen in table II.

Initial Value of β HCG	Number of patients	Number of doses of Methotrexate
1000 -2000mIU	5	1
2000-3000mIU	7	1
3000-4000mIU	3	1
4000-5000mIU	2	2

Table II: Correlation between levels of β-HCG and Doses of Methotrexate.

These two patients had higher initial value of β-hCG as compared to other patients. Three patients gave history of ovulation induction .In maximum number of patients the time period for resolution of β-HCG was between 30to 40 days. Resolution is defined as serum β-hCG levels <10mIU/m

Duration for Resolution of βHCG	Number of Patients.
20-30 days	6
30-40 days	8
40-50 days	3
50-60 days	1

Table III: Time for resolution of serum β-hCG

The side effects reported by our patients were pelvic pain, nausea, headache and weakness. Pelvic pain was reported by 10 of our patients following methotrexate therapy. Of these three were treated surgically on suspicion of rupture, whereas in rest 7, the pain subsided between days 2 to 4.

Discussion

The use of methotrexate is being seen as a safe and highly effective alternative treatment of ectopic pregnancies with a success rate of 82%.[3] In our study, the result was found to be 85%. This highly efficacious result was obtained with strict adherence of the selection criteria. Women with increasing β-hCG values and complaints of abdominal pain were taken early for surgical intervention for fear of rupture of the ectopic pregnancy. 35% of women with ectopic pregnancy are eligible for medical treatment [4]. The use of methotrexate to treat early unruptured ectopic pregnancy has been shown to be a safe and effective alternative to surgery in properly selected cases An increase in the treatment failure group with advanced maternal age ⩾ 35 years and history of spontaneous abortions was noted corresponding to our study where success rate of methotrexate treatment decreased as maternal age increased[5].The three women taken for surgery were all beyond 30 yrs.

In our study two patients had to be given a repeat dose of methotrexate. In these patients, the initial levels of β-HCG were found to be 4,200 mIU and 4,500 mIU. Three patients who had failed management with methotrexate had values between 4,000mIu and 5000mIU Cochrane systemic review concluded that MTX treatment of EP had the highest success rate when plasma β-hCG levels were below 3,000 IU/mL[6] Failure of single-dose medical management is associated with initial serum β-hCG concentrations >5000 IU/l, a moderate or large amount of free fluid on ultrasound, the presence of fetal cardiac activity and a pretreatment increase in serum β-hCG of >50% over a 48-hour period[7]. The mean time of resolution has been reported as 26.5 (10-37) days in patients who were successfully treated with methotrexate. [7]Our results are consistent with this study with maximum number of patients undergoing resolution between 30- 40 days. Methotrexate regimen reduces the incidence of persistent trophoblast. Persistent trophoblast is detected by the failure of serum β-hCG levels to fall as expected after initial treatment, often a problem occurring after salpingostomy rather than salpingectomy. 41% of women complained of lower abdominal pain .In another study the complaint of pelvic pain was a comparable figure of 38.5%.[8]Pelvic pain and cramps after methotrexate treatment could be due to tubal abortion or stretching of the tube by hematoma contributing to increased failure rate in most of the medical management. Differentiating 'separation pain' due to tubal abortion from pain due to tubal rupture can be difficult and may lead to early surgical intervention. Fertility outcomes following methotrexate therapy are still being followed up in these patients.

Conclusion

Methotrexate has proven to be an effective medical management for ectopic pregnancies. Early diagnosis of ectopic pregnancies using transvaginal sonography and β-hCG levels facilitate this noninvasive approach. Lower initial β-hCG levels are one of the predictors of success. The success rate can be further increased by following strict inclusion criteria.

Conflicts of interests: The authors declare there are no conflicts of interest in this study.

Source of Funding: Nil

References

1. Barnhart KT, Sammel MD, Gracia CR, et al. Risk factors for ectopic pregnancy in women with symptomatic first trimester pregnancies. Fert Steril. 2006;20:1.
2. Kadar N, Bohrer M, Kemmann E, Shelden R.: The discriminatory human chorionic gonadotropin zone for endovaginal sonography: a prospective, randomized study. Fertil Steril. 1994;61:1016.
3. Stovall TG, Ling FW, Gray LA, Carson SA, Buster JE. Methotrexate treatment of unruptured ectopic pregnancy: a report of 100 cases. Obstet Gynecol 1991;77(5):749-53.

4. Sowter MC, Farquhar CM, Petrie KJ, Gudex G.: Arandomized trial comparing single dose systemic methotrexate and laparoscopic surgery for the treatment of unruptured ectopic pregnancy. British Journal of Obstetrics & Gynaecology. 2001;108(2):192–203.

5. Cho GJ, Lee SH, Shin JW, Lee NW, Kim T, Kim HJ, et al. Predictors of success of repeated injections of single-dose methotrexate regimen for tubal ectopic pregnancy. J Korean Med Sci 2006;21(1):86-9.

6. Tawfiq A, Agameya AF, Claman P. Predictors of treatment failure for ectopic pregnancy treated with single-dose methotrexate. Fertil Steril 2000;74(5):877-80.

7. Erdem M, Erdem A, Arslan M, Oc A, Biberoğlu K, Gursoy R. Single-dose methotrexate for the treatment of unruptured ectopic pregnancy. Arch Gynecol Obstet 2004;270 (4):201-4.

8. Lipscomb GH, Puckett KJ, Bran D, Ling FW. Management of separation pain after single-dose methotrexate therapy for ectopic pregnancy. Obstet Gynecol 1999;93(4):590-95.

Abbreviations:

BSA : Body surface area.

β-HCG : Beta human chorionic gonadotropin.

CBC : Complete blood count.

EP : Ectopic pregnancy.

IUD : Intra uterine death.

MTX : Methotrexate.

SGOT : Serum glutamic oxaloacetic transaminase.

TVS : Transvaginal sonography.

ORIGINAL ARTICLE

Assessment of Prescriber's Adherence to the Basic Principles of Prescription Writing

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ABSTRACT

Background : Prescription order is an important therapeutic transaction between physician and patient. Lack of attention during prescription writing can lead to prescription errors which in turn can adversely affect patient's well-being. Good quality prescription is an important factor for minimizing errors in dispensing medication and should be adherent to guidelines for prescription writing for benefit of the patient. Thus, prescriptions are an important target area for improvement.

AIM & OBJECTIVES : To assess prescriber's adherence to the basic principles of prescription order writing.

METHODS : Study was conducted in Pune city, which was cross sectional observational study. Prescriptions by allopathic doctors were collected from retail pharmacy shops from January 2016 to March 2016. They were analysed for prescription parameters by comparing them to Maharashtra Medical Council prescription format, Maharashtra FDA prescription format and WHO prescribing indicators.

RESULTS : Total 800 prescriptions were analysed. In those prescriptions name of drug, name of patient, date of prescription showed highest adherence to prescription format i.e. 100%, 93.25% and 96% respectively. Lowest adherence was seen for address of patient (3%) and diagnosis (11.62%). For rest of parameters adherence was intermediate. As per WHO prescribing indicators, in 66.16% prescriptions antibiotics were prescribed.

CONCLUSIONS : The study indicates need for standardizing the prescription writing. This can be achieved by implementing clear and effective legislation and various educational methods.

KEY WORDS : Maharashtra Medical Council, Maharashtra FDA, Prescription, Adherence, Legislation.

Introduction

Drugs are an essential component of health care delivery. When used rationally, they produce the desired effects to improve patient's ailments. Their irrational use on the other hand leads to prolongation of the illness, development of adverse effects and unnecessary expenses.[1] The most important requirement is, therefore, the prescription to be clear, legible and indicate precisely what should be given.[2]

Prescribing errors are classified into two main types, errors of omission and errors of commission. Errors of omission are defined as prescriptions with essential information missing while errors of commission involve wrongly written information in the prescriptions. Errors of omission include absence or incomplete specification of dosage form or strength, dose or dosage regimen, quantity or duration of drug to be supplied as well as prescriptions with an illegible handwriting and prescriptions that violate legal requirements. Whereas, errors of commission include wrong dose or dosage regimen, wrong drug or its indication, wrong quantity or duration of therapy and incorrect patient's name in the prescription.[3] Prescription errors are major problems among medication errors. Although they are rarely fatal, these errors can affect patient's safety and quality of healthcare.[4] Thus, prescriptions are an important target area for improvement.

Previously a study was done on prescribing errors in hospital inpatients by Dean B.et al[5] Format of the prescriptions was studied by Kebede T. M. in Ethiopia[3].

The purpose of this study was to screen drug prescriptions by allopathic physicians in Pune city for the essential elements of prescription.

Aims and Objectives

To assess prescriber's adherence to the basic principles of prescription writing.

1. To screen drug prescriptions written by

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physicians

2. To evaluate prescriptions as per WHO prescribing indicators

Material and Methods

This was cross-sectional observational study. It was conducted in Pune city, Maharashtra. Both hand written and printed prescriptions by allopathic doctors were collected from retail pharmacy shops and were included in this study whereas prescriptions by other pathy (ayurvedic, homeopathic, unani) doctors, prescriptions collected from wholesale pharmacy shops and pharmacies attached to hospitals were excluded because they follow their own prescriptions format which would have affected the results of study. Study was started after approval from Institutional Ethics Committee of B.J. Government Medical college. Pune. During January 2016 to March 2016, total 800 prescriptions were collected from retail pharmacy shops. They were observed and analysed for elements of prescription as per both Maharashtra Medical Council prescription format[6], Maharashtra FDA prescription format[7] and WHO prescribing indicators.[8,9]

Following WHO prescribing indicators were assessed:

- Average number of drugs per prescription
- Percentage of drugs prescribed by generic name
- Percentage of prescriptions with antimicrobial(s) prescribed
- Percentage of prescriptions with an injection(s) prescribed.

Statistical Analysis - The detailed data of prescriptions was entered into Microsoft 2010 excel sheet and calculated in percentage (%). Results were shown in tabular form and suitable pie chart.

Results

During study period total 800 prescriptions were collected and analysed. Average number of drugs per prescription was found to be 3.01.

Name of patient was mentioned in 746(93.25%) of prescriptions and age, sex, weight and address of patient were mentioned in 140(17.50%), 240(30%), 126(15.75%), and 24(3%) of prescriptions respectively.

Table I: Patient information in prescriptions (N=800)*

***N - Total number of prescriptions**

Parameter	% Prescription
Name of patient	93.25%
Age	17.50%
Sex	30%
Weight	15.75%
Address	3%

Date of prescription was mentioned in 768(96%), prescription serial number in 95(11.87%), diagnosis in 93(11.62%) and Rx written in 544(68%) of prescriptions. **Table II.**

Table II: Patient information in prescriptions

Parameter	% Prescription
Date of Prescription	96%
Prescription serial number	11.87%
Diagnosis	11.62%
Rx	68%

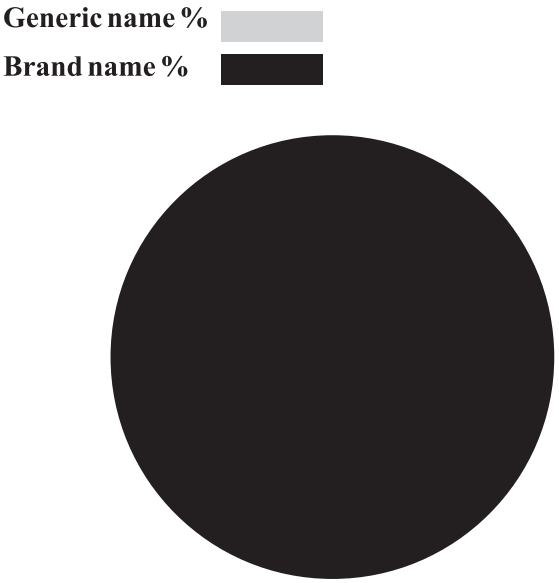
Drug parameters like name of drug (generic/brand), dose, frequency, duration, dosage form, route of administration, and dosing instructions were mentioned in 800(100%), 637(79.62%), 688(86%), 617(77.12%), 727(90.87%), 728(91%), and 410(51.25%) respectively. **Table III.**

Table III: Drug parameters in prescriptions

Parameter	% Prescription
Generic name of drug	0%
Brand name of drug	100%
Dose	79.62%
Frequency	86%
Duration	77.12%
Dosage form	90.87%
Route of administration	91%
Dosing instructions	51.25%

In all 800 prescriptions, drugs were mentioned by brand name only (100%) and no prescription mentioned drug by generic name. Figure 1 highlights use of brand name to refer drugs instead of generic name in prescriptions

Figure1. Prescriptions with generic name versus brand name of drugs



Prescriber's information which includes doctor's name, qualification, registration number, address of doctor, contact number, doctor's signature and doctor's stamp were observed in 580(72.50%), 564(70.50%), 491(61.37%), 727(90.87%), 695(86.87%), 609(76.12%) and 131(16.37%) of prescriptions respectively. **Table IV.**

Table IV: Prescriber's information in prescriptions

Parameter	% Prescription
Doctor's name	72.50%
Qualification	70.50%
Registration number	61.37%
Address of doctor	90.87%
Contact number	86.87%
Doctor's signature	76.12%
Doctor's stamp	16.37%

On evaluating these prescriptions as per WHO prescribing indicators, following were the observations:

Average number of drugs per prescription - 3.01

% of drug prescribed by generic name - 0%

% of prescription with antibiotics prescribed - 66.16%

% of prescription with an injection prescribed - 7.33%

Discussion

Prescription writing is an important aspect of medical practice. Omission/mistake in the superscription, dosage form, strength of preparation, improper route and/or illegible handwriting leads to prescription errors. A properly written prescription is the basis for giving appropriate information, instructions and warnings to the patient and it ensures adherence to therapy and protects the patient from unnecessary harm related to therapy.

Average number of drugs per prescription in this study was 3.01. WHO has recommended that average number of drugs per prescription should be 2.0.[10] To avoid confusion it is important to prescribe drugs by their generic names.

Age is one of the valuable factors that affect response to drugs. This is because in addition to other factors, age of the patient is also an important factor in calculation or determination of doses. In this study, age was not mentioned in 82.50% prescriptions whereas, sex and prescription serial number were not mentioned in 70% and 88.13% prescriptions respectively, showing poor adherence to these parameters whereas in the study done by Abdella S. H. et al. ; these parameters were not mentioned in 18.2%, 23.7% and 60.2% prescriptions respectively.

Patient's weight was not mentioned in 84.25% of prescriptions. According to WHO, the inclusion of weight is recommended and should be included in prescription especially at the extremes of ages.[11,12] Weight is an important piece of information since it has implications on pharmacokinetics and pharmacodynamics of drugs. Lack of information on weight of child in prescriptions could lead to dispensing errors.

In this study, address of patient was not mentioned in 97% of prescriptions which is very important for identifying endemic diseases like malaria and also it is essential for follow up of patient. In this study, 88.38% of prescriptions were without diagnosis as compared to study done by Ramachandrudu R.[13] where only 28% of prescriptions were without diagnosis. In this study, in 4% of prescriptions date was not written whereas in Kebede T. M. et al[3] study date was lacking in 16.67 %, so this shows good adherence for this parameter. The date of the prescription order is important in establishing the medication record of the patient.

This study showed adherence to drug dose in 79.62%, dosage form in 90.87% and frequency in 86% of prescriptions as Compared to study done in Wollo[1], Ethiopia where 40.2% of prescriptions were with drug dose mentioned in them, 38.87% included dosages form of the drug and 45.2% of prescriptions given frequency of the dosages.

In this study generic name was not mentioned in any of the prescriptions indicating there is need to prescribe drugs by their generic names whereas, study by Sapkota S. et al[8] showed 53.6% prescriptions with generic names.

Limitations of this study are small sample size and inclusion of prescriptions collected from allopathic doctors only.

Conclusion

Some prescriptions in this study, lacked doctor's name, qualification, registration number and address. Poor adherence was shown for patient's profile, especially age and weight of the patient and diagnosis. On the other hand, good adherence was seen for some parameters which include patient's name, date of prescription and medication information. So, the quality of prescriptions was poor in terms of format and content.

Thus, this study indicates the need for physician education on appropriate prescription writing which can be achieved by implementing clear and effective legislations and various educational programs particularly continued medical education.

Conflict of Interest - None

There was no conflict of interest.

Funding Source & Sponsership - Nil

References

1. Abdella S.H., Wabe N. T. Prescribers adherence to the basic principles of prescription order writing in South west Ethiopia. Nat. J. physiology, pharmacy and pharmacology. 2012;2(1):66-70
2. Katzung B. G., Trevor A. J. Basic and clinical pharmacology. 13th ed. New York: McGraw Hill Education; 2015. Chapter 65, Rational prescribing and prescription writing; p1108-17
3. Kebede T. M., Kassie G. M. Assessment of Prescribers' Adherence to the Basic Standards of Prescription Order writing in Jimma University Specialized Hospital, Southwest Ethiopia. International journal of Science and Technology. 2014;19(1):1316-1329
4. Dean B, Barber N, Schachter M. What is a prescribing error? Qual in Health Care. 2000 Dec;9(4): 232–237
5. Dean M., Schachter M., Vincent C., Barber N. Prescribing errors in hospital inpatients: their incidence and clinical significance. Qual Saf Health Care. 2002;11:340–344
6. Maharashtra Medical Council. Prescription Pattern For Medical Practioners. Cited 23/11/15. Available from: http://www.maharashtramedicalcouncil.in.
7. Maharashtra Model Medicine Prescription Format. Food and Drug Administration, Maharashtra State. Feb 2014; cited 23/11/15. Available from: http://www.fda.maharashtra.gov.in.
8. Sapkota S., Pudasaini N., Singh C., Sagar G.C. Drug prescribing pattern and prescription error in elderly: a retrospective study of inpatient record. Asian J Pharm Clin Res. 2011;4(3):129-132
9. How to investigate drug use in health facilities: selected drug use indicators. World Health Organization, 1993
10. Mohlala G., Peltzer K., Phaswana-Mafuya N., Ramlagan S. Drug prescription habits in public and private health facilities in 2 provinces in South Africa. Eastern Mediterranean Health Journal. 2010;16(3)

11. Joshi A., Buch J., Kothari N., Shah N. Evaluation of Hand Written and Computerized Out-Patient Prescriptions in Urban Part of Central Gujarat. Journal of Clinical and Diagnostic Research. 2016;10(6):p1-5

12. De Vries TPGM, Henning RH, Hogerzeil HV, Fersle DA. Guide to good prescribing: A practical manual. Geneva, World Health Organization. 1995;51-5

13. Ramachandrudu R. Prescription writing practices among doctors in a teaching hospital in Andhra Pradesh: an observational study. J. Evolution Med. Dent. Sci. 2016;5(43):2749-2753

ORIGINAL ARTICLE

Epidural Bupivacaine 0.1% With Fentanyl For Labour Analgesia - A Prospective Non-randomized Open Label Study

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ABSTRACT

Background and Objectives : Labour pain can be deleterious for mother and baby. Epidural analgesia relieves labour pains effectively with minimal maternal and foetal side effects. This prospective open label study was undertaken to ascertain effective dosing regimen for ambulatory analgesia in labour.

Primary objectives : To achieve good analgesia. To assess onset, duration and total dose required.

Secondary objectives : To assess side effects in mother and foetus if any. Apgar score in newborn.

Methods : Sixty women with singleton foetus in vertex position were included. Epidural catheter was inserted. Initial bolus of 10 ml (0.1% bupivacaine and 2 µg/ml fentanyl) solution was injected and after the efficacy of block was established, top ups were given by intermittent technique.

