

Mountebank pill pushers & cosmetic marketeers.

One's patience is snapped viewing the TV Ads about pills (especially from alternative medicine), cosmetic and food products. These shark marketeers feed sloppy and half truth medical facts conveying clever disinformation in favour of their products to the lay viewers to boost the sale of their products.

Advertisements relating to the claims of particular toothpaste preventing dental decay and making teeth stronger, pill curing osteoarthritis, creams making complexion fairer day by day or adding proteins to the shampoo putatively preventing hair fall and making hair strong, all claims are tall and unrealistic. The advertisers always use sciencey words from medical background which convinces the lay viewers about the truthfulness about the advertisers claim.

Nobody has conducted randomized controlled trials to verify facts that a particular pill cures osteoarthritis. We all know it a degenerative disorder and symptoms could improve but it can not be cured. No cream can make a person fairer and fairer. Adding protein to the shampoo has not been proved beneficial in patients. Adding pomegranate and peaches in the facial creams is unlikely to bring great glow to aging skin. However, it is an established fact that eating fruits (peaches or pomegranate) give a healthy glow on skin. The customer is fleeced by paying hefty price (thousands of rupees) for these cosmetics.

It is time that the medical associations come to the rescue of the exploited lay viewers.

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Audit of Surgery For Acute Appendicitis in National Medical College and Teaching Hospital, Birgunj

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ABSTRACT

Background: Acute appendicitis is one of the most common surgical emergencies in the world. The purpose of this study is to know clinical profile and outcome of surgery in patients with acute appendicitis. **Materials and methods:** This retrospective study was done in National Medical college and Teaching Hospital, Birgunj, Nepal from 2013 April to 2016 April. A total of 184 patients with suspected appendicitis who underwent surgery were included in the study. Patient's demographics, clinical features, white blood cell count, operative findings, histology report and outcome of surgery were recorded on patient's proforma. **Results:** Among 184 patients, 115 were males (62.5%) and 69 were females (37.5%). The majority of our patients were in the 2nd decade (36.4%) followed by 3rd decade (33.2%) with only 41.3% presenting within 24 hours of onset of symptoms. The most common symptoms were abdominal pain (100%), vomiting (68.5%), fever (37.5%) and history of migration of pain was present in 60.9%. Localized and generalized abdominal tenderness were present in 91.8% and 8.2% respectively. The most common incisions were gridiron (64.1%) and Lanz (27.2%). The negative appendicectomy rate was 9.2%. Acute appendiceal inflammation and gangrenous appendicitis was present in 69% and 4.9% respectively. The perforation rate was 16.8%. Post operative complications included surgical site infection (12.6%), complete wound dehiscence (1.1%) and chest infection (1.6%). The median length of hospital stay was 8 days. There was no mortality. **Conclusion:** Acute appendicitis is more commonly seen in young adults. Majority of patients present late in hospital. This delay presentation increases morbidity and treatment cost.

Key words: Appendicitis, appendectomy, audit, NMCTH

INTRODUCTION

Acute appendicitis is one of the most common surgical emergencies and is the commonest cause of abdominal pain requiring hospital admission.¹ Appendicitis can occur in any age group but is common in childhood and early adult life. Early diagnosis and prompt operative treatment is required to prevent serious complications. This retrospective study was carried out with the objective to know the clinical presentation, pathological features and outcome of surgery.

MATERIALS AND METHODS

This study was conducted in National Medical College and Teaching Hospital, Birgunj during 3 years period from 2013 April to 2016 April and case records of patients who underwent surgery for suspected appendicitis were analyzed retrospectively. Patient demographics, clinical features, white blood cell count, type of incision, operative findings,

histological findings, postoperative complications were recorded on proforma. Appendicectomy was indicated when there was high suspicion of acute appendicitis based on symptoms and signs. White blood cell count (WBC) was used as complimentary findings, ultrasound scan was performed when clinical features were equivocal.

All specimens were examined routinely for morphology and sent for histopathological examination for final diagnosis. Negative appendicectomy is one which is performed for diagnosis of acute appendicitis but on histopathological examination, appendix is found to be normal. Patients treated conservatively or surgically after failed initial conservative treatment were excluded from the study and those who had elective appendicectomy (whether or not part of another operation) also excluded. The white blood cell count was considered positive when it was equal or greater than 10×10^9 per litre.

RESULTS

Demographics

A total 184 patients underwent emergency appendicectomy during the study period. Out of 184 cases, there were 115 (62.5%) males and 69(37.5%) females. The most commonly affected age group was 11-20 years (36.4%) followed by 21 -30 years(33.2%; Figure 1). The youngest patient was 4 years old and the oldest patient was 79 years old. The median age of patient was 23 years.

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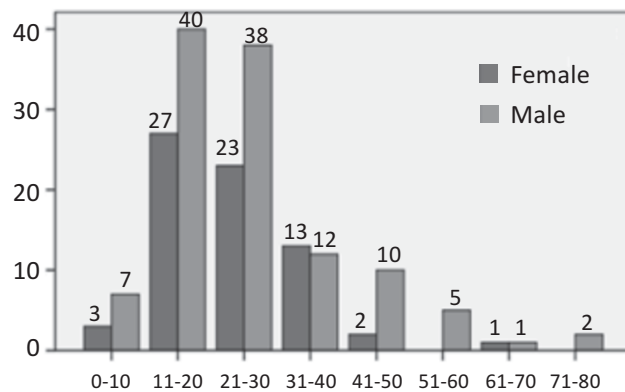


Figure 1: Age and gender distribution of patients with acute appendicitis

Clinical features

Symptoms

The most common complaints were abdominal pain (100%), vomiting (68.5%), and fever (37.5%; Table 1). Anorexia was present in 13.1% and 4.3% patients had loose motions. History of migration of pain was present in 60.9% and 41.3% patients presented within 24 hours of onset of symptoms.