Results : According to subjective grading among subjects in the study 68.3% subjects had excellent pain relief, 30% had good pain relief with a visual analogue scale of 1 to 3. The incidence of caesarian section and assisted delivery was 3.3% each. No major side effects were observed.

Conclusion : 0.1% bupivacaine with 2 µg/ml fentanyl provides good labour analgesia with least motor blockade.

Key Words : Labour analgesia; ambulatory analgesia; epidural

Introduction

Labour and delivery results in severe pain for many women. The goal of maternal labour analgesia is relief of pain without compromising maternal safety, progress of labour and foetal well-being. Concept of ambulatory epidural analgesia during labour is worthwhile as confining a parturient to the bed may lead to painful and prolonged labour with higher incidences of abnormal presentations and foetal distress.[1] Newer techniques such as combined spinal-epidural, continuous epidural infusions, walking epidurals and patient controlled epidural analgesia (PCEA) are now available. On the contrary continuous infusion of epidural analgesia has been associated with significant motor blockade.[2] The greatest advantage of implementing intermittent lumbar epidural for labor analgesia is the lack of need of volume elastomeric epidural infusion pump; making its worth role in conducting deliveries in emergency settings, primary, secondary and tertiary health centers of developing countries, where these facilities are not easily available but do have the expertise.

Material and Methods

It was a prospective open label study. We studied 54 primiparous and 6 second gravida women with singleton foetus in vertex position admitted for parturition in the age group of 18-30 years, requesting for labour analgesia. Parturients excluded from the study were; parturients with obstetric complications like pre-eclampsia, preterm labour, previous caesarian, abnormal lie and placenta previa, parturients with renal, hepatic disease, diabetes mellitus, metabolic disorders, parturients having absolute contraindications to spinal anaesthesia like raised intracranial pressure, severe hypovolaemia, bleeding diathesis, local infection.

Procedure was explained to the parturients and procedure was performed in well equipped operation theatre.

All parturients were asked to empty their bladder before the procedure. Preloading was done with Ringer's lactate solution, 5ml/kg. Electronic cardiac monitor was connected and continuous Foetal heart rate (FHR) was monitored. Basal recording of heart rate, systolic blood pressure (SBP), oxygen saturation(SpO_2), FHR were noted. Pre epidural pain score using visual analogue scale (VAS) was checked, where 0 is no pain,1-2 is mild pain,3-6 is moderate pain, 7-9 is severe pain and 10 is worst pain possible.

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After establishment of active phase of labour i.e. cervical dilation of 3-4cm, parturients were shifted to operation theatre.

With the parturient in sitting position, under all aseptic precautions, epidural catheter no 18G was threaded through the epidural needle in the L2-L3/L3-L4 interspace. After administration of test dose and ruling out of intravascular or subarachnoid placement of catheter; initial bolus of 10ml of drug solution containing 0.1% Bupivacaine and 2µg/ml fentanyl was injected through epidural catheter and subsequent analgesia was maintained with top up doses of 5ml of drug solution (0.1% Bupivacaine and 2 µg/ml fentanyl) as and when required; when VAS is more than 5.

Maternal pulse, SBP, SpO_2 and FHR were monitored every five minutes for first 30 minutes after initial bolus of local anaesthetic solution and then monitored every 30 minutes. Effectiveness of the block was assessed after 30 minutes with the help of visual analogue scale, motor blockade using modified bromage score[3], sensory loss by cotton wisp method, subjective assessment by parturient as excellent / good / fair / poor.[3] Effectiveness of the block and pain relief was assessed every 30 min interval.

Patients were allowed to ambulate during first stage. At full cervical dilation patients walked to second stage delivery room. After delivery of baby epidural catheter was removed. Neonatal assessment was done. APGAR score at one and five minutes was recorded. Duration of second stage was noted.

Parturients were observed for 24 hours.

Parturients were interviewed a day after delivery for satisfaction level, backache and willingness for labour epidural for subsequent pregnancy.

Statistical analysis

Data was entered into Microsoft excel data sheet and was analyzed using

SPSS 22 version software. Categorical data was represented in the form of

Frequencies and proportions.

Paired t test is the test of significance for paired data such as before and after procedure for quantitative and qualitative data respectively.

Graphical representation of data: MS Excel and MS word was used to

obtain various types of graphs such as bar diagram, Pie diagram and Scatter plots.

p value (Probability that the result is true) of <0.05 was considered as

statistically significant after assuming all the rules of statistical tests.

Statistical software: MS Excel**,** SPSS version 22 **(**IBM SPSS Statistics, Somers NY, USA) was used to analyze data. EPI Info (CDC Atlanta), Open

Epi, Med calc and Medley's desktop were used to estimate sample size, odds ratio and reference management in the study.

Results

Before insertion of epidural catheter all parturients experienced severe labour pains (Median VAS score was 9 at baseline).

After initial 10 ml bolus, mean maternal baseline pulse rate was 91.8±9.7 per min(figure 1). Study group showed significant decrease (p<0.001) in maternal pulse rate compared to baseline pulse rate. None of parturient had bradycardia. Mean maternal baseline systolic blood pressure was 126.4±6.6 mm Hg(figure 2). After induction of analgesia, there was significant decrease in SBP from five min till 30 min compared to baseline SBP. However there was no hypotension observed at any point of time. At the baseline, median VAS score in study group was nine. After first 30 min median VAS score reduced to two. This decrease in VAS score after 30 min in comparison to baseline was statistically significant (<0.001)(Table I). According to subjective grading among subjects in the study 68.3% subjects had excellent pain relief, 30% had good pain relief and 1.7% had fair pain relief. Mean time of onset of analgesia among subjects was 6.4±1.1 min. Mean time at which 1st top up required was 79±16.7 min. And the mean number of total top up required was 3.1±0.9 min. Total mean dose of Bupivacaine required was 25.1±4.6 mg and mean fentanyl dose required was 50.2±9.1 µg. Average modified bromage score assessed after 30 min (first and second stage) was one in all subjects. None of subjects had motor block and none of them had sensory loss. Mean duration of secondnd stage of labour was 10±3.5 min. The incidence of caesarian section and assisted

delivery was 3.3% each. At one min majority (56.7%) had APGAR score of nine and 43.3% had APGAR score of eight. At five min 75% had APGAR score of ten and 25% had APGAR score of nine. Baseline mean foetal heart rate in the study group was 133.33±5.26 per min(Table II). No foetal bradycardia seen. Adverse effects like nausea, vomiting, pruritus, sedation, hypotension, urinary retention, and bradycardia were not noted in our study group. One subject had unilateral epidural block. Maternal satisfaction was assessed by 24 hours after the delivery. In our study 98.3% subjects were satisfied, 100% of the subjects shown willingness for epidural analgesia in the next pregnancy. No backache was seen in 100% subjects.

Table I: VAS Score comparison between baseline and after 30 min

	N	Mean	SD	Minimum	Maximum	Percentiles			P value
						25th	50th (Median)	75th	
VAS at Baseline	60	8.43	0.722	6	9	8.00	9.00	9.00	<0.001
VAS after 30 min	60	1.58	0.619	1	3	1.00	2.00	2.00	

Table II: Fetal Heart Rate comparison between baseline and other intervals

FHR	Mean	SD	Median	Range	P value
Baseline	133.33	5.26	134	20	
5 min	132.80	5.05	133	22	0.259
10 min	132.83	4.54	132	22	0.313
15 min	132.50	4.34	132	20	0.079
20 min	132.77	4.45	132	22	0.285
25 min	133.07	4.78	132	24	0.594
30 min	133.33	4.70	132	22	1.000

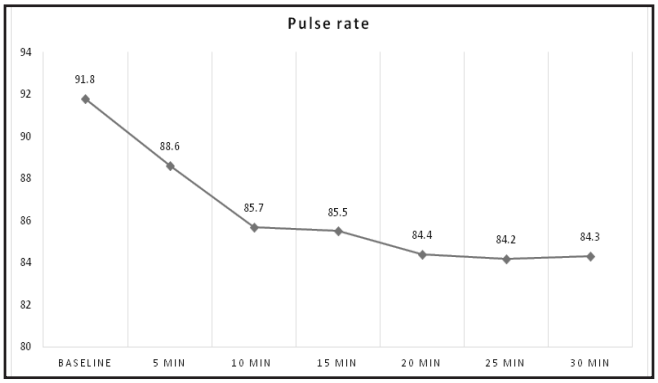

Figure 1: Line diagram showing Pulse Rate comparison between baseline and other intervals

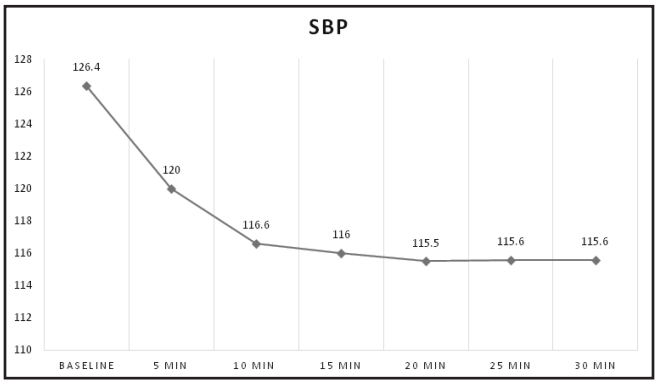

Figure 2: Line diagram showing SBP comparison between baseline and other intervals

Discussion

Lumbar epidural analgesia is the technique of choice for the management of parturition pain.[4,5,6] Safe and effective relief of pain during labour and delivery accomplished by the skilful use of lumbar epidural analgesia prevents the stress response in the mother.[7] Maternal hypoxemia, hypocapnia, catecholamine production leading to uterine hypo-perfusion, foetal hypoxia and acidosis are avoided.[8] Higher concentration of bupivacaine was used as an intermittent bolus in the past, which resulted in fairly high incidence of motor block and instrumental deliveries.

We thus decided to conduct the study to evaluate whether enough analgesia and patient satisfaction can be produced while maintaining the patient ambulant using 0.1% bupivacaine with 2 μg/ml fentanyl as bolus demand doses.

Mean time of onset of analgesia among subjects was 6.4±1.1 min. At the baseline, median pain score in study group was nine. After epidural analgesia pain score (VAS) was recorded every 30 min interval. After first 30 min median VAS score reduced to two. This decrease in VAS score after 30 min in comparison to baseline was statistically significant (<0.001)(Table I). Mean time at which 1st top up required was 79±16.7 min. And the mean number of total top up required was 3.1±0.9 min. Gaurav S Tomar et al [1] in 2011 concluded that the duration of analgesia was significantly higher ($p<0.05$) in group B. Total mean dose of Bupivacaine required was 25.1±4.6 mg and mean fentanyl dose required was 50.2±9.1 μg. Low dose epidurals decrease the total drug dose.[9]

In the study by Sharma [3] et al they found that the dose of bupivacaine was reduced due to addition of fentanyl, thereby reducing the chances maternal and foetal toxicity due to overdose.

According to subjective grading among subjects in the study 68.3% subjects had excellent pain relief, 30% had good pain relief and 1.7% had fair pain relief.

We found that 98.3% of the subjects in our study group had excellent to good pain relief. Average modified bromage score assessed after 30 min (first and second stage) was one in all subjects. None of subjects had motor block and none of them had sensory loss. We found that epidural bupivacaine 0.1% with 2 µg/ml fentanyl, does not cause motor and sensory blockade. This is beneficial for ambulation, decreased incidence of instrumental deliveries and caesarian sections and increased number of vaginal deliveries. In our study there was no prolongation of labour seen; also the second stage of labour was not prolonged; mean duration of second stage of labour was 10±3.5 min, indicating that bupivacaine in concentration of 0.1% does not interfere with the bearing down efforts of mother.[10] Pain is noxious, unpleasant stimulus which produces fear and anxiety. Unrelieved labour pain causes sympathetic stimulation resulting in increase in plasma cortisol and catecholamine, which further causes tachycardia. Mean maternal baseline pulse rate in our study group was 91.8±9.7 per min.

Pulse rate monitoring into the group after analgesia showed statistically significant difference ($p<0.001$). Study group showed significant decrease in pulse rate compared to baseline pulse rate. None of parturient had bradycardia. Mean baseline blood pressure in study group was 126.4±6.6 mm Hg. After induction of analgesia, timely monitoring of blood pressure revealed,

there was significant decrease in SBP from 5 min till 30 min compared to baseline SBP. However there was no hypotension observed at any point of time. We found that there was no maternal desaturation in our study group. Baseline mean foetal heart rate in the study group was 133.33±5.26 per min. It is seen that there was no significant difference in FHR from five min till 30 min compared to baseline FHR(Table II). At one min majority (56.7%) had APGAR score of nine and 43.3% had APGAR score of ten. At five min 75% had APGAR score of ten and 25% had APGAR score of nine. Adverse effects like nausea, vomiting, pruritus, sedation, hypotension, urinary retention, and bradycardia were not noted in our study group.

One subject had unilateral epidural block. In the study of Sharma et al [3] there was no incidence of itching, urinary retention, desaturation, and hypotension. Our results correlate with this.

Limitations of the study were that we did not compare this group with any other drug or doses of the same. Continuous infusion was not used considering unavailability of continuous infusion pump in many set ups.

Conclusion

We concluded that 0.1% bupivacaine with 2 µg/ml fentanyl bolus followed by intermittent top ups, provided a faster onset of good analgesia with a longer duration. Dose of the drugs required with this concentration is less, avoiding motor blockade which renders parturient ambulant and also decreasing drug related toxicity, generally associated with higher doses. In the dose and concentration mentioned, there were no significant maternal hemodynamic changes and foetal welfare and neonatal APGAR scores were unaffected. Duration of second stage of labour was not prolonged. Low dose concentration of local anaesthetic does not prolong labour or increase incidence of operative delivery.

Conflicts of interest –nil

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References

1. Tomar GS, Tiwari A, Godwin RB, Kriplani TC, Gaur NS et al. A Comparative study of two different doses of Fentanyl added to Bupicavaine for intermittent epidural labour analgesia: A Prospective Randomized double blind study. J Anesthe Clinic Res 2011; 2:145.
2. Wong CA, Ratliff JT, Sullivan JT, Scavone BM, Toledo P, et al. A randomized comparison of programmed intermittent epidural bolus with continuous epidural infusion for labor analgesia. Anesth Analg; 2006; 102: 904-909.
3. Sharma RM, Setlur R, Bhargava AK, Vardhan S, Walking epidural: an effective method of labour pain relief. MJAFI 2007;63:44-6.
4. Cohen. S.E, Tan. S, Albright G. A, Halpem J. Epidural

fentanyl/ bupivacaine mixtures for obstetric analgesia, Anaesthesiology: 1987;67: 403-407.

5. David. S. Chestnut, Linda. J. Laszewski, Kenneth. L, Pollack, James. N. Bates, Neil. K. Manago, "Epidural infusion of 0.0.625% bupivacaine + 0.0002% fentanyl during 2nd stage of labour" Anaesthesiology. 1990;72:613-618
6. James K. S, McGrady. E, Quasim. I, Patrick. A-Comparison of epidural bolus administration 0.25% bupivacaine and 0.1% bupivacaine with 0.0002% fentanyl for analgesia during labour. Br J Anaesth 1998; 81(4); 507-510.
7. Reena , Bandopadhyay KH, Afzal M,Mishra AK,Paul A. Labour epidural analgesia: past, present and future. Indian J Pain 2014 ;28;71-81.
8. Ward, M. Elizabeth MD, FRCPC - acute pain and the obstetric patient; recent developments in analgesia for labour and delivery - International Anaesthesiology Clinics.
9. Sunil T Pandya, labour analgesia: Recent advances; Indian Journal of Anaesthesia.2010; 54(5):400-408.
10. Marcos Silva et al. Epidural analgesia for labour; current techniques. Local and regional anesthesia 2010;3:143-153.

ORIGINAL ARTICLE

Demographic Study Of Diabetes Mellitus In Patients Attending Medicine OPD In Tertiary Care Centre

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ABSTRACT

Objectives :- Primary objective of this study was to assess the prevalence of diabetes mellitus among the patients attending medicine OPD and to study age, BMI and lifestyle correlation with diabetic patients.

Method :- Retrospective data of 538 patients evaluated during diabetic week was obtained from medical record. Their basic information regarding age, sex, height, weight, occupation and random blood glucose level was recorded. New patients having random blood glucose level ⩾ 200 mg/dl were followed in diabetic OPD with fasting and postprandial blood glucose level for confirmation.

Result :- Overall prevalence of diabetic patients (known and new) attending medicine OPD was 30.1%. Prevalence of new cases was 7.16%. There was no difference in mean age of male and female diabetic patients (56.89 ± 10.98 years and 51.42± 11.75 years respectively). Maximum number of patients were in the age group of 60-69 year (n=128, 23.8%) and BMI group of 18.5-24.9 kg/m^2 (n=298, 55. 4%).There was significant association between age, sedentary life style and diabetes (p=<0.001). Most of diabetic patients were in normal BMI group (n=97,59. 87%).29 new cases detected. Newly detected diabetic were younger (47.83±11.06 vs 55.86±11.27 years,p=0.001) than known diabetic but BMI of both group was not different (23.41±3.18 vs 24.00±6.83 respectively p=0.485)

Conclusion:- Prevalence of diabetes mellitus is increasing in India. Diabetes screening should be done in younger population and even individuals with normal BMI should also be screened.

Keywords:- Diabetes mellitus, Prevalence

Introduction

Diabetes mellitus is a group of common metabolic disorder that share the phenotype of hyperglycemia. In India, there is increasing number of cases of non-communicable diseases in recent past and diabetes is the commonest non-communicable disease. [1] It is projected that 366 million people will be diabetic by 2030 and 290 million diabetics will be living in developing countries like India if proper preventive measures are not taken. [2]

Longer duration of undiagnosed diabetes give rise to macrovascular and microvascular complications. Hence early diagnosis of diabetes is important. In the recent years, sedentary life style, obesity is increased due to urbanization and hence prevalence of diabetes has increased.[3] Hence during diabetic awareness week in Sassoon general hospital Pune, we conducted this study to find out prevalence and risk factors for diabetes.

Material and Methods

Diabetic week was celebrated in Sassoon General hospital during 1 April to 7 April 2016. Retrospectively, data of all these patients including blood glucose level, age, sex, occupation, height, weight and BMI was obtained from medical record. New patients having random blood glucose level ⩾200 mg/dl were followed in diabetic OPD with fasting and postprandial blood glucose level for confirmation. According to American Diabetes Associations guidelines, patients having fasting blood glucose level ⩾ 126mg/dl or postprandial blood glucose level ⩾ 200 mg/dl were labeled as newly detected diabetic patients.[4]

The statistical analysis was carried out using Statistical Package for Social Sciences (SPSS Inc., Chicago, IL, version 17.0 for Windows). **The** quantitative data **was** presented as mean ± SD. P value of ⩽ 0.05 was considered as statistically significant.

Result

Total 538 patients attending medicine OPD were enrolled in this study. Among these 538 patients, 53.2% (n=286) were male and 46.8% (n=252) were female.

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Maximum number of patients were in the age group of 60-69 year (n=128, 23.8%) and BMI group of 18.5-24.9 kg/m^2 (n=298, 55. 4%).Sedentary lifestyle was observed in 110 patients (20.4%)

Out of these 538 patients,30.1% (n=162) were diabetic while 69.9% (n=376) were nondiabetic.29 diabetic patients were newly diagnosed while 133 cases of diabetes were old.

Table I: Demographic characteristics of all screened patients

	Diabetes mellitus	Age(Years)	BMI (kg/m^2)	BGL(mg/dl)
Male (n=286)	Present(n=89)	56.89 ± 10.98	23.88±7.28	234.67±103.76
	Absent(n=197)	49.64 ± 14.75	23.09±4.52	115.26±32.70
Female (n=252)	Present(n=73)	51.42± 11.75	23.92±4.99	247.14±97.32
	Absent(n=179)	47.24± 13.41	24.08±5.07	116.69±29.50

Mean age of diabetic male (n=89) and female(n=73) patients were almost same,56.89 ± 10.98 years and 51.42± 11.75 years respectively. Similarly, there was no difference in BGL of male and female diabetic patients. (234.67±103.76 and 247.14±97.32 respectively). However, BMI of male diabetic was slightly higher than female diabetic patients. (23.88±7.28 and 23.92±4.99 respectively). But maximum male and female diabetic patients had normal BMI (n=53 and 44 respectively)

Table II : Detail demographic characteristics of patients and association with Diabetes mellitus

		Age(Years)							BMI (kg/m^2)				Sedentary life style	
		10-19	20-29	30-39	40-49	50-59	60-69	>70	<18.5	18.5-24.9	25-29.9	>30	Yes	No
Diabetes mellitus	Present (n=162)	1	1	16	35	41	54	14	12	97	38	15	104	58
	Absent (n=376)	2	14	89	101	60	74	36	45	201	93	37	52	324
p value		<0.001							0.374				<0.001	

Statistical data showed significant association between older age and diabetes (p=<0.001) as well as sedentary lifestyle and diabetes (p=<0.001). Although 53 diabetic patients had higher BMI (>25 kg/m^2), it was not statistically significant (p=0.374).

Table III : Demographic characteristics of known and new diabetic patients

	Known Diabetic (n=133)	New Diabetic (n=29)	p value
Age (Years)	55.86±11.27	47.83±11.06	0.001
BMI (kg/m)	24.00±6.83	23.41±3.18	0.485
BGL(mg/dl)	226.41±95.83	303.97±100.03	< 0.001

Though more old diabetic patients were in age group of 60-69 years (n=47,87.04%), new diabetic patients were more in 40-49 years' group (n=9,25. 71%), statistical data showing significant association (p=<0.001). BGL of newly diagnosed diabetic patient was significantly higher than known diabetic patients (303.97±100.03 and 226.41±95.83 respectively, p=<0.0001). There was no statistically significant impact of BMI on known and new diabetic patients (24.00±6.83 and 23.41±3.18, p=0.485)

Discussion

Diabetes mellitus prevalence is increasing in India. [5] In our study 30.1% (n=162) patient had diabetes mellitus, while study done by Ramachandran et al and Bharti Korea et al had prevalence of 13.9 % and 7.33% respectively.[6,7] In our study prevalence of male patients having diabetes was high. (54.93% vs 43-45%), while other study done in other part of India had more female diabetic patients. This higher prevalence of diabetes in our study may be due to, screening patients attending medicine OPD for various complaints in our study while in other studies healthy individuals were screened for diabetes in various cities of India.[6]But after excluding 133 previously diagnosed diabetic patients, prevalence of new cases of diabetes was 7.16%.

Like Ramachandran et al, our study had maximum number of diabetic patients, in the age group of 60-69 year, but percentage of diabetic patients in 60-69 age group was higher in our study than Ramachandran et al study (42.19% vs 29. 1%).Majority of diabetic patient in Bharti Korea et al study was in 45-60-year age group. [6]But Mean age of diabetic males (n=89, 56.89 ± 10.98 years) and female (n=73, 51.42± 11.75 years) patients were comparable to other studies in India for diabetic patients. [6,7]

Older age, sedentary life style and obesity are the known risk factors for diabetes mellitus.[8] We found strong correlation between age and diabetes (p=<0.001). Same observation was made by Ramachandran et al and other studies in India.

Though prevalence of diabetes is higher in obese patients, most of diabetic patients in our study were in normal BMI group (18.5-24.9 kg/m^2 -n=97,59. 87%).This may be due to lean body habitus of Indian population and normal BMI value in Indian people may be lower than in western population. Lean Indian with low BMI are at equal risk as those who are obese.[9]

Sedentary life style is increased due to urbanization and so the prevalence of diabetes. Our study was not exception for this fact (p=<0.001) like other studies in India and worldwide.

29 new patients were diagnosed as diabetes by standard diagnosis criteria. Newly detected diabetic patients were younger than the known diabetic patients (47.83±11.06 vs 55.86±11.27 years)

This age difference was statistically significant (p=0.001), hence screening of healthy individual should be done at younger age. However, there was no statistical difference in BMI of newly diagnosed and known diabetic patients (23.41±3.18 vs 24.00±6.83 respectively p=0.485)

Conclusion

Prevalence of diabetes mellitus is increasing in India. Diabetes screening should be done in younger population and even in normal BMI individuals.

Conflict of Interest - None

Reference

1. Singh AK, Mani K, Krishnan A, Aggarwal P, Gupta SK. Prevalence, Awareness, Treatment and Control of Diabetes Among Elderly Persons in an Urban Slum of Delhi. Indian J Community Med 2012; 37:236-9.
2. Wild S, Roglic G, Green A, Sicree R, King H. Global prevalence of diabetes-estimates for the year 2000 and projections for 2030. Diabetes Care. 2004;27(3):1047-53.
3. Gupta SK, Singh Z, Purty AJ, Kar M, Vedapriya DR, Mahajan P et al. Diabetes Prevalence and its Risk Factors in Rural area of Tamilnadu. Ind J Comm Med. 2010; 35(3): 396-399.
4. American Diabetes Association. Classification and diagnosis of diabetes. Diabetes Care 2017;40(Suppl. 1): S11–S24
5. Kumar A, Goel MK, Jain RB, Khanna P, Chaudhary V. India towards diabetes control: Key issues. Australas Med J. 2013;6(10):524-31.
6. Ramachandran A, Snehalatha C, Kapur A, Vijay V, Mohan V, Das AK, Rao PV, Yajnik CS, Prasanna Kumar KM, Nair JD; Diabetes Epidemiology Study Group in India (DESI). High prevalence of diabetes and impaired glucose tolerance in India: National Urban Diabetes Survey. Diabetologia. 2001;44(9):1094-101.
7. Bharti Koria, Rupesh Kumar, Ashish Nayak, GeetaKedia.Prevalence of diabetes mellitus in urban population of Ahmedabad city, Gujrat. National J Community Med 2013; 3:398-401
8. Mohan V, Sandeep S, Deepa R, Shah B, Varghese Epidemiology of type-2 diabetes: Indian Scenario Indian J Med Res 2007(125): 217-230
9. Zargar AH, Khan AK, Masoodi SR, Laway BA, Wani AI, Bashir MI, Dar FA. Prevalence of type 2 diabetes mellitus and impaired glucose tolerance in the Kashmir Valley of the Indian subcontinent. Diabetes Res ClinPract. 2000;47(2):135-46.

CASE REPORT

Anesthetic Challenges In A Patient Of Aortic Dissection With Marfan s Syndrome For Emergency Cesarean Section

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ABSTRACT

Dissection of aortic aneurysm is a rare but potentially fatal condition due to risk of rupture. It is most commonly associated with connective tissue disorders, bicuspid aortic valves and trauma. Aortic dissection in pregnant patient is commonly associated with Marfan□s syndrome. Maintenance of hemodynamics is of paramount importance in such cases to avoid aneurysm rupture and hemodynamic collapse. We present a case of 22yr old primigravida with proximal aortic dissection with aortic regurgitation associated with Marfan□s syndrome. Lower segment cesarean section was successfully conducted under epidural anesthesia.

Key words: Anesthesia, caesarean section, epidural, marfans syndrome, aortic dissection

Introduction

Dissection of aorta is very rare (0.8 to 1.2 per 100000 maternities)[1] but life threatening condition most commonly associated with connective tissue disorders as Marfan□s syndrome or bicuspid aortic valve. Marfan's syndrome is a genetic disorder involving connective tissues. It has a prevalence of ≈ 1 in 3000 to 5000. It is an autosomal dominant condition with complete penetrance but variable expression with significant intra-and interfamilial variation. Approximately 25% of patients represent sporadic, new mutations for the condition. Marfan s chiefly involve the cardiovascular, ocular, and skeletal systems. The most life-threatening complication of Marfan s is thoracic aortic aneurysms leading to aortic dissection, rupture, or both.[2] In 2003 Immer et al[3] found that more than 50% of pregnant patients with aortic dissection had Marfan□s syndrome. We present a case of successful management of anaesthesia for emergency cesarean section with aortic dissection in a previously undiagnosed case of Marfan s syndrome.

Case Report

Previously healthy 22-year-old primi gravida from rural background presented at 34 weeks of gestation to a private hospital with c/o breathlessness, chest pain and 2-3 episodes of vomiting. Echocardiography was done at private hospital and patient was sent to our hospital with diagnosis of aortic regurgitation with suspected aortic dissection.

On general physical examination, patient was pale and malnourished. She had pathognomic body habitus of Marfan s with a height of 176 cm, weight of 60 kg, arachnodactyly and high arched palate. She had a pulse rate of 104beats/min, bounding in character. Her blood pressure was 130/32 mm Hg in both arms on intravenous infusion of NTG at 4µg/kg/min. On cardiovascular system examination she had palpable thrill along the left sternal border and a loud grade 4 continuous murmur heard all over the precordium, best auscultated over the left parasternal region. Lung fields were clear on auscultation.

Obstetric ultrasound showed a live fetus at 34 weeks ±5days in cephalic presentation with normal FHR.

Routine blood investigations were normal except for hemoglobin 8.0 g/dl.

Electrocardiography - sinus tachycardia with left ventricular enlargement.

Transthoracic 2D ECHO- severe AR , dilated aortic root (45 mm) ,sinus of Valsalva, sinotubular junction and proximal aortic arch. Flap seen in proximal ascending aorta suggestive of dissection of aorta.

Holodiastolic reversal of blood flow seen in descending aorta. Dilated LV, mild LVH, no MS mild MR, no AS, mild TR, severe pulmonary hypertention (PASP 60 mm of Hg).

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Case was discussed by obstetricians, physicians, cardiologists, cardiothoracic surgeon and anaesthetists. As patient was relatively stable hemodynamically, it was decided to terminate pregnancy by emergency LSCS and review the patient later on for surgical correction of aortic dissection.

Written informed consent was obtained from both patient and her husband.

In operating theatre, patient was given supine position with a wedge of 10-15° under the right hip. Oxygen was started with venti mask. Intravenous access was obtained with an 18G cannula on both arms. Intravenous inj. Ranitidine 50 mg, inj. Metoclopramide 10 mg and antibiotic prophylaxis with 2 g ceftriaxone were given 30 min prior to induction. Pulse rate, noninvasive blood pressure, oxygen saturation, electrocardiography were monitored throughout the surgery and kept within the normal limits.

Sitting position was given, under all aseptic precautions L2-L3 intervertebral space was infiltrated using 3 ml solution of 2% lignocaine. Tuohy needle of 18G was used to locate epidural space with the loss of resistance to air technique. Epidural catheter was advanced into the epidural space and secured at 8cm. A test dose of 3 ml 2% lignocaine with epinephrine 1:200,000 was given. Patient was made supine with 15° wedge under right hip. Local anesthetic-opioid mixture was administered through the epidural catheter in 3ml increments at 5 min interval. Total 7ml of 2% lignocaine, 10ml of 0.5% bupivacaine with 25µg of fentanyl was administered over a period of 20minutes. After 25 min, successful bilateral sensory block to pain, fine touch and temperature extending from T6 to S4 was established. There was not a single episode of hypotension.

LSCS was performed and a healthy female infant weighing 2600 g was delivered with an Apgar score of 8/10 and 9/10 at 1 and 5 min respectively.

Inj. Oxytocin 10 IU was given slow intravenous infusion to achieve sufficient uterine contraction. After delivery of baby 1 mg midazolam and 50 µg fentanyl were given intravenously.

Intraoperatively, patient remained hemodynamically stable with total blood loss of approximately 550 ml, which was replaced with 1 pint of PCV over three hours. Surgery lasted for 45min. Patient was observed in OT for one hour post-surgery and then shifted to intensive care unit (ICU) for further observation. Complete recovery from epidural anesthesia occurred after 6 hrs. Analgesic doses as 4cc of 0.125% bupivacaine with 10µg fentanyl were given 6 hourly post-operatively through epidural. Catheter was removed after 24 hrs.

Patient recovered well in Intensive care unit

Discussion

Aortic dissection in pregnancy is a rare, life-threatening condition most often associated with genetic or anatomic predisposition, such as Marfan□s syndrome or bicuspid aortic valve. A review in 2003 by Immer et al found that more than 50% of pregnant patients with aortic dissection had Marfan s syndrome[3].

Aortic dissection in pregnancy occurs most commonly in the third trimester due to the hyper dynamic state and hormonal effect on vasculature.[4] Marfan□s syndrome involves many organ systems, but the cardiovascular manifestations, such as aortic dilation and dissection, are responsible for 90% of deaths attributed to Marfan□s syndrome[5].

Patients with an aortic root < 4 cm in diameter at the time of delivery have a similar outcome for vaginal and cesarean section delivery, but cesarean section is preferred in patients with an aortic root dilatation > 4 cm because the risk for cardiac decompensation is extremely high[6]. In our case aortic root was dilated to 4.5cm and also had evidence of aortic dissection so vaginal delivery was not considered.

High blood pressure tends to develop aortic aneurysms due to a weakened vascular media in patients with Marfan□s syndrome. Myocardial ischemia and heart failure can also be caused by an increased myocardial oxygen demand resulting from high blood pressure. Therefore, the most cautious goal is to prevent high blood pressure[7].

It is reported that general anaesthesia leads to increased cardiovascular stress associated with hypertensive response due to laryngoscopy and intubation which increases risk of aneurysm rupture [8]. Also general anaesthesia is associated with polypharmacy that can be avoided I epidural anaesthesia.

Epidural anaesthesia provides unique advantage of better hemodynamic control due to slow induction and

sympathetic blockade as compared to spinal anaesthesia, as well as avoids stress responses and frequent hemodynamic swings under general anaesthesia. In our case severe AR with proximal dissection of aorta it was important to avoid hypertensive response for fear of rupture, so epidural anaesthesia was considered for this patient. Slow induction helped control hypotension associated with sympathetic blockade. Continued analgesia in intra and post-operative period ensured no rises in blood pressure thus decreasing chances of aneurysm rupture.

Pitocin was used in low dose of 10 units slow iv infusion ; as oxytocin use is associated with important side effects such as maternal arrhythmia, hypotension and tachycardia and excessive doses should be avoided in such cases[9].

Conclusion

A thorough knowledge of pathophysiology of aortic dissection with Marfan s syndrome and skillful use of epidural anaesthesia for better hemodynamic control intra as well as post operatively led to successful outcome, avoiding complications in a patient posted for LSCS.

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Conflict of Interests : None

References

1. Banerjee A, Begdisai I, Thorne S. aortic dissection in pregnancy in England: an incidence study using linked national databases. BMJ Open 2015:5:e008318.doi:10.1136/bmjopen-2015-008138
2. Murdoch JL, Walker BA, Halpern BL, Kuzma JW, McKusick VA. Life expectancy and causes of death in the Marfan syndrome. N Engl J Med. 1972; 286: 804 808.CrossRefMedline
3. Immer FF, Bansi AG, Immer-Bansi AS, et al. Aortic dissection in pregnancy: analysis of risk factors and outcome. Ann Thorac Surg. 2003;76:309 314
4. Collins D. Aetiology and management of acute cardiac tamponade. Crit Care Resusc. 2004;6:54 58.
5. Paternoster DM, Santarossa C, Vettore N, Dalla Pria S, Grella P. Obstetric complications in Marfan's syndrome pregnancy. Minerva Ginecol 1998; 50: 441-3.
6. Rahman J, Rahman FZ, Rahman W, al-Suleiman SA, Rahman MS. Obstetric and gynecologic complications in women with Marfan syndrome. J Reprod Med 2003; 48: 723-8.
7. Kim DW, Lim YG. A case report of marfan syndrome under general anesthesia. Korean J Anesthesiol 1993; 26: 1055-8.
8. Gülay Erdoğan Kayhan, Nurçin Gülhaş, Taylan Şahin, Ülkü Özgül, Mukadder Şanlı, Mahmut Durmuş, Mehmet Özcan Ersoy. Anaesthesia for Caesarean Delivery in a Pregnant with Acute Type B Aortic Dissection; Turk J Anaesth Reanim 2013; 41: 178-81
9. Tsen LC, Balki M. Oxytocin protocols during cesarean delivery: time to acknowledge the risk/benefit ratio? Int J Obstet Anesth 2010; 19: 243-5

CASE REPORT

Primary Colonic Lymphoma With Multiorgan Involvement

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ABSTRACT

Primary colorectal lymphoma represents a rare tumor among the colonic neoplasms. Early diagnosis is often difficult because of vague symptoms and is usually diagnosed after resection. We describe a rare case of colonic lymphoma presenting with synchronous liver, splenic and lymph nodal metastases. Because of the difficulty in the preoperative pathological diagnosis and high risk of bowel obstruction, the patient underwent right hemicolectomy with splenectomy, liver resection and regional lymphadenectomy.

Final histopathological impression was a lymphohistiocytic type of high grade non Hodgkin lymphoma. Patient received EPOCH with Rituximab for chemotherapy post operatively. Primary colonic lymphoma is a rare disorder and due to difficult pre operative diagnosis can pose a challenge to the surgeon. This case highlights the difficulty in diagnosing primary colonic lymphoma and emphasizes on considering it in the differential of a colonic mass with multi organ involvement.

Key Words : Primary colonic lymphoma; Diffuse large B-cell lymphoma; Cecal lymphoma; Multi organ involvement

Introduction

Colorectal lymphoma is the third most common large bowel malignancy after adenocarcinoma and carcinoid.[1] The involvement of most colorectal lymphomas is secondary to widespread diseases. Patients of primary colorectal lymphoma often present with non-specific symptoms leading to a delay in diagnosis which often occurs after surgical resection.[2] We present an unusual case of lymphoma of cecum with synchronous liver, splenic and lymph nodal metastases. This case also highlights the difficulty in diagnosis of a primary colonic lymphoma.

Case Report

A 52-year-old male presented with complaints of mass per abdomen since 6-8 months associated with pain. There was history of loose stools with per rectal bleeding and fever since 7 days with weight loss of 6 kgs in the past 6 months. There was no history of constipation or abdominal distension or any symptoms suggestive of intestinal obstruction. There was no past history of altered bowel habits.

Examination revealed pallor, massive splenomegaly and a non - tender mass in right iliac fossa, of 4x4x3cm, in size mobile It did not move with respiration. Per rectal examination was normal. The patient had pulse rate of 88/minute and blood pressure of 116/78 mm of Hg.

Laboratory investigations included hemoglobin of 8.5g/dl, total bilirubin 0.8 mg/dl, serum creatinine of 0.9 mg/dl and blood urea nitrogen levels of 21 mg/dl. Stool was negative for occult blood.

Ultrasonography revealed a large mass in the left hypochondrium not separately visualized from spleen with enlarged lymph nodes. Possibility of lymphoma was suggested.

A right sided inguinal lymph node biopsy done outside revealed caseating epitheloid cells and granulomas with Langhans giant cells. ZN stain was negative for AFB. An ambiguous report of tuberculous or reactive lymphadenitis was given. Sputum examination was negative for tuberculosis.

Abdominal contrast CT showed massive splenomegaly with extensive lobulated appearance measuring 22 cm with multiple non enhancing areas within. Gross irregular concentric wall thickening with intraluminal growth was noted involving the terminal ileum, ileocecal junction and proximal cecum causing severe narrowing of lumen with maximum wall thickness of 4.8cm. Multiple heterogeneously enhancing soft tissue deposits in precaval region and central mesenteri lymph nodes was noted, largest measuring 4.8x4.5 cms.

Colonoscopy revealed an ulcerative polypoidal growth in the lumen at ileocecal junction and the scope could be

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negotiated across the growth. Rest of the colon was found to be normal. Oesophagoduodenoscopy was normal.

Bone marrow biopsy showed no neoplastic involement.

Because of the difficulty in the preoperative pathological diagnosis, high risk of bowel obstruction and hemorrhage, the patient was posted for surgery.

Laparotomy was done and cecal biopsy sent for frozen section and report was inconclusive. Spleen was found to be of normal size with a highly vascular mass attached to it. Splenectomy was done en bloc with the mass. Mass was found to involve the left lobe of liver which was also removed. Right hemicolectomy with ileotransverse anastomosis in two layers was done using Vicryl 3-0 continuous sutures. Another lymph nodal mass found in lesser sac was also removed (figure 1). A single drain was placed in the right paracolic gutter. Patient tolerated the procedure well and was kept in the ICU for 48 hours. Antibiotics given were i.v. Ceftriaxone, Amikacin and Metronidazole. Total parenteral nutrition was given since the 3rd post operative day. Orals sips were started on the 4th post operative day and full diet by 10th day. There was no evidence of anastomotic leak.

Final histopathological report revealed all specimens showing diffuse lymphoid proliferation. Presence of large histiocytes showing emperipolesis [presence of lymphocytes in macrophages] with few lymphocytes showing erythrophagocytosis seen. Impression was a lymphohistiocytic type of high grade non-Hodgkin's lymphoma (figure 2).

Patient was diagnosed with diffuse large B cell lymphoma (DLBCL) and received EPOCH (Etoposide,Prednisolone,Vincristine,Cyclophosphamie and Doxurubicin) with rituximab for chemotherapy. 6 cycles were given at an interval of 15 days. The patient is now doing well at follow up of 6 months.

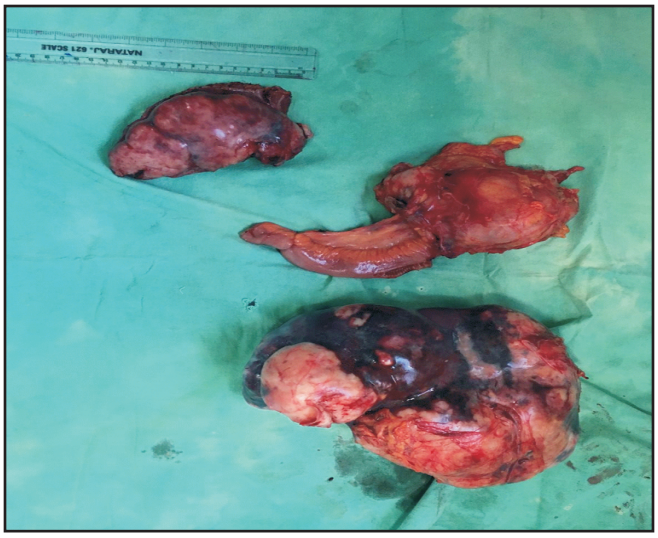

FIGURE 1:Post laparotomy gross specimen of resected splenic,liver and cecal mass

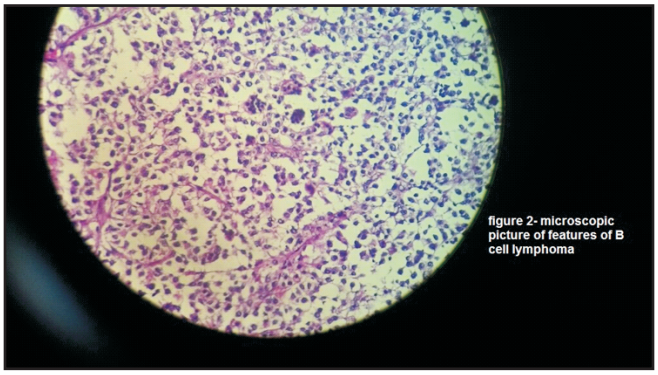

Figure 2 : Microscopic Features of B-cell Lynphona (Under 40x Magnification)

Discussion

The colon is an uncommon site of involvement of Non-Hodgkin's lymphoma. The most frequently involved colonic site at diagnosis is the ileocaecal region, followed by the caecum, sigmoid and rectum. Primary colonic lymphoma (PCL) is often associated with inflammatory bowel disease and immunosupression. [3] Males are predominantly affected with highest incidence at the age of 50–70 years. Most PCLs have a B-cell lineage with DLBCL being most common. [4]

The radiological appearance of colorectal lymphoma is variable and overlaps with other conditions of the colorectal region. It is clear that small biopsied samples containing scanty neoplastic follicles and scarce lymphoma cells are likely to lead to a misdiagnosis. [2] In 2014, a case was reported of lymphoma of the colon with

synchronous liver metastases. In their case, both tomography and colonscopy showed findings mimicking colonic adenocarcinoma. This patient underwent a right hemicolectomy associated with locoregional lymphadenectomy and liver resection and the diagnosis of lymphoma was made on histopathology just like in this case report. [2]

The correct diagnosis is often challenging and usually based on histological findings after operative colonic resection. It is difficult to distinguish this type of tumor from primary adenocarcinoma when there are no enlarged lymph nodes. [5]

Treatment for colorectal lymphoma usually involves surgery and chemotherapy. A case of an 84-year old female was reported in 2013 who on physical examination, had a large lower quadrant abdominal mass. Colonoscopy showed a large ulcerated mass and biopsy was consistent with diffuse large B-cell lymphoma. The patient underwent colectomy. [5]

Currently, due to the introduction of new drugs such as rituximab as part of chemotherapy, the role of surgery is debatable. Certain authors propose that surgery may be beneficial to prevent perforation or bleeding.[6] However, other authors have suggested that early diagnosis and chemotherapy might avoid a surgical procedure. Surgery may be beneficial in patients at risk of complications, but it should be associated with postoperative chemotherapy. [7]

Conclusion

Colonic lymphoma is extremely rare and the various imaging tests are non-specific; the diagnosis is rarely made before surgery and usually confirmed by histopathological investigation after surgery. This kind of tumour should be considered in the differential diagnoses of a colonic mass with synchronous multi organ involvement.

References

1. Mahfoud T, Tanz R, Khmamouche M, Regragui A, Ichou M, Errihani H. Primary Non-Hodgkin's Lymphoma of the Colon: A Case Report and Literature Review. Journal of Gastrointestinal Cancer. 2012;43(4):619-621.
2. Risio D, Percario R, Legnini M, Caldaralo F, Angelucci D, Marinelli C et al. Diffuse large B-cell lymphoma of the colon with synchronous liver metastasis: a rare case report mimicking metastatic colorectal adenocarcinoma. BMC Surgery. 2014;14(1).
3. Doolabh N, Anthony T, Simmang C, Bieligk S, Lee E, Huber P et al. Primary colonic lymphoma. Journal of Surgical Oncology. 2000;74(4):257-262.
4. Daum S, Ullrich R, Heise W, Dederke B, Foss HD, Stein H, Thiel E, Zeitz M, Riecken EO. Intestinal non-Hodgkin's lymphoma: a multicenter prospective clinical study from the German Study Group on Intestinal non-Hodgkin's Lymphoma. J Clin Oncol. 2003;21(14):2740–2746.
5. Bairey O, Ruchlemer R, Shpilberg O. Non-Hodgkin's lymphomas of the colon. Isr Med Assoc J.2006;8:832–835
6. Barbarya A, Ali A. Primary Diffuse Large B-Cell Lymphoma of the Ascending Colon. Rare Tumors. 2013 Apr 15; 5(2): 85–88.
7. Pascual M, Sánchez-González B, García M, Pera M, Grande L. Primary lymphoma of the colon. Revista Española de Enfermedades Digestivas. 2013;105(2):79-83.

CASE REPORT

Primary Cutaneous Diffuse B Cell Lymphoma (Leg Type) In An HIV Infected Patient With Dramatic Response To Therapy

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ABSTRACT

During the potent antiretroviral therapy era, the incidence of AIDS-defining cancers has decreased and the incidence of non--AIDS-defining cancers (NADCs) has increased, as has the proportion of mortality associated with NADC in HIV-infected patients. The increase in NADCs is partly associated with increased longevity of the HIV-infected population, but it may also reflect consequences of increased immune activation and decreased immune surveillance as well as direct effects of HIV.

The NADCs appear to have earlier onset and worse prognosis in HIV-infected patients than in the general cancer population. Much remains to be learned about risk, risk reduction, optimal treatment, and drug interactions in HIV-infected cancer patients.

Herein we report a patient with Primary Cutaneous Diffuse B-cell lymphoma (PCBCL), Leg Type in HIV Positive patient, who showed promising response to chemotherapy.

Key words - ADC, NADC, Malignancy in HIV, PCBCL.

Introduction

The most common AIDS-related malignancies are non-Hodgkin's lymphoma (NHL) (33%), cervical cancer (21%) and Kaposi's sarcoma (KS) (5%).[1] Lymphoma is a malignancy of lymphoid cells and generally presents in lymph nodes, viscera, or bone marrow and may infiltrate the skin at a later stage. However, lymphoma can originate in the skin from cutaneous lymphocytes in so-called primary cutaneous lymphomas. These lymphocytes display skin homing markers such as cutaneous lymphocyte antigen and the chemokine receptor CCR4 that help guide these cells to the skin.[2]

Primary cutaneous diffuse B cell lymphoma (leg type) is expected to have an unfavourable prognosis in immunocompromised individuals (According to The International Prognostic Index for aggressive non-Hodgkin lymphoma).[3]

To the best of our knowledge, till date only a single case of Primary cutaneous B-cell lymphoma (PCBCL), leg type in HIV patient has been reported.[4] We are reporting second such case.

Case Report

A 45 year old female with unknown HIV sero-status presented with multiple painful red swellings over left thigh since eight months. She had history of oozing from large lesion and history of fever since two months. She did not have any history of trauma to that site, cough, chest pain, weight loss or granular discharge. On dermatological examination, she had multiple tender, indurated, skin colored and erythematous nodules of variable size extending from left thigh to groin. Two ulcerated nodules sized 10 x 12 cm were present on left thigh with serous discharge.[Figure 1A]

Patient was pale with pitting type of edema over left lower limb and was unable to walk without assistance because of huge swelling over thigh and associated discomfort. Patient had three tender enlarged inguinal lymph nodes of size 4 x 5 cm on corresponding side. Her systemic examination revealed no significant abnormality.

Differential diagnoses considered were cutaneous tuberculosis, deep fungal infection and lymphoma.

On investigation, she was detected to be HIV seropositive with CD4 count of 108/cu mm. Local ultrasound was suggestive of neoplastic etiology like sarcoma and computerized tomography scan demonstrated malignant neoplasm with muscle invasion.

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Fine needle aspiration cytology from inguinal lymph node revealed cells with high nuclear-cytoplasmic ratio, round nucleus with prominent nucleoli and scanty cytoplasm along with lymphocytes and a few polymorphs. These findings were reported to be suggestive of round cell lymphoma. Biopsy taken from non-ulcerated tender erythematous nodule revealed dermis showing a tumour composed of sheets of large round to oval cells with large hyperchromatic nuclei with areas of necrosis and polymorphs on hematoxylin and eosin stain. [Figure 2A] Immunohistochemistry was positive for CD20, CD79a and bcl-6 and negative for CD-10, CD-7, TdT, CD-30, MUM-1, bcl-2, CD-34, Synaptophysin and Chromogranin which are pathognomonic of primary cutaneous diffuse B cell lymphoma (leg type) clinched the diagnosis.[Figure 2B]

Mib labelling Index was 70 to 80%.

She was put on Anti-Retroviral Therapy in the form Tenofovir Lamivudine Efavirenz regimen and after consulting oncologist, was started on chemotherapy (CHOP regimen- Cyclophosphamide, Hydroxydaunorubicin, Oncovin, Prednisolone) which was to be given 3 weekly for 6-8 weeks as

1) Inj. Adriamycin (Hydroxydaunorubicin) 75mg in 100 cc normal saline over 1 hr

2) Inj. Vincristine (Oncovin) 2 mg IV in 100 cc normal saline

3) Inj. Cyclophosphamide 1200 mg IV in 500 cc of normal saline over 1 hr

4) Tab Prednisolone 100 mg OD for 5 days

Lesions regressed dramatically after 9 weeks chemotherapy. [Figure 1B] Patient has received three chemotherapy cycles till date and her treatment is ongoing. The only side effect noted was hair loss due to anagen effluvium.

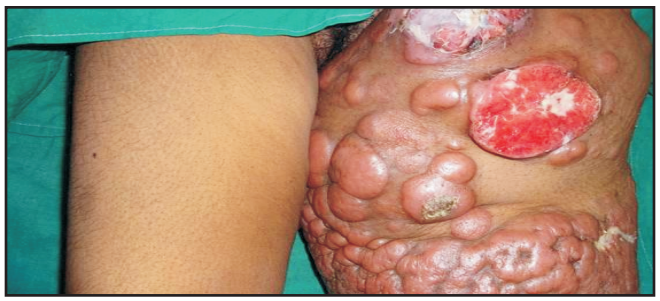

Fig. 1A

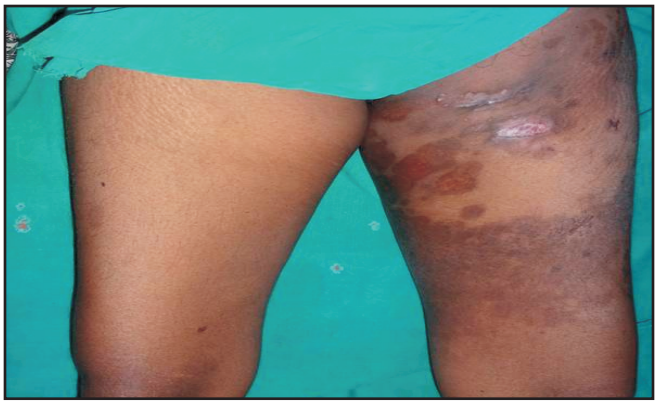

Fig. 1B

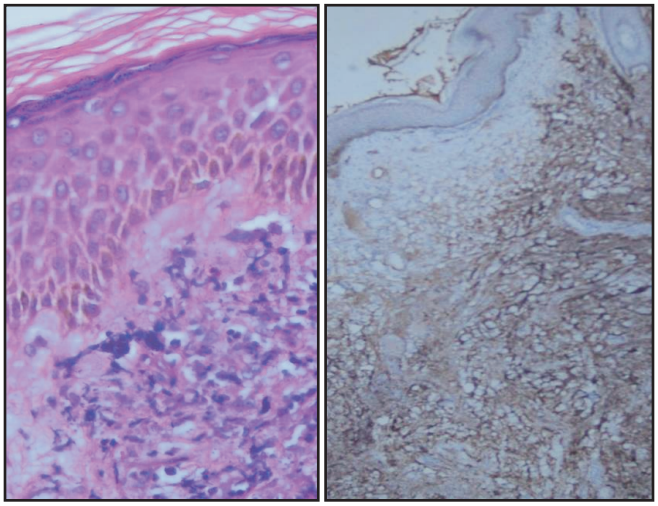

Fig. 2A & 2B

Legends :

1. **Figure 1A-**Multiple tender indurated skin colored & erythematous nodules of variable size on left thigh & groin
2. **Figure 1B -** Post chemotherapy resolution of lesions.
3. **Figure 2A -**HPE (40 X) **-**Dermis showing tumour composed of sheets of large round to oval cell with large hyperchromatic nuclei with areas of necrosis and polymorphs .
4. **Figure 2B-** IHC for CD-20

Discussion

Primary cutaneous B-cell lymphoma (PCBCL) is a heterogeneous group of lymphoproliferative disorders, which account for 25-30% of all primary cutaneous lymphomas and include three main histotypes:

1) Primary cutaneous marginal zone B-cell lymphoma (PCMZL)

2) Primary cutaneous follicular center cell lymphoma (PCFCL)

3) Primary cutaneous diffuse large B-cell lymphoma (DLBCL), leg type (PCDLBCL-LT).[2]

PCMZL and PCFCL are indolent lymphomas, with an excellent prognosis despite a high rate of cutaneous recurrences; in contrast, PCDLBCL-LT is clinically more aggressive and usually requires to be treated with multi-agent chemotherapy and anti-CD20 monoclonal antibodies. PCDLBCL-LT histologically consists of large round cells (centroblasts and immunoblasts), and is characterized by strong bcl-2 expression, in the absence of t(14;18) translocation, and resembles the activated B-cell type of nodal DLBCL.[5]

HIV infection is associated with cytokine profile changes that favor production of Th2 cytokines which are associated with B-cell proliferation, accumulation of genetic errors, and subsequent lymphoma.

Certain HIV proteins also play a role in HIV associated malignancy. tat and nef have been shown to favor oncogenesis via numerous mechanisms. *tat* protein can regulate chemokines and expression of their receptors, leading to inappropriate angiogenesis. *nef* protein, decreases major histocompatibility complex class 1 (MHC-1) on the surface of cells, which in turn leads to poor detection of deranged self-cells.

Previously reported case in literature showed PCDLBCL-LT along with HIV encephalopathy and single ulcerated plaque over tendo-achillis. This single lesion was treated by surgical excision without recurrence.[4] In contrast, our patient had extensive lesions over thigh with inguinal lymphadenopathy, hence systemic chemotherapy was initiated. Patient showed promising response despite a grossly deranged immune status.

Conclusion

In recent times, most people living with HIV may look and feel healthy as a result of improved overall survival rates. Therefore, standard of care for prevention, follow up and treatment of malignancy in these patient differs significantly from healthy individuals. This case is reported to highlight the rare cutaneous malignancy, we encountered in a case of HIV positive patient and to emphasize the need for stringent screening for non AIDS defining cancers.

Acknowledgement :

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Conflict of interest - None

References

1. Kiertiburanakul S, Likhitpongwit S, Ratanasiri S, Sungkanuparph S. Malignancies in HIV-infected Thai patients. HIV Med. 2007;8(5):322–3.
2. Willemze R. Primary cutaneous B-cell lymphoma: classification and treatment. Curr Opin Oncol. 2006;18(5):425–31.
3. Paulli M, Lucioni M, Maffi A, Croci GA, Nicola M, Berti E. Primary cutaneous diffuse large B-cell lymphoma (PCDLBCL), leg-type and other: an update on morphology and treatment. G Ital Dermatol Venereol [Internet]. 2012;147(6):589–602. Available from: http://www.ncbi.nlm.nih.gov/pubmed/23149705
4. Tamihiro Kawakami, Masako Mizoguchi and Yoshinao Soma. Primary Cutaneous Diffuse Large B-cell Lymphoma, Leg Type in an Elderly Man with Human Immunodeficiency Virus Encephalopathy. Acta Dermato-Venereologica. 2009,534-535
5. Wilkins K, Turner R, Dolev JC, LeBoit PE, Berger TG, Maurer TA. Cutaneous malignancy and human immunodeficiency virus disease. Journal of the American Academy of Dermatology. 2006. Vol. 54,189–206.

CASE REPORT

Fatal Primary Amoebic Meningoencephalitis

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ABSTRACT

Primary amoebic meningoencephalitis is a rare and fatal infection of CNS caused by free living amoeba.We report a case of primary amoebic meningoencephalitis in a 36 years old male after clinical post mortem examination..Patient came to casualty with history of low grade fever for 10 days followed by irrelevant talk and altered sensorium for 2 days.He had six episodes of generalized tonic clonic convulsions on the day of admission.Patient's condition deterioted and he became comatose and expired on 12th day of admission.Complete autopsy was performed and histopathological examination of cerebrum showed many trophozoite form of amoeba.

Keywords - Primary amoebic meningoencephalitis, trophozoite form of amoeba.

Introduction

Amoebic meningoencephalitis either a primary infestation by free living amoeba or secondary from a liver infection with the intestinal parasite.[1]The free living amoeba Naegleriafowleri, Acanthamoeba and Balamuthiamandrillaris account for Primary amoebic meningoencephalitis[PAM].N.fowleri produces acute amoebic meningoencephalitis[AAM] which clinically mimics acute bactetrial meningitis. Acanthamoeba leads to subacute to chronic infection and produces granulomatous amoebic encephalitis[GAE] mimicking brain abcess, chronic meningitis or CNS malignancy. [2]Both these infections are equally fatal and acquired by swimming or bathing in warm water contaminated with these protozoa.[1]

Case Presentation

A 36 years old male came to casualty with history of low grade continuous fever since 10 day Fever was not associated with chills and rigors followed by irrelevant talk and altered sensorium since 2 days.He had six episodes of generalized tonic clonic convulsions on the day of admission.Patient had single episode of generalized tonic clonic convulsions 8 months back. He had non-healing ulcer over right arm since 4 months.Patient had no history of diabetes mellitus,hypertension and tuberculosis.

On examination patient was drowsy and febrile.Rest of the parameters were unremarkable.On Systemic examination, cardiovascular system,,respiratory system and per abdominal examination were unremarkable.OnCNS examination patient was drowsy with right sided hemiplegia.Reflexes were diminished on right side and neck stiffness was present.

All basic investigations were normal. HIV, HBsAg and TB PCR were negative.

CSF examination showed protein 116mg/dl,sugar 20mg/dl and total cell count was 28/cumm of which lymphocytes were 25 and polymorphs were 3in number.

CT Brain(Plain) showed multiple ill-definedhypodensities in left basifrontal, parasagittal, high frontal, right parietooccipital and left temporal region predominantly involving sub cortical areas and MRI Brain(Plain+Contrast) showed same heterogenous lesions of varying sizes seen in cortical and subcortical location at left high frontal, left basifrontal, parasagittal, right frontal, right parieto-occipital and left temporal regions.There was heterogenous enhancement in these lesions.Same lesions were also seen in periventricular white matter and B/L caudate nucleus suggestive of neoplastic etiology with possibility of metastasis.

Skin biopsy showed chronic non- specific changes.

Clinical diagnosis was Metastasis to brain with unknown primary.

Despite of treatment patient became comatose and died on 12th day of admission.

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Postmortem Finding

Complete autopsy was performed on averagely built and poorly nourished male.

On external examination no pallor, edema, cyanosis, clubbing, icterus and lymphadenopathy noted. No other specific findings except an ulcer over right arm.

In situ examination of thoracic cavity showed no free fluid in pleural cavity.Both lungs were congested and right lung upper lobe showed consolidation .Microscopically right lung upper lobe showed bronchopneumonia and rest of the lobes were unremarkable.

Cardiovascular system, gastrointestinal system and hepatobiliary system were unremarkable on gross as well as microscopically.

On CNS examination, meninges were hazy,dilated and congested blood vessels were seen with fibrinous exudate at places. Cut surface of cerebrum showed multiple necrotic areas mimicking abcesses in the sub cortical region of right and left frontal lobes,right parietal, temporal and occipital lobes. Microscopically meninges were congested and showed diffuse and dense infiltration by acute on chronic inflammatory cells and fibrinous exudate at places. Microscopic examination of cerebrum showed large areas of necrosis,many round structures of size 15 to 20 microns with eccentric nuclei, thrombosed blood vessels were seen[figure 1a] and occasional epithel oid cell granuloma noted .Special stains like PAS stain[figure2a] and Heidenhain's iron hematoxyline stain[figure2b] highlighted those roundstructures.

Histopathological appearance as well as positive special stains confirmed that the round structures were nothing but amoeba [figure 1b] and we concluded our diagnosis to **Primary amoebic meningoencephalitis**.

Figure 1a-Shows thrombosed blood vessel within a necrotic brain tissue with an arrow[H&E40X]

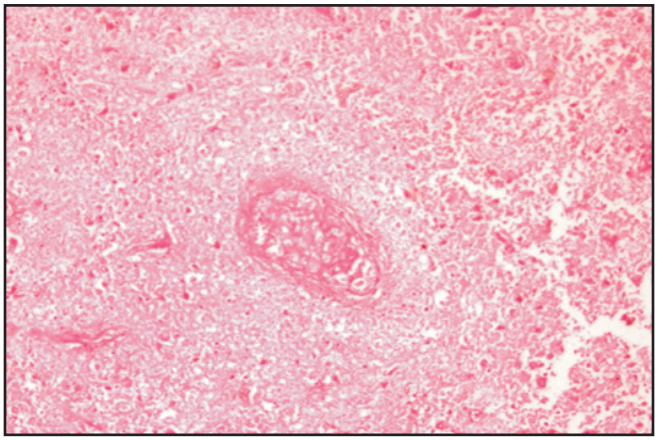


Figure 1b-Shows amoeba within a necrotic brain tissue with an arrow[H&E 40X]

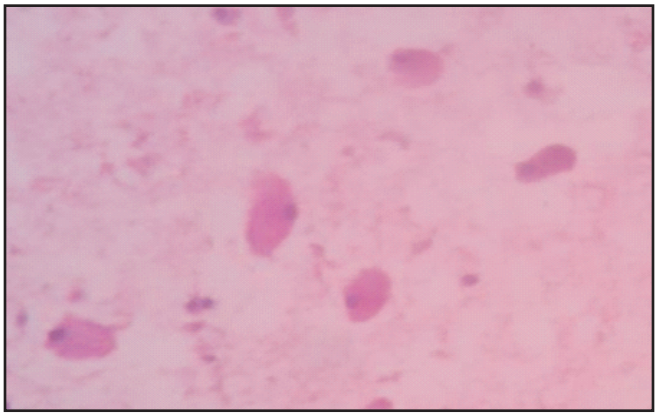


Figure 2a- PAS stain highlighting the amoeba[40X]

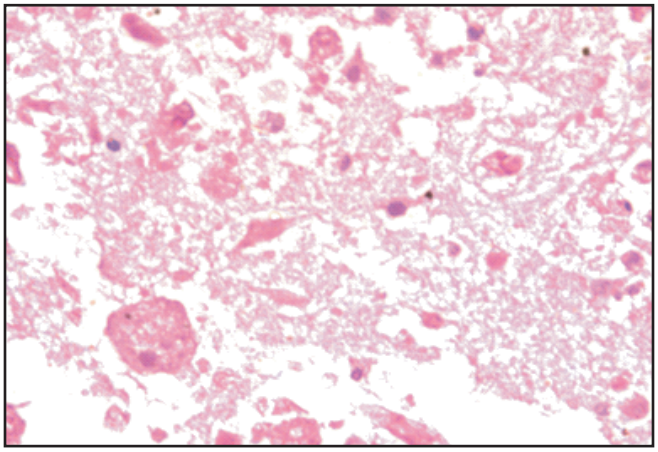
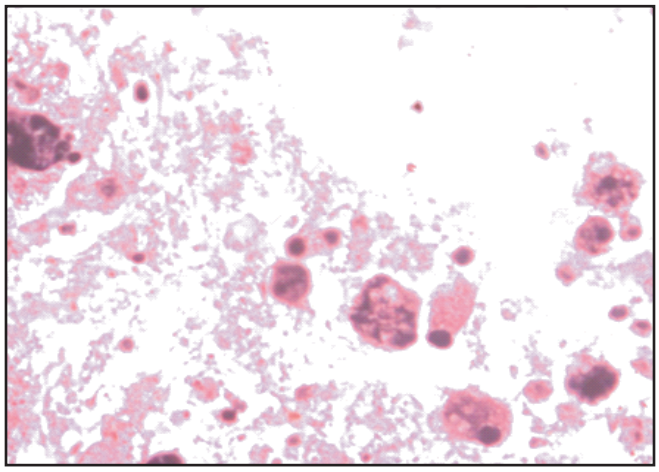


Figure 2b-Heidenhain's iron hematoxyline stain highlighting the amoeba[40X]



Discussion

Primary amoebic meningoencephalitis [PAM] may be acute [AAM] or sub-acute to chronic [GAE]. AAM is caused by N.fowleri and GAE is caused by Acanthamoeba and Balamuthiamandrillaris.These infections are acquired by swimming ,bathing and diving in inadequately sanitized or contaminated water. The amoeba penetrate the nasal mucosa and probably reach the CNS via olfactory nerves through the cribriform plate[1]N.fowleri infection is usually seen in immunocompetent host while acanthamoeba infects debilitated or immunocompromised host. [1]These protozoa occur in three forms as a cyst, trophozoite (ameboid) and a biflagellate form. Cyst form is not seen in human tissue. The trophozoites are about 10 to 20 micron in size with distinct nuclear membrane and incubation period is 2-15 days [3]. After entering into the brain tissue these organisms result into fulminant and rapidly fatal meningoencephalitis which is necrotizing and sometimes hemorrhagic. On gross brain swelling and focal area of softening is seen. Microscopically exudate containing neutrophils, lymphocytes and macrophages are seen. Vessels are necrotic and thrombosed. [4]Amoeba are present in large numbers in the exudate mistaken for macrophages.Detection of actively motile amoeba in wet preparation of CSF using light microscopy is helpful in diagnosis. CSF cytology shows neutrophilic pleocytosis in case of acute infection and lymphocytic pleocytosis in case of subacute to chronic infection[2].Other modes of diagnosis are CSF culture on non-nutrient agar plate, Indirect immunoflourescent[IIF] and triplex RT-PCR for simultaneous identification of the three species .Other disease like Neuro-Bechet's disease, Neuro-sweet's disease, Neurosarcoidosis, Neuro-Borreliois and Neuro syphilis should be differentiated from primary amoebic meningoencephalitis by clinical and histopathological findings. From 1962 to 2015, 138 infections in the U.S. have been reported to CDC[centre of disease control and prevention]. The annual number of U.S. infection ranges from 0 to8. About 300 cases of PAM have been reported internationally. [2]In one of the article reviewed 8 indian cases of N. fowleri meningitis have been repoted. [5]We are reporting this case due to its rarity and fatal outcome.

Conflict of interest -None

References

1. Rachagan SP, Raman S, Balasundaram G, Balkrishnan S : Rupture of pregnant uterus –A 21 year review Aust NZ obstetrics gynecology 31:37,1991
1. Anderson's pathology. 10th edition. Protozoal infection.page 2722-23
2. Jain R, Prabhakar S, Modi M, Bhatia R, Sehgal R, Naegleria meningitis: a rare survival, Neurology India,2002, vol 50,issue 4,pg 470-72
3. Singh SN, Patwari AK, Dutta R. Naegleriameningitis, Indian pediatrics,1998:35, pg 1012-15
4. Boyd's text book of pathology,10th edition page 451-52
5. Khanna Vinay, Khanna Ruchee, Shrikiran Hebbar, Shashidharv, Mundkar Sunil, etc al., Primary amoebic meningoencephalitis in an infant due to N. fowleri, Neurological medicine, volume 2011 [2011].

CASE REPORT

Airway Complications In Large Multinodular Retrosternal Goiter Prevented By Systematically Planned Extubation

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ABSTRACT

Thyroid surgery has important implications intra and post-operatively. A 64 year old obese female patient with ischemic heart disease presented for surgery of a long standing multinodular goiter with retrosternal extension. Difficult intubation was anticipated because she had restricted mouth opening, large tongue, loose, irregular, bucked teeth and tracheal narrowing and deviation on left side. Video laryngoscopy revealed sluggishly moving right vocal cord and obliterated posterior pharyngeal space; therefore extubation was also expected to pose significant risk of airway collapse. Airway Exchange Catheter (AEC) was inserted through endotracheal tube and awake extubation was done safely.

Key words- Thyroid surgery, difficult intubation, planned extubation.

Introduction

Thyroidectomy is a very common surgical procedure with significant implications for surgeons and anesthetists. Management of difficult airway with large swelling in the neck compressing over trachea for prolonged duration and likelihood of hemorrhage with high vascularity and major vessels in vicinity, parathyroids, recurrent laryngeal nerves and cardiac decompensation due to endocrine disturbance are known intra and postoperative risks. [1]An in depth understanding and systematic stepwise approach enables smooth and safe extubation without airway collapse.

Case Report

A 62 years old 72 kg female (BMI=32) presented with swelling in the neck increasing gradually since 2-3 years. There was no swallowing difficulty, change of voice, heat or cold intolerance, mood changes, weight gain or loss. She complained of feeling of smothering and choking during shoulder and neck movements and in supine position. She could sleep only in lateral position; snoring was also present. She was a diagnosed case of ischemic heart disease since 15 years and was on Aspirin 150mg OD and Isosorbide 5mg TDS after an episode of angina with ICU admission for one week.

On examination pulse rate was 94 beats/minute, regular, blood pressure was 130/80 mmHg and systemic examination was normal. Mouth opening was two fingers, Mallampati grade 3, with multiple loose teeth and protruding incisors (Figure 1). Local examination of neck showed 8×4 cm swelling on left side and 7×5cm on right side. Trachea could not be palpated at the sternal notch and the lower border of swelling was not palpable. Swelling moved with deglutition; there was no bruit.

ECG, X ray chest were normal; 2D ECHO reported hypertensive heart disease, mild concentric LVH, mild AR, trivial MR with grade I diastolic dysfunction. Blood investigations and thyroid function tests were normal. T_3= 144.1ng/dL(84.6-201), T_4= 4.6 microgm/dL (5.1-14.1), TSH= 2.20 IU/ml (0.2- 4.2). X-ray neck AP view showed narrowing of tracheal lumen and lateral view showed significant subglottic narrowing. CT and USG neck confirmed the size and enlargement of thyroid gland, extension into superior mediastinum and compression of proximal esophagus with indentation of posterior pharyngeal wall and bilateral obliteration of pyriform fossa. Pharyngeal constrictor, lingual, pterygoid tensor veli muscles and tonsillar pillars were reported normal and no lymphadenopathy reported. Carotid and jugular vessels and parotid and submandibular salivary glands were normal; FNAC confirmed multinodular goiter with benign etiology.

Patient was subjected to anesthesia for thyroidectomy with high risk and informed consent. IV line was secured, ECG, NIBP, S_pO_2 were attached and patient was premedicated with IV glycopyrrolate 0.2 mg, ondansetron 4 mg. Preparation of airway for planned

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awake fiber optic intubation included nebulization with 2ml of 2% xylocard in 2 ml of saline for 20 minutes followed by gargles with lignocaine viscous; patty soaked in oxymetazoline nasal preparation was secured in the nostrils. Posterior pharyngeal wall was sprayed with 10 % lignocaine and fiber optic bronchoscopy attempted via nasal route with pre-loaded no. 7 Portex cuffed lubricated endotracheal tube. Glottis opening could be visualized with difficulty and was deviated to left and obliterated due to overlying prominent false cord from right side. Intubation was followed by IV propofol 150mg, sevoflurane 3-4% inhalation after confirmation of normal $ETCO_2$ value. IV vecuronium, oxygen, nitrous oxide and sevoflurane were used for maintenance of anesthesia. After the surgery was over and the neuromuscular paralysis had worn off patient was reversed with IV neostigmine 2.5 mg and glycopyrrolate 0.4 mg. Before proceeding for extubation, AEC was introduced through endotracheal tube and connected to 100% oxygen source at 4 liter/minute flow rate via Bain's circuit (Figure 2). After confirming adequacy of bag movement with regular rate and depth of respiration, 99- 100%, oxygen saturation, acceptable $ETCO_2$ and absence of adventitious sounds on auscultation, patient was intermittently allowed to breathe room air by actively disconnecting from oxygen source. Patient was extubated confirming no signs of apprehension, shortness of breath, bronchospasm, laryngospasm and normal values of saturation and $ETCO_2$ thus ruling out airway collapse. AEC was removed and she was shifted to recovery room.

Figure 1 Restricted mouth opening, Mallampati grade 3

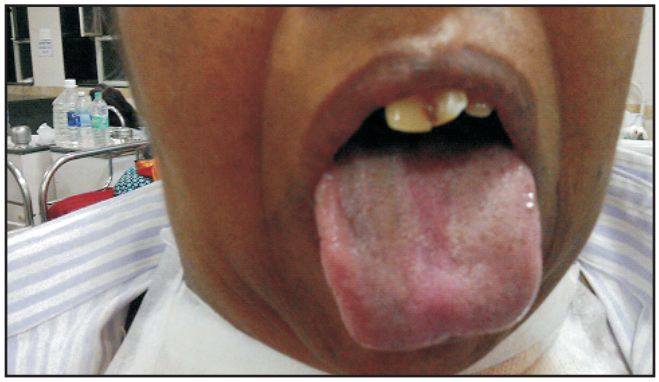
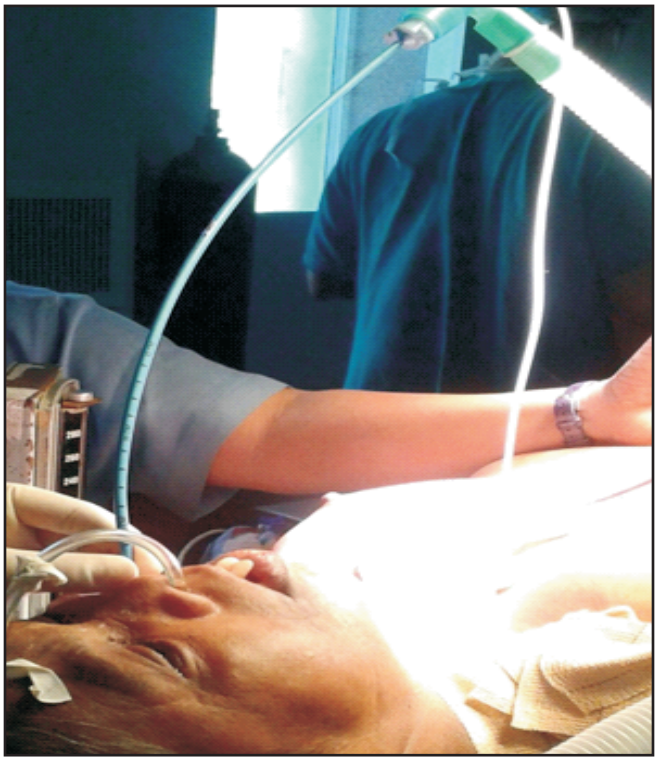


Figure 2 – After extubation, breathing through AEC



Discussion

Every tracheal intubation is logically followed by extubation. However continued control of airway after extubation is the essence of successful airway management. The incidence of airway complications associated with extubation may exceed those occurring during intubation.[2]

Post thyroidectomy patients are always monitored closely during and after extubation anticipating complete airway collapse due to dislocation of laryngeal cartilages during airway instrumentation or tracheomalacia and resulting laryngospasm, laryngeal edema or vocal cord palsy.[1]

Our patient had risk factors viz. high BMI, old age restricted mouth opening, loose bucked teeth, large tongue, large thyroid swelling with retrosternal extension, difficult neck surgery in a diabetic, ischemic heart disease patient with guarded post-operative course.

Avoidance of failed extubation and difficult and possibly life threatening re- intubation was of prime importance. We therefore planned awake extubation with a pre formulated airway management plan using AEC as per

ASA Task Force on difficult airway management recommendation.[3]

The Cook AEC is a narrow semi-rigid catheter with a blunt tip; it resembles a long gum elastic bougie but is hollow with distal side ports. Oxygenation can be maintained by attaching to oxygen source using 15mm or Luer lock connector.[4] Padkin et al have suggested aided intubation using AEC in actively bleeding sub-glottic tumors in stridor.

Prolonged intubation increases morbidity and cost in PACU and ICU. An indwelling AEC use is highly justified to be tried before extubation is attempted. However AEC does not have 100% success rate; 24.6% re-intubation rate has been stated. Timing of removal of AEC has been stated to be subjective therefore cricothyroidotomy, jet ventilation and fiber optic bronchoscopy remains the gold standard. [5]

Conclusion

Thus AEC is a safe, standard and highly non-invasive means of keeping the airway and oxygenation secured in patients where elective life-saving tracheostomy is less feasible.

Conflict of interest -None

References

1. Abderrahmane Bouaggad, Sif Eddine Nejmi, Moulay Ahmed Bouderka and Omar Abbasi. Prediction of difficult tracheal intubation in thyroid surgery. Anesthesia & Analgesia 2004; 99: 603-6.
2. Asai T, Koga K, Vaughan RS. Respiratory complications associated with tracheal intubation and extubation. British Journal of Anesthesia 1998; 80: 767-75.
3. Caplan RA, Benumof JL, Berry FA, Blitt CD, Bode RH, Cheney FW, Connis RT, Guidry OF, Nickinovich DG, Ovassapian A; for the American Society of Anaesthesiologists Task Force on Difficult Airway Management Practice Guidelines for management of difficult airway: an updated report by The American Society of Anaesthesiologists Task Force on Management of Difficult Airway. Anaesthesiology 2003; 98: 1267-77.
4. A. Padkin, A. McIndoe. Use of Airway Exchange Catheter for the patient with the partially obstructed airway. Anaesthesia 2000; 55: 81-88.
5. Mort TC. Continuous Airway Access for the Difficult Extubation: the efficacy of Airway Exchane Catheter. Anesthesia & Analgesia 2007; 105: 1357-62.

CASE REPORT

Febrile Arthropathy Presenting As First Manifestation Of Leprosy

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ABSTRACT

Aim- Leprosy is chronic infectious diseases caused by mycobacterium leprae. Leprosy commonly presents as cutaneous and neurological manifestation but may manifest for first time with fever rash and arthritis.Leprosy may first time seen in lepra reaction type II(Erythema nodosum leprosum ENL)more frequently than type I. We describe the case presented with history of fever and arthritis. After proper history and skillful examination revealed palpable erythematous nodule on extremities and trunk, asymmetrical polyarthritis and thickened painful nerve with history of fever suggestive of type II lepra reaction. Patient responded significantly to steroid and anti-leprosy treatment with complete disappearance of joint and neuritic symptoms.

Key words - Lepra reaction, erythema nodosum leprosum, neuritis

Introduction

Leprosy is a chronic granulomatous infectious disease, large number of people are still affected by this disease in the developing countries .

Cutaneous and neurological manifestations are the common and classical presentations of leprosy. Musculoskeletal involvement is the third most common manifestation but is less frequently reported. Prevalence of 1-5%. Joint involvement can present as acute symmetrical or asymmetrical polyarthritis or chronic polyarthritis or arthropathy resembling rheumatoid arthritis, chikungunia.

The extra cutaneous manifestation includes neuritis, iridocyclitis, orchitis and lymphadenopathy with fever and other constitutional symptoms[(1)]. Patient may present for first time in lepra reaction.

Case Presentation

25 year- old male, farmer by occupation was referred to our institute as case of fever and rash with arthritis. He was apparently well 3months before, started with high grade fever. He developed joint pain and swelling after two month of fever involving proximal interphalangeal joints, metacarpophalangeal joints wrist and elbow joint left more than right. He also noticed erythematous plaque and nodules on extremities and trunk with spontaneous healing with pigmentation. All these symptoms were worsened and he lost 6kg weight over a period of 3months There was no history to suggest upper or lower respiratory tract infection, urinary or gastrointestinal tract infection, oliguria, hematuria, jaundice, dyspnea on exertion, or ear discharge. No h/o recurrent oral ulcer.

His weight was 45kg had mild pallor, highly febrile with pulse 102/minute, BP 110/70 mmHg. He had tenderness, swelling in bilateral supra trochlear region, restricted movement at left 2nd metacarpophalangeal & left wrist joint.(**Figure 1a)** Pain, tenderness also present over small joints of hands,wrist, bilatera lelbow, shoulder, knee and ankle joint. Well-defined multiple erythematous, painful indurated macules over the extremities and trunk suggestive of erythema nodosum**. (Figure 1b)** On careful examination supraorbital, great auricular, B/L Ulnar, Radial cutaneous nerve, lateral popliteal nerveswere palpable & tender suggestive of Grade I neuritis. Rest of the general and the systemic examination was unremarkable.

Investigations revealed hemoglobin 9 g/dl and erythrocyte sedimentation rate of 45 mm. Total WBC count of 12000/cmm N-78%, L-18%, M-1%,E-1% and platelet counts 470000/cmm, liver function tests were normal except globulin more than albumin (3.2/2.8).Urinalysis, renal function tests were normal. RA factor, CRP, HIV were negative. Local ultrasound of arm s/o thickened ulnar nerve & no abscess.

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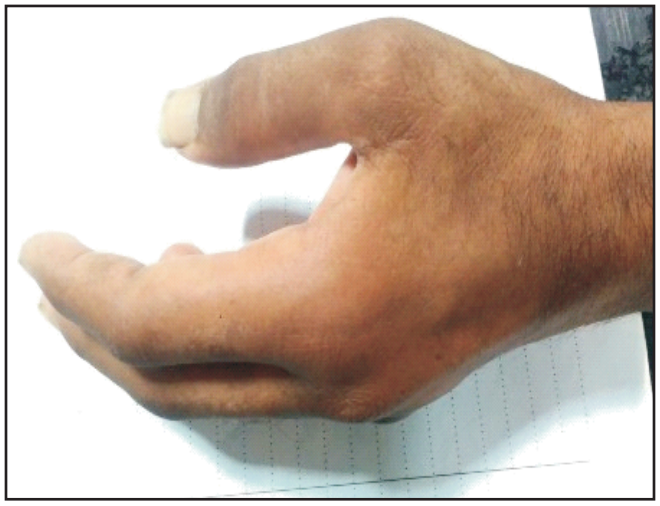
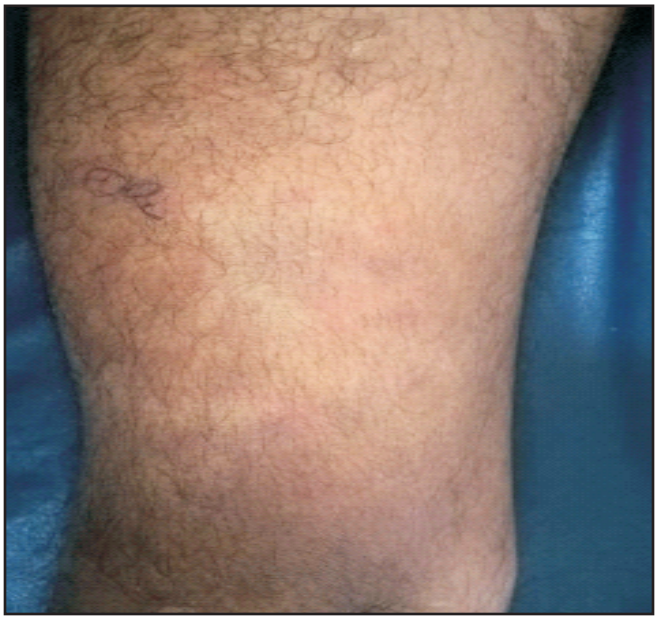
Split skin smear from ear lobes was negative for lepra bacilli and skin biopsy from one the lesions over the right thigh showed epithelioid cell granulomas with foam cells, lymphocytes & bacterial index of 6. Nerve conduction study revealed sensory predominant mononeuritis multiplex.

With clinical scenario and investigation diagnosis of Type II Lepra reaction (Erythema nodosum leprosum) was made with polyarthritis and patient started on Tab prednisolone 40mg OD, tab indometacin 75mg BD, MTD-3, with supportive management. Patient responded drastically to above treatment, his fever subsided & all skin lesion disappeared by 3rd day and joint pain swelling started decreasing & shown improvement in joint mobility within 7 days. Patient was discharged after fifteen days with cure of his fever & normal joint.

Figure 1

1a. Involvement of left 2nd metacarpophalangeal





1b.Multiple Erythema Nodosum on right thigh, biopsy site marked

Discussion

Leprosy is more common in endemic areas. Patient could be seen for first time in lepra reaction with systemic manifestation more than classical leprosy. Most common but rarely reported manifestation of leprosy is musculoskeletal in the form of polyarthritis or arthralgia with prevalence of 2-5%[2]. Exact pathogenesis of joint involvement in leprosy isnot fully understood. Lepra reactions (Types I and II lepra reaction), and direct infiltration of the synovium by mycobacterium leprea are thought to be the underlyingpathogenesis mechanisms for joint involvement[3]. Type 1 Lepra[2,3] reaction is a delayed hypersensitivity reaction. It iscell mediated immune response to M. leprae antigenic determinants and is characterized by acute inflammation of pre-existing skin lesions or by the appearance of new lesions and/or neuritis. Systemic involvement does not occur in type 1 reaction. Type 2 lepra reaction known as Erythema nodosum leprosum (ENL). It results in severe painful skin lesion, nerve damage,fever and systemic manifestation. Systemic involvement can lead to arthritis, dactyltis, orchtitis, uveitis, lymphadenitis, glomerulonephritis, protienuria and hepatitis. It occurs

before, during or after the treatment of leprosy[2,3]. Chauhan et al[4] classified arthritis in leprosy into the following groups: (1) Charcot's arthropathy secondary to peripheral sensory neuropathy;(2) swollen hands and feet syndrome; (3) acute polyarthritis of lepra reaction; and (4) chronic arthritis from direct infiltration of the synovium by lepra bacilli. Proximal inter phalangeal, wrist, elbow, Knee, and ankle are the joints commonly affected and often mimic Rheumatoid arthritsis. it is important to include leprosy in list of possible differential diagnosis of arthritis, in the countries where leprosy is prevalent[5].

Our patient presented with an subacute onset of asymmetrical polyarthritis, erythematous tender nodules or plaques, and high-grade fever. High inflammatory markers such as raised ESR, leukocytosis[6], reversal of A/G ratio and skin biopsy suggestive of lepromatous leprosy are evidence for type2 lepra reaction. He did not have any stigmata of leprosy prior to presentation or chronic skin lesions suggestive of chronic infection with leprosy. Presented first time as arthritis in lepra reaction .After the treatment with steroid and MTD-3patient improved clinically with disappearance of rash and decreased in joint swelling and absence of fever. He has advised to follow up.

Conclusion

Musculoskeletal manifestations are common in leprosy though it is rarely reported. As in our patient chronic fever with arthritis is presenting manifestation in type II lepra reaction. Leprosy can be manifest for first time as type II lepra reaction with systemic involvement than classical leprosy.

Conflict of Interest - None

References

1. Jesu´s, C., Jose´, L.R., Rosario, C., Fe´lix, C., 2007. Erythema NodosumLeprosum: Reactional Leprosy. Semin. Cutan. Med. Surg. 26, 126–130.
2. Graham A, Furlong S, Margoles LM, Owusu K, Franco-Paredes C (2010) Clinicalmanagement of leprosy reactions. Infect Dis ClinPract 18:235–238
3. Bhat RM, Prakash C (2012) Leprosy: an overview of pathophysiology. Interdiscipl Perspect Infect Dis, Volume 2012, Article ID 181089, 6 ages doi:10.1155/2012/181089
4. Wakhlu A, Agarwal V (2010) Arthritis in leprosy by sandeep Chauhan. Rheumatology 49:2237–2242, doi:10.1093/rheumatology/keq264.AdvanceAccess publication 19 August 2010
5. Agarwal V, Singh R, Chauhan S, Sachdev A, Mohan H. Pitting edema with arthritis as the presenting manifestation of type I lepra reaction. J Indian Rheumatol Assoc. 2004;12:123-6
6. Legendre DP, Muzny CA, Edwin S (2012) Hansen's disease (leprosy): current and future. Pharmacotherapy and treatment of disease-related immunologic reactions. Pharmacotherapy 32(1):27–37

CASE REPORT

Imaging Of Vaginal Leiomyoma In Indian Female

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ABSTRACT

The overall incidence of vaginal leiomyomas is fairly limited. Very few cases, less than 300 have been reported till now in literature. Sometimes, like in our present case, the organ of origin for a giant fibroid is difficult to assess on standard Ultrasonography.

On performing a special MRI technique, the lesion turned out to be a vaginal fibroid; thereby emphasizing the role of imaging and special imaging techniques to delineate a tumor and its organ of origin.

Key words - Vagina, Myomas, MRI, Ultrasound, anuria

Introduction

Leiomyomas are usually found along anterior wall of uterus followed by lateral wall and posterior wall. Their presentation varies with size, location and rarely growth of myomas. Common clinical features include lower abdominal discomfort, dyspareunia, urinary pressure symptoms like urgency frequency or with vaginal bleeding. Imaging with the help of Ultrasound and MRI vaginography helps clinch the diagnosis with accurate localization and extension in parametrium. MRI is more helpful in characterization and detection of secondary changes within myomas as compared to ultrasound.

Case Report

We present a young 25 year old unmarried, nulligravida female with complaints of anuria and lower abdominal discomfort. She was completely asymptomatic 2 months back with no significant medical history. Symptoms began with increased frequency of micturition and urgency which later progressively increased in severity with time until she developed complete anuria. Laboratory investigations including hematologic, urinary and routine chemistry tests revealed no significant abnormality. On bimanual examination, there was a large mass in vagina which was painless and firm in consistency.

Ultrasound revealed a large soft tissue lesion in pelvis displacing the uterus anteriorly and causing significant compression of posterior wall of bladder. The lesion was heterogeneous, predominately hypoechoic and showed mildly raised vascularity.(Figure 1)

MRI Vaginogram was performed after attempted distension of vaginal cavity with jelly admixed with gadolinium. There was a large mass arising from left lateral wall of vagina which was seen displacing the pelvic structures superiorly and compressing the bladder. It showed heterogeneous signal intensity, however it was predominately hypointense on T2WI [figure 2], hyperintense on STIR images [figure 3] and hypointense on T1WI [figure 4]. The lesion showed mild heterogeneous post contrast enhancement. It was seen reaching to the left lateral pelvic wall and showing small extra pelvic extension through sciatic foramen. [Figure 4]

Patient was subsequently taken up for surgery and vaginal approach for myomectomy was taken. Mass was excised and send for histopathological correlation. Diagnosis of benign leiomyoma was confirmed on HP report.

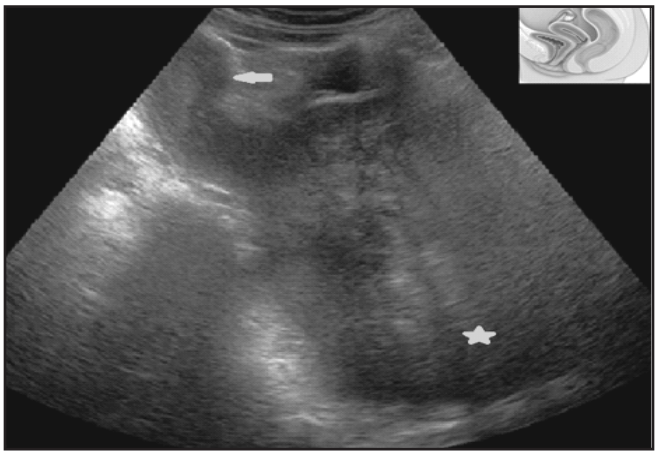

Figure 1 Grey scale ultrasound image showing heterogeneous, predominately hypoechoic mass in pelvis (asterisk). Uterus is seen separately(yellow arrow)

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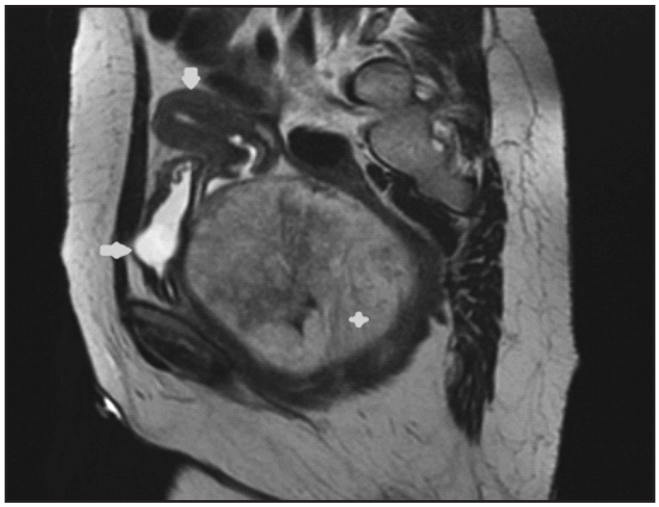

Figure 2 : Sagittal T2 Weighted Image of Pelvis showing a well-defined heterogeneous mass (asterisk) in pelvis below the level of cervix appearing heterogeneous predominately hypo to isointense to muscle. Fat planes with bladder anteriorly (arrow) and sacrum poster

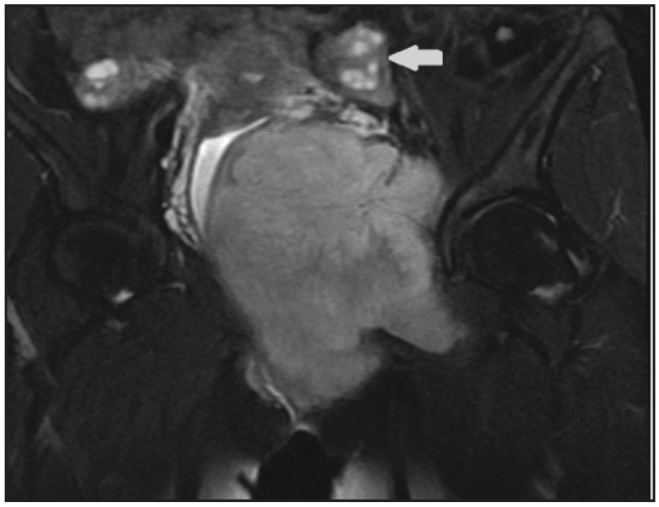

Figure 3 : Coronal Stir Image of pelvis showing heterogeneous, predominately hyperintense mass in pelvis along left lateral wall of vagina. Inferolaterally mass is seen extending outside pelvis through sciatic foramen. Ovaries (arrow) and body of uterus are seen separately

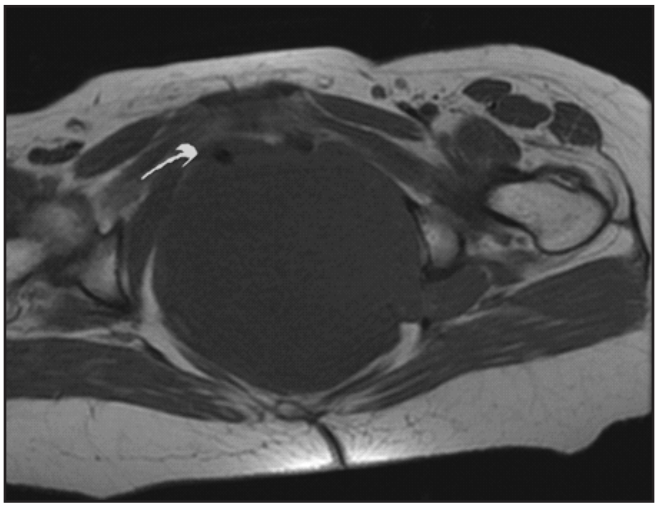

Figure 4 : Axial T 1 weighted image of female pelvis showing hyperintense mass occupying the pelvic cavity. It is seen pushing the urethra

Discussion

Vaginal myomas are common in age group of 35 – 50 years[1]. Leiomyomas are known to occur in the uterus, cervix, and broad ligament and less commonly in round ligament, uterosacral ligament and ovaries. Their occurrence is rare in vagina and along urethra.[2] There are few case reports published in literature describing occurrence of vaginal myomas since it was first described by Denys de leden in 1733.[3] Among the few cases reported, anterior wall of vagina seems to be more commonly involved than lateral and posterior wall of vagina.[4] Usually these tumours are solitary, well circumscribed and solid with mild vascularity within. As the size grows larger, morphology becomes more heterogeneous with changes of necrosis and/or haemorrhages within.

On ultrasound, myomas are usually hypoechoic, with characteristic whorled appearance on grey scale imaging. On colour Doppler, there is increased vascularity. Computed tomography is rarely used for evaluation of myomas as better characterization is possible with Magnetic Resonance Imaging.(Table 1) MRI is a safe modality with advantage of reduced risk of ionizing radiation, better spatial resolution, multiplanar capability and better anatomical localization.[5] On MRI, myomas are isointense to muscle on T1WI, T2WI and appear hyperintense on STIR sequences. Areas of blooming on GRE sequences correspond to

haemorrhagic changes. Contrast study shows mild to moderate enhancement. MRI helps to detect early sarcomatous changes within myomas which appear hyperintense on T2WI with irregular, heterogeneous post contrast enhancement.

Teaching Points:

1. Common sites of Leiomyomas are uterus, cervix, uterosacral ligament, round ligament, ovaries and rarely vagina.

2. Anterior wall of Vagina is a more common site for leiomyoma than lateral and posterior wall.

MRI provides high resolution multiplanar imaging which helps in better delineation and characterization of tumour.(Table 2)

Table I: Demographics

Age	35- 50
Sex	Female
Etiology	Nulliparity, advanced age, high oestrogen state
Common site	Uterus, cervix, uterosacral ligament, ovary and rarely vagina
Common symtoms	Dysmenorrhea, dyspareunia, urinary symptoms, discomfort
Ultrasound	Heterogeneous, hypoechoic, +/- calcification, vascularity+
MRI	T1WI & T2WI Signal intensity similar to muscle, T2 hyperintensity seen in sarcomatous changes, blooming on GRE corresponds to haemorrhage and or calcification

Table II :DIFFERENTIAL DIAGNOSIS VAGINAL MASS

Leiomyoma	Slow growing benign tumour mostly solid appearence with/without calcification, may undergo degenerative changes
Leiomyosarcoma	Malignant sarcomatous changes within myomas, solid with heterogeneous appearance, sarcomatous changes appearing hyperintense on t2wi mri
Lipoleiomyoma	Myoma rich in fat appearing hyperintense on T1 WI
Epidermal inclusion cyst	Thin walled cyst with no internal enhancement , appearing intermediate/hyperintense on t2wi and hypointense/intermediate on t1wi
Urethral myoma	Similar appearance to vaginal myomas confused due to proximity

Disclosures : No conflict of interest from all authors. No disclosures to make from all authors

Consent: Written informed consent from the patient was taken

Acknowledgements: We like to thank the patient for her cooperation.

Conclusion

Ultrasound was helpful in detecting fibroid; however special techniques like MRI vaginogram proved beneficial in better characterizing and localizing the exact position of fibroid.

References

1. Costantini E, Cochetti G, Porena M. Vaginal para-urethral myxoid leiomyoma: case report and review of the literature. Int Urogynecol J Pelvic Floor Dysfunct. England; 2008 Aug;19(8):1183–5.
2. Theodoridis TD, Zepiridis L, Chatzigeorgiou KN, Papanicolaou A, Bontis JN. Vaginal wall fibroid. Arch Gynecol Obstet. Germany; 2008 Sep;278(3):281–2.
3. Young SB, Rose PG, Reuter KL. Vaginal fibromyomata: two cases with preoperative assessment, resection, and reconstruction. Obstet Gynecol. UNITED STATES; 1991 Nov;78(5 Pt 2):972–4.
4. Yogesh K, Amita M, Rajendra K, Raju A, Rekha W, Hemant T. Vaginal leiomyoma developing after hysterectomy - case report and literature review. Aust N Z J Obstet Gynaecol. Australia; 2005 Feb;45(1):96–7.
5. Pavlica P, Bartolone A, Gaudiano C, Barozzi L. Female paraurethral leiomyoma: ultrasonographic and magnetic resonance imaging findings. Acta Radiol. Sweden; 2004 Nov;45(7):796–8.

CASE REPORT

Labial Agglutination and Meatal Stenosis in Labour - A Combined Effort.

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ABSTRACT

Labial fusion is common in infants and prepubertal girls. It is rare in reproductive age females. [1,2,3] We are reporting a case of labial agglutination in a female who presented with full term pregnancy with complaints of pain in abdomen and per vaginum discharge with itching. She gave a history of recurrent per vaginum discharge since 1 year for which she had not received any treatment. In view of fused labia with no obvious introital opening, trial of vaginal delivery was out of question. Due to the distorted anatomy of the introitus a caesarean section was decided upon. An emergency LSCS was done and simultaneously labial adhesiolysis and reconstruction with urethral meatal dilatation was done. Procedure was uneventful.

Key words : Labial agglutination, pregnancy, meatal stenosis, adhesiolysis, labial reconstruction.

Introduction

Labial fusion is common in infants and prepubertal age group, rare in reproductive age females [1, 2, 3]. It is caused due to oestrogen deficiency [2, 3, 4]. Labial agglutination may sometimes be asymptomatic or patients may present with complaints of urinary frequency, dysuria, post void dribbling of urine or recurrent vaginitis [2]. Treatment includes topical application of betamethasone and surgical methods such as adhesiolysis and reconstruction [2,3].

Case Report

A 25 year primigravida, married since 1 year with term pregnancy, registered and immunized at Rural hospital was referred to our tertiary hospital in view of primigravida with narrowed (stenosed) vaginal opening in labour. The labour pains had started since 4 hours and were associated with PV discharge and itching. There was no history of painful micturition, urinary retention, dribbling or incomplete voiding, no difficulty in defecation, no history of fever or any application of irritant (detergents, harsh soaps) to perineal area, any drug intake, surgical intervention or immunocompromised status. There was h/o regular coitus without dysparenuia. She gave history of recurrent PV discharge with itching since 4 months, for which no treatment was taken. During her 3-4 ANC visits at Rural Hospital, local examination was not done and the diagnosis of fused labia was missed. According to ultrasonography done at 31 weeks, she was 36 weeks pregnant with a single live intrauterine gestation with fundo posterior placenta. There was no obstetric problem throughout her antenatal period except for the vulval itching. She was a known case of hemorrhoids since 4 years, for which she had not received any treatment. Past and family history were normal. General and systemic examinations were unremarkable. On per abdominal examination Uterus was 34 weeks size with mild contractions, cephalic presentation with regular fetal heart rate. On local examination vertical labial fusion was present with sticky bloody white discharge. Leucoplakia was seen over the perineum. No obvious vaginal or urethral opening was visualized. A single small opening of approximate 0.5 cm diameter at the introitus was seen through which she was able to pass urine. There was no delineation of the labia majora and minora. Grade IV external hemorrhoids were seen (Figure 1). A per vaginal examination was not possible, so a per rectal examination was done which concluded that the vertex was at station zero approximately. Diagnosis of primigravida with full term pregnancy with IUGR with labial agglutination without any delineation of urethral and vaginal opening in labour was made.

Her bedside investigations, haemoglobin, BT, CT, renal and liver function tests were within normal limits. An

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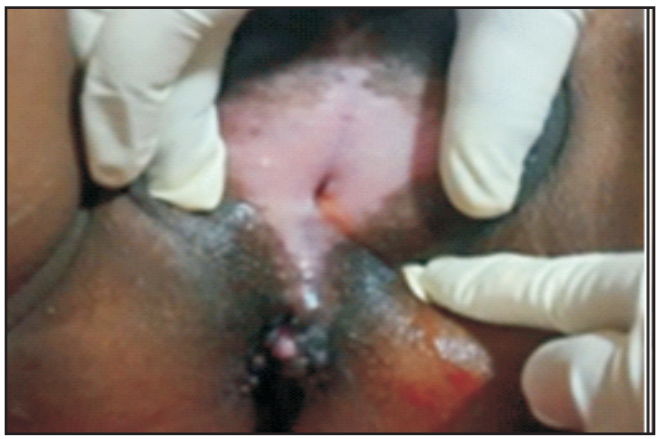
urgent urosurgery reference was done in view of non visualisation of meatal opening and inability to pass the catheter through the opening. Decision of Emergency LSCS was taken in view of primigravida with full term pregnancy with IUGR with labial agglutination in labour and simultaneous labial adhesiolysis was planned. LSCS was done under spinal anesthesia in lithotomy position; a Female child of 2.1Kg was delivered by vertex with good Apgar score. Intraoperatively bladder didn't appear to be advanced. Anticipating the problem of lochiometra (collection of lochia in vagina) and puerperal infection the decision of simultaneous labial adhesiolysis and reconstruction was taken. Labial adhesiolysis with meatal dilatation and catheterization and meatoplasty with Lords anal dilatation done. Under the guidance of probe the pinpoint opening was dilated. As the thickness of the fusion was found to be 0.5-1cm, a vertical incision in downward direction was taken and further manual separation was done. On completion of adhesiolysis the vaginal and urethral opening were seen separately and the visualized vagina and cervix were found to be normal. Probing of the urinary meatus was done with no.1 of dilator. On successful probing no.14 Foleys catheterization was done. On urinary opening everting sutures with 3-0 chromic catgut were taken and meatoplasty was done. Lord's four finger anal dilatation was done for the grade IV hemorrhoids. (Figure 2). Aseptic dressing of wound was done. The procedure was uneventful and post operative period was smooth with good wound healing. The catheter was removed on 8th postoperative day and patient was discharged on 10th postoperative day after suture removal.

Figure 1: Fusion of the labia majora and minora with small opening at the introitus with grade IV haemorrhoids is seen.



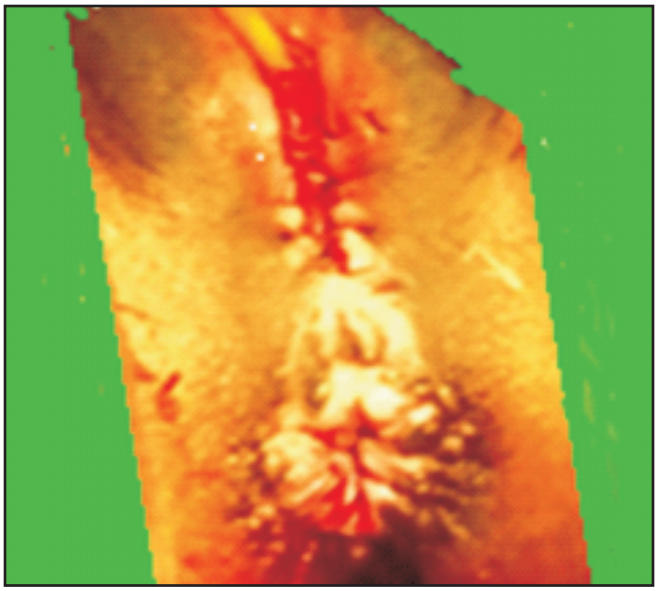


Figure 2: Labial reconstruction done, everting sutures were taken on urinary opening.

Discussion

Labial agglutination also known as labial fusion, labial synechiae, gynatresia, vulvar synechiae [2] describes apposition of labia minora, which may be complete or partial [2]. Labial fusion is common in infants in age group of 13-23 months, incidence is 3.3%[1,3] ; in age group of 3 months-6 years incidence is 0.6-7%[2]. It is more common in prepubertal age group incidence being 1.8% [1, 3] but may occur in post pubertal girls, most common cause being trauma, sexual abuse and infection [3]. It is rare in reproductive age group, rarely seen in ante partum or post partum period; occasionally seen in post menopausal women [3]. It is basically caused due to the estrogen deficiency, so seen in infants and post partum and post menopausal period [3,4]. Relative hypoestrogenic state of immediate postpartum period contributes to formation of labial adhesions [4]. Most presentations are asymptomatic and discovered on examination only. Some patients may present with symptoms of dysuria, urinary frequency, post void dribbling of urine, vaginal discharge due to pooling of urine, itching, difficulty in having intercourse and dysparenuia [2, 3]. It can lead to urinary tract infection, urethral obstruction and urinary retention [2, 3]. Adolescent girls present with haematocolpos following menarche. Diagnosis is based on clinical examination and invasive investigations of genital tract should be avoided [2]. Post partum adhesions occur when the labia have open wounds like unrepaired

lacerations which form tissue bridges during wound healing [4]. Perineal hygiene, periodic cleansing of perineum, sitz bath prevent adhesions [4]. Medical line of management is topical application of estrogen cream for 6 weeks [2]. Manual or surgical separation using EMLA or xylocaine cream can also be done [2, 3, 4]. Recurrence is the most common post operative complication, accounting for 15-40% [2] . Estrogen cream, 0.5% betamethasone or emollients like Vaseline prevent recurrence [2, 5]. Excision plus amniotic membrane grafting is effective for recurrent labial adhesions, especially postpartum [6].

Recommendations

Antenatal women should have a local genital inspection, per speculum and per vaginal examination done at first visit.

Timely multidisciplinary approach is essential.

Aknowledgement

The authors thank study participant for her contribution. This work was supported by Obstetrics and Gynaecology Department and Surgery Department, Byramjee Jeejeebhoy Government Medical College and Sassoon General Hospital, Pune. The authors would like to thank Dr. Ajay Chandanwale, Dean, BJGMC and Dr. P. W. Sambarey Professor and Head of Department, Obstetrics and Gynaecology Department, BJGMC. The authors also thank International Fogarty Program, Fogarty International Centre, NIH grant number 1D43TW009574.

References

1. Naik S, Jaliminche J, Pawar S. Labial Agglutination in Adolescent Girl. J South Asian Feder Obst Gynae. 2016; 8(4):331-332
2. Fleisher GR, Ludwig S. Textbook of Pediatric Emergency Medicine.6th ed.Philadelphia: Lippincott Williams and Wilkins; 2010.
3. Broecker, Jane ED. Imperforate hymen. Paula J, Adams H, editors. The 5-minute Obstetrics and Gynecology Consult. Philadelphia: Lippincott Williams &Wilkins; 2008. 122-123.
4. Sheehusen D, Earwood JS. Postpartum Labial Adhesions. J Am Board Fam Med. 2007; 20(4):408-410.
5. Mayoglou L, Dulabon L,Martin-Alguacil N, Pfaff D,Schober J.Success of Treament Modalities for Labial Fusion. Journal of Pediatric and Adolescent Gynecology. 2009; 22(4):247-250.
6. Lin Y, Hwang J, Huang L, Chou C. Amniotic membrane grafting to treat refractory labial adhesions postpartum. J Reprod Med. 2002; 47(3):235-37.

CASE REPORT

Case Report Of Carcinoma Breast In A Male Patient

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ABSTRACT

Male breast carcinoma is a rare disease. It is etiologically linked to numerous hormonal and genetic conditions, like gynaecomastia. Most common in the sixth decade of life, its most common type is Infiltrating Ductal Carcinoma. We describe to you this case of Carcinoma Breast in a 61yr old male. Metastatic workup was performed. Stage was determined to be IIIB. Lump was managed by Modified Radical Mastectomy with adjuvant Chemo-radiation. Split skin graft was applied over the raw area of excision. The lump was found to be an infiltrating ductal carcinoma. Margins of excision turned out to be negative. A full metastatic workup revealed no metastasis. Pt was declared free of malignancy, and advised regular follow up. Cosmetic results were acceptable. Male breast carcinoma is a rare presentation of a common disease (Carcinoma Breast). It has numerous distinctions from its female counterpart. Surgery is the mainstay of treatment, however a variety of treatment options are available. Prognosis is worse than in females.

KEY WORDS:- Male Breast Carcinoma, Gynaecomastia, Modified Radical Mastectomy, Infiltrating Ductal Carcinoma, Adjuvant Chemo-radiation.

Introduction

Less than 1% of all breast cancers occur in men. The incidence appears to be highest among North Americans and the British, in whom breast cancer constitutes as much as 1.5% of all male cancers. Jewish and African American males have the highest incidence. In a study from India, eight out of 1,200 (0.7%) male cancer diagnoses in a pathology review represented breast cancer. Male breast cancer is preceded by gynecomastia in 20% of men. The probability of gynaecomastia progressing to breast cancer increases in hypoandrogenic states. Male breast carcinoma is associated with radiation exposure, oestrogen therapy, testicular feminizing syndromes, and Klinefelter syndrome (XXY). Chronic alcoholism has been linked to male breast cancer. Breast cancer is rarely seen in young males and has a peak incidence in the sixth decade of life. With the relative infrequency of male breast cancer, randomized studies are lacking.

Case Report

61-years-old male patient presented in our OPD in a Tertiary Care Hospital with chief complaints of ulcerative lesion over the left breast since 2 months. Pt had history of a lump in the breast preceding the ulcer since 1 year. There was history of weight loss and loss of appetite. There was no history of similar lump in the other breast. Family history was not significant. Pt had a history of TIA with Left sided Hemiparesis 8years ago.

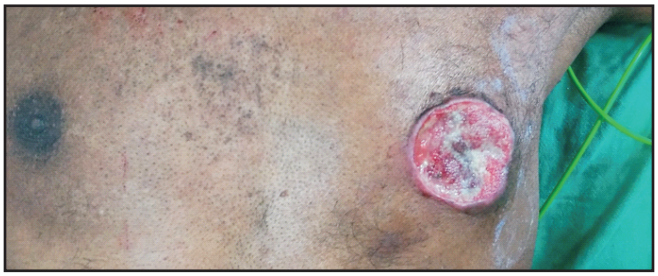

Fig 1 : Preoperative photograph of the lesion

On examination, the patient had average built and nutrition. There was pallor. External Genitalia were found to be normal. There was no tenderness/ pathological fractures, osteolytic lesions in the spine, skull, ribs, and long bones. Xray chest was normal. Per-rectal examination did not reveal any abnormality. The patient was found to be hypertensive, on treatment with anti-hypertensive medications, with a cardiac murmur. Other systems were found to be normal. Pt had an ulcer (Figure 1) 5x5cm large over the left breast. It had an irregular margin, with a floor composed of necrotic material, bleeding easily on touch, with a base formed by an underlying lump of 6x6cm. The lump was hard in consistency, with an irregular surface. It was fixed to underlying muscle but not chest wall. The nipple-areola complex was completely destroyed by the ulcer. Surrounding skin was normal. There was a single hard mobile lymph node of size 2x2cm in the left central axillary group. Edge biopsy of the ulcer and FNAC of

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Axillary Lymph node indicated presence of malignancy. The patient was evaluated for systemic spread of tumour, but no evidence of the same was found. The clinical stage of the disease was determined to be T_{4b} N_1 M_0 = STAGE IIIB.

The patient was thoroughly evaluated for Anaesthesia fitness. Necessary therapeutic measures advised by the Physician and the Cardiologist were instituted. The patient was optimised for surgery. After explaining the risk of surgery, and obtaining necessary written informed consent, the patient was taken up for Modified Radical Mastectomy with Axillary Dissection. Under General Anaesthesia, the patient was placed in the supine position, with the left arm abducted to 100˚. An oblique Orr incision was used, extending upto the anterior axillary line. Skin flaps were raised upto the midline, clavicle, latissimus dorsi and origin of external oblique muscle. The breast was raised off the pectoralis major, alongwith some part of the muscle where it was found adherent to the tumour. The pectoralis minor was retracted to facilitate dissection of level I, II, III lymph nodes. The axillary dissection was carried out between the axillary vein, and the long thoracic and thoracodorsal neurovascular bundles. (Fig 2)

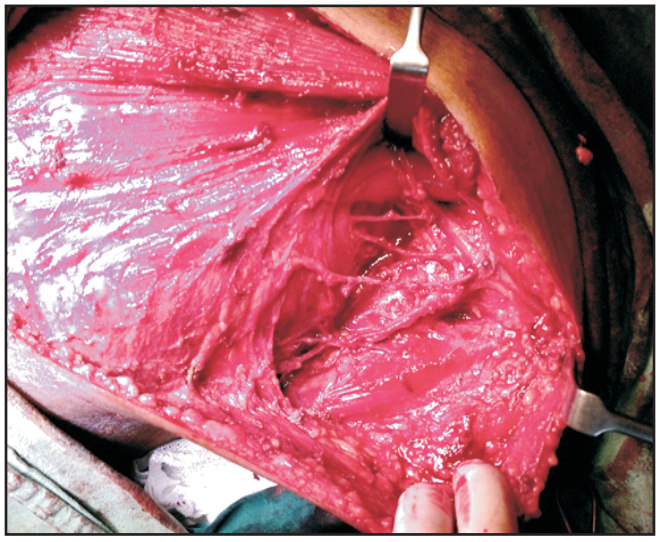

Fig 2 : After Completion of Axillary dissection

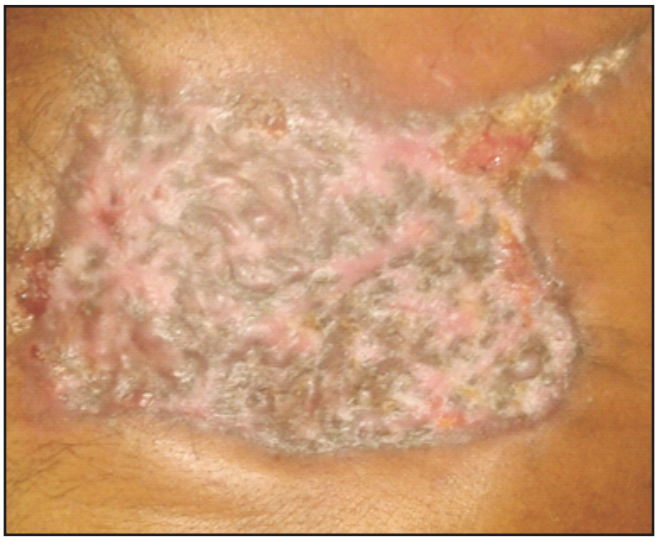

Fig 3 : Appearance at first post-op visit

Meticulous haemostasis was achieved. The wound was irrigated with 200ml of distilled water. A drain was placed in the axilla. The skin margins were approximated as far as possible avoiding undue tension, and fixed to the underlying muscle with absorbable sutures. The raw area was covered with a meshed split skin graft harvested from the thigh. Sterile dressing was applied. The patient tolerated the procedure well. On gross examination, a circumscribed tumour was seen, infiltrating the skin, but 1.5cm from posterior margin of specimen. 12 lymph nodes were identified in the fibrofatty tissue specimen of axillary dissection. Microscopy showed an Infiltrating Ductal Carcinoma Grade I, with 3/12 lymph nodes showing metastasis, with perinodal spread. All margins were free of tumour. On IHC, the tumour was found to be ER+ PR+ HER2 - . The patient had an uneventful course post-operatively. He received early extensive physiotherapy for mobilisation of the arm. The axillary drain was removed on post-op day 7. The patient was discharged on day 10 after ensuring adequate graft healing. The patient was called for follow up after two weeks,(Figure 3) and after consultation with an oncologist, the patient was administered adjuvant chemotherapy (consisting of 6 cycles of 5 - Fluorouracil, Adriamycin, Cyclophosphamide; 3 weekly) followed by adjuvant radiotherapy.

Discussion

There are significant differences between male and female breast cancer. Lesions are easier to find in males

due to the smaller breast size; however, lack of awareness may postpone seeking medical attention. The presence of gynecomastia may mask the condition. The diagnosis is made later in males—at age 67 on average—than in females with their average at 63. Lesions are less contained in males as they do not have to travel far to infiltrate skin, nipple, or muscle tissue. Thus, lesions in males tend to be more advanced. Almost half of male breast cancer patients are stage III or IV. Male breasts lack terminal ductal lobular units, thus lobular carcinoma is extremely rare except in cases of oestrogen exposure. In familial cases, male BRCA2 carriers are at higher risk, rather than BRCA1 carriers. Male breast cancer is 3 times less likely to be HER2 positive. Mammography is highly sensitive and specific for breast cancer in men, but it should be used to complement the clinical examination. MRI is generally not indicated in the workup for male breast cancer unless there is concern for chest wall invasion. The treatment of male breast cancer is surgical, with the most common procedure being a modified radical mastectomy. SLN dissection has been shown to be feasible and accurate for nodal assessment in men presenting with a clinically node-negative axilla. Adjuvant radiation therapy is appropriate in cases in which there is a high risk for local-regional recurrence. Approximately 80% of male breast cancers are hormone receptor positive, and adjuvant tamoxifen is considered. Hormonal treatment may be associated with hot flashes and impotence. Hormonal options include:

- Orchiectomy
- Tamoxifen for oestrogen receptor–positive patients.
- Aromatase inhibitors.

Systemic chemotherapy is considered for men with hormone receptor-negative cancers and for men with large primary tumours, multiple positive nodes, and locally advanced disease. Chemotherapeutic options include:

- Cyclophosphamide plus methotrexate plus fluorouracil (CMF).
- Cyclophosphamide plus doxorubicin plus fluorouracil (CAF).
- Trastuzumab (monoclonal antibody therapy).

Male breast cancer is staged in the same way as female breast cancer, and stage by stage, men with breast cancer have the same survival rate as women. Overall, men do worse because of the more advanced stage of their cancer (stage II, III or IV) at the time of diagnosis. Prognostically favourable are smaller tumour size and absence or paucity of local lymph node involvement.

Conclusion

Male breast carcinoma is a rare disease. Risk factors are similar to that in females. Presentation of disease is somewhat late. It generally mirrors female breast carcinoma as regards pathology, tumour behaviour and prognosis. Surgery is the most common choice of treatment, although other modalities such as chemotherapy, radiotherapy, endocrine therapy, and monoclonal antibodies are available. Surgical therapy produces good results in spite of locally advanced disease. Optimal treatment is currently not known. It is a subject that warrants much further research.

Conflict of interest : none

References

1. Korde LA, Zujewski JA, Kamin L, Giordano S, Domchek S, Anderson WF, et al. Multidisciplinary meeting on male breast cancer: summary and research recommendations. J Clin Oncol [Internet]. 2010 Apr 20 [cited 2016 Oct 12];28(12):2114–22. Available from: http://www.ncbi.nlm.nih.gov/pubmed/20308661
2. Giordano SH, Buzdar AU, Hortobagyi GN. Breast cancer in men. Ann Intern Med. 2002;137(8):678–87.
3. Kalyani R, Das S, Bindra Singh MS, Kumar H. Cancer profile in the Department of Pathology of Sri Devaraj Urs Medical College, Kolar: a ten years study. Indian J Cancer [Internet]. [cited 2016 Oct 12];47(2):160–5. Available from: http://www.ncbi.nlm.nih.gov/pubmed/20448380
4. Hultborn R, Hanson C, Köpf I, Verbiené I, Warnhammar E, Weimarck A. Prevalence of Klinefelter's syndrome in male breast cancer patients. Anticancer Res [Internet]. [cited 2016 Oct 12];17(6D):4293–7. Available from: http://www.ncbi.nlm.nih.gov/pubmed/9494523
5. Gómez-Raposo C, Zambrana Tévar F, Sereno Moyano M, López Gómez M, Casado E. Male breast cancer. Cancer Treat Rev [Internet]. 2010 Oct [cited 2016 Oct 12];36(6):451–7. Available from: http://www.ncbi.nlm.nih.gov/pubmed/20193984
6. Breast Cancer in Men. Am Cancer Soc Cancer Facts Fig. 2016;
7. Johansen Taber KA, Morisy LR, Osbahr AJ, Dickinson

BD. Male breast cancer: risk factors, diagnosis, and management (Review). Oncol Rep [Internet]. 2010 Nov [cited 2016 Nov 2];24(5):1115–20. Available from: http://www.ncbi.nlm.nih.gov/pubmed/20878100

8. Ottini L, Palli D, Rizzo S, Federico M, Bazan V, Russo A. Male breast cancer. Crit Rev Oncol Hematol [Internet]. 2010 Feb [cited 2016 Oct 12];73(2):141–55. Available from: http://www.ncbi.nlm.nih.gov/pubmed/19427229

9. Patterson SK, Helvie MA, Aziz K, Nees A V. Outcome of Men Presenting with Clinical Breast Problems: The Role of Mammography and Ultrasound. Breast J [Internet]. 2006 Sep [cited 2016 Nov 2];12(5):418–23. Available from: http://doi.wiley.com/10.1111/j.1075-122X.2006.00298.x

The Research Society

B. J. Medical College And Sassoon General Hospitals, Pune - 411 001

ANNUAL REPORT

(April 2015 To March 2016)

Dear Life Members,

I. GOVERNING COUNCIL:

The office-bearers of the current Governing Council (2015-2016) were :

President	Dr. A.L. Kakrani
Vice-President	Dr. K.V. Kelkar
Hon. Secretary	Dr. P.M. Bhalerao
Hon. Joint secretary	Dr. Amol Shinde
Hon. Treasurer	Dr. Sarfaraj Pathan

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Dr. S.A. Sangle

Dr. Medha Khandekar

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Dr. Anita Basavraj

Dr. Savita Kamble

Dr. Sangeeta Gawali

Medical Journal Of Western India:

Volume 44, 1st feb 2016, issue I was released on the occasion of inauguration of annual conference of Research society of B.J.Medical College and Sassoon General Hospitals, Pune. There was an editorial on, "Lets take pride in caring : Organ Donation", by Dr Rohini Jagtap, 3 Review articles, 3 original articles, 1 short communications, 3 case series and 6 case reports were published.

Volume 44, issue 2 was released in December 2017.In this issue there was an editorial on,"Violence against doctors" by Dr.Sneha Sathe. Besides 3 review articles, 5 original articles and 9 case reports were published.

CMEs conducted :

1. Department of Ophthalmology : Oncology in ophthalmology
2. Department of Medicine : Geriatric medicine

Annual Conference :

1) The 42nd Annual Conference of Research Society BJMC and SGH, Pune was held on 24th ,25th ,26th Feb 2016. It was organized by Department of Obstetrics and Gynaecology under able guidance of Dr Pradeep Sambhrey. It was attended by delegates,staff and students. The event was inaugurated by Dr Ganeshan, Director of ISER and Mr Sutar , Executive editor of Sakal.

2) The annual conference was attended by 1200 delegates

3) Total number of oral paper were 71; 37 posters and 18 interesting cases were presented

4) Dr B.B.Dixit Oration was by Dr Satish Patki on Miracles of stem cells in endometrium.

5) Oral paper and poster presentation was done on day 1 of conference

   Day 2 :- Dr B.B. Dixit Oration was followed by five guest lecturers

   Day 3 :- There 4 guest lectures followed by panel discussion on sexual dysfunctions; medicolegal aspects; organ donation.

5. Prizes won :

1) Suchitan trophy :- Best paper of conference

Winner :- Dr Nikita Deshmukh. Dept Of Skin and VD

2) Sphurti Trophy :- Best paper in Anaesthesia

Winner :- Dr Pallavi Sharma

3) Harshvardhan Prize :- Best paper in UG &PG Category

Winner :- Surabhi Pujari

4) Dr A. R. Bhadkamkar Award:- Best Paper in Anatomy

Winner :- Dr Deepali Kate

5) Dr Mrs V. A. Bhadkamkar Award :-Best paper in Pharmacology

Winner :- Dr Mahendra Gaikwad

6) Dr Jejurikar Award :- Best Paper in Surgery

Winner :- Dr Mishra S.

7) Dr S. J. Kinnikar Award :- Best paper in medicine by PG student

Winner :- Dr Chetankumar Bhandarkar

8) Dr Ajit Gokhale Prize :- Best Poster of Conference

Winner :- Dr Vishal Kalale, Dept Of Gynaecology

9) Dr D. J. Patil Award :- Best Oral Paper in Interesting Cases.

Winner :- Dr Sharvari Jagdale. Dept Of Anaesthesi

10) Dr M. B. Gharpure Award :- Best oral paper in Dermatology

Winner :- Dr Nikita Deskmukh

11) Dr K.P.Niphadkar prize.:- best paper in immunology, pathology Microbiology by PG

Winner :- Dr Vaidya Mihir

12) Dr Roentgen Teacher Trophy :- Best paper in Radiology

Winner :- Dr Parida Bakshi

13) Best oral paper in PG Category:- 1st prize

Winner :- Dr Mariyam Ahmed, Dept Of Gyanecology

14) Best oral paper in PG category :- 2nd prize

Winner :- Dr Chaitanya Ramteke, Dept Of Plastic Surgery

15) Best oral paper in PG category :- 3rd prize

Winner :- Dr Namrata Bhuta, Dept Of Ophthalmology

16) Best oral paper Lecturer Category (<5yrs) 1st prize

Winner :- Dr Sonali kankhere, Dept Of Anatomy

17) Best oral paper Lecturer Category(>5 yrs) 2nd prize

Winner :- Dr Sonali Lomte, Dept of Ophthalmology, KEM, Pune.

18) Best oral paper in AP Category :-

Winner :- Dr Chaya Valvi, Dept Of Paediatrics

19) Best Poster in AP Category :-

Winner :- Dr Hasina Inamdar, Dept of Pharmacology

20) Interesting Case Presentation:- 2nd Prize

Winner :- Dr Disha Parikh, Dept Of Skin

21) Interesting Case Presentation :- 3rd prize

Winner:- Dr Pallavi Sharma, Dept of Anaesthesiology

22) Best Poster Postgraduate category:- 2nd Prize

Winner :- Dr Gurunath Birajdar, DY Patil Medical College, Pune.

23) Best Poster Postgraduate Category :- 3rd Prize

Winner :- Dr Garg P. Dept Of Paediatrics

24) 1970 batch UG oral Paper 1st prize

Winner :- Surabhi Pujari

25) 1970 batch UG oral paper 2nd prize

Winner :- Ketki Parasnis

Life Members :- 15 new members were added

6. List of new Life members

Dr. Kuvar Ravi Sajan

Dr. Umarji Pramod Chinmay

Dr. Agarkhedkar Sharda

Dr. Vinyanand Tanny.

Dr. Hadate Abhijit Ashok

Dr. Gosavi Prakash Anil

Dr. Naresh Dilip Munot

Dr. Zanjad Naresh Prabhakarrao

Dr. Bhitkar Harshal Narendra

Dr. Thorat Santosh Dashrat

Dr. Nalawade Niraj Manohar

7. Auditors

Deekay and Company Pune was continued as auditor for this period.

ACKNOWLEDGMENTS

The honorary secretary is thankful to the members of the governing council, past office bearers, Editor-in-chief, and the members of the organising comittee of the annual conference for their valuable help in fullfilling the objectives of the trust.

Hon. Secretary

Research Society

B.J.M.C. & S.G.Hs, Pune 411 001.

Medical Journal of Western India

Instructions To The Contributors

Medical Journal of Western India is a peer reviewed indexed with Index copernicus. It is published biannually. It accepts original articles, review articles related to the different disciplines, case reports and short communications in the field of clinical practice and medical education. Case reports of only unique and rare character are accepted. Papers are published in English. Submitted papers are accepted after peer review. To achieve wider dissemination of knowledge and information, the published articles can be accessed online at www.bjmcpune.org/medicine.htm.

Submission of manuscript : Authors should submit electronic version (Microsoft word doc) of the manuscript to the editor via e-mail on medicaljournalofbjmc@gmail.com. Manuscripts should be in Times New Roman with font size of 12 points along with two hard copies. These articles should contain a covering letter, title page and abstract with key words. They should be written under appropriate sub-headings.

1. Undertaking : The manuscript must be submitted with a statement, signed by all the authors, regarding the originality and authorship. For original article a copy of ethics committee approval should be submitted.

2. Covering Letter : It should include name, address, contact details including e-mails and mobile number of the corresponding author.

3. Title page : It should include the title and the names of authors. Surname of authors are to be followed by initials and affiliations. **Title** should be informative, specific and short. The number of authors should not exceed 2 for review article 4 for case report and 6 for original article.

4. Main article : The main article should be drafted as a single microsoft word document elaborating following headings.

a) Abstract and key words : Abstract should not exceed 250 words for original articles and 150 words for case report.

For original article, the abstract must be in a structured form (Objectives, Methods, Results and Conclusion) and explain briefly what was intended, done, observed and concluded. Case report should have sections as: Abstract, Introduction, Case Presentation and Discussion.

b) Key words : Should not exceed 5- 6 words.

c) Manuscript : Manuscript should be typewritten, with wide margin on an A-4 size paper. It should be of 3000-4000 words for review article, 1500 to 2000 for original article and 750 to 1000 for case report.

d) Tables/Figures / Graphs.

i) The tables should appear in the text itself and should be numbered in Roman numbers (Table. I, II etc.)

ii) Should be limited to the essential (preferably not exceeding four).

iii) For figures: should be referred to as figures and numbered in Arabic numerals (E.g. Figure 1, 2)

e) Photographs:

i) The photographs should be of high definition type with legends. Maximum 4 photographs for original article,2 for case report.

ii) Coloured photographs will be charged extra as per the applicable rates (To be paid by D.D or Cheque to the Treasurer, Research Society, BJMC Pune).

f) Acknowledgment : Acknowledge only those who have contributed to the scientific content or provided technical support. Sources of financial support if any, should be reported. Conflict of interest should be mentioned.

g) References:

i) The list of references should be in the Vancouver style.

ii) References should be cited in the text in Arabic numbers. E.g Our observations are similar to those of Dowling et al.1.

iii) Maximum number of references: for review articles-40, original articles-20, case reports-06, short communications- 10

Note : 1.Accuracy of the references cited is the sole responsibility of the author/authors.

2. Views expressed by the authors do not necessarily reflect those of the Research society.