Signs

Localised and generalised abdomen tenderness was present in 91.8% and 8.2% patients respectively. Rebound tenderness was present in 72.8%. Raised WBC ($\geq 10 \times 10^9$ per litre) level was noted in 65.2% of patients.

Median age (years)	23
Sex ratio (M:F)	115:69
Symptoms	
Abdominal pain	184(100)
Migratory pain	112(60.9)
Vomiting	126(68.5)
Fever	69(37.5)
Nausea	26(14.1)
Anorexia	24(13.1)
Loose stool	8(4.3)
Dysuria	5(2.7)
Signs	
Localized tenderness	169(91.8)
Generalized tenderness	15(8.2)
Rebound tenderness	134(72.8)
Presentation within 24 hrs of symptoms	76(41.3)
Values in bracket are percentages	

Table I: Demographic and clinical feature of patients with acute appendicitis

Operative findings

At surgery, uncomplicated appendicitis was found in 70.1% of patients and 20.7% of the patients were found to have complicated appendicitis (Table 2) and the normal appendices were present in 8.2%. Of grossly normal appendices, another underlying pathology was found in 4(2.2%) patients and out of 4 patients, 3 were females (2 had bleeding from ovary and 1 had inflamed ovary) and 1 male patient with inflamed terminal ileum. Perforation was present in 15.8% of patients – male 8.7% and female 7.1%. The most common incisions were gridiron incision (64.1%) and Lanz incision (27.2%). Other incisions were Rt. Paramedian (4.9%) and lower midline (3.3%). Laparoscopic appendicectomy was done in 1 patient. Primary skin closure was done in 167 (90.8%) and delayed primary skin closure was done in 17(9.2%) patients.

Total	n=184
Appendicectomy	
Open	183(99.45)
Laparoscopy	1(0.54)
Open surgery	
Grid-iron incision	118(64.1)
Lanz incision	50(27.2)
Rt paramedian incision	9(4.9)
Lower midline incision	6(3.3)
Intraoperative findings	
Uncomplicated appendicitis	129(70.1)
Complicated (gangrenous or perforation) appendicitis	38(20.7)
Grossly normal appendix	15(8.2)
Without other pathology	11(6.0)
With other pathology	4(2.2)
Faecolith	2(1.1)
Skin closure	
Primary	167(90.8)
Delayed primary	17(9.2)
Histological findings	
Acute appendicitis	127(69.0)
Perforation	31(16.8)
Gangrenous	9(4.9)
Normal appendix	17(9.2)
Rt- Right; values in brackets are percentages	

Table II: Operative data for patients undergoing appendicectomy for acute appendicitis

Histological findings

Acute appendicitis was seen in 69% of patients and the negative appendicectomy rate was 9.2%- 6.5% in females and 2.7% in males. The perforation rate was 16.8% - 8.7% in males and 7.1% in females. 14.7% perforation was found in patient who presented after 24 hrs. of symptoms.

Morbidity and mortality

Most common complication was surgical site infection (SSI). Out of 167 patients, 21(12.6%) patients developed surgical site infection. Out of 21, superficial SSI was seen in 17(10.2%) and 4(2.4%) patients developed deep SSI. Of the 15(8.2%) patients who were complicated by diffuse peritonitis, 2(1.1%) developed complete wound dehiscence and 3(1.6%) patients developed chest infection. There was no mortality.

DISCUSSION

In this study, acute appendicitis occurred most commonly during 2nd decade of life accounting for 36.4% followed by 3rd decade of life (33.2%) which is comparable with reports^{2,3}. There was male predominance (M:F,1.7:1) comparable to other reports^{2,4,5}. Study done by C. C. van Rossem et al⁶ revealed slightly female predominance (M:F, 0.9:1). Only 41.3% patients presented within 24 hours of onset of symptoms and this trend is common in other reports^{2,7}. The most common symptoms in our patients were abdominal pain (100%), vomiting (68.5%) and fever (37.5%) similar to series.² The classical presentation (migratory pain) was present in 60.9% of patients but in study by Madiba TE et al⁸ revealed that only 16% of patients had classical presentation. The most common surgical incision was gridiron (64.1%) which is comparable to report⁶. In that study, 96.5% patients had gridiron incision. The type of incision is mainly depends upon the surgeon's choice. In our study, laparotomy was done in 8.2% of the patients, comparable to report from UK⁹ but in the study done by I Chamisa² revealed that 47.2% patients had lower midline incision which probably reflects high rate of delayed presentation with complicated appendicitis.

In this series, the negative appendectomy rate was 9.2% comparable to series⁸. Negative appendectomy rate was found higher in females as compared to series². The study⁶ revealed low rate of normal appendectomy and in that study, they had used imaging modality almost in every patient to diagnose acute appendicitis and histologically normal appendix was found in 2.2%. Studies^{10,11} have shown the effectiveness of imaging techniques in reducing normal appendectomy rate. Reports^{2,5} have shown the higher rate of negative appendectomy. In our study, only one patient had laparoscopic appendectomy. The perforation rate on histology was 16.8% and this is comparable to report¹² but higher than the report published in the literature⁶ and in that study, perforation was found in 11.0%. Reports^{2,13} have shown higher rate of perforation. Colson et al¹⁴ proposed that a delay in presentation of >12 hours after onset of symptoms increase perforation rate. In our study, there was direct correlation between perforation and delayed presentation.

Postoperative complications were evaluated in the 1st month of the operation and we had no data on long term follow up. SSI was the most common complication seen in 12.6% of patients comparable to the report¹⁵ and lower than the report². The

median length of the hospital stay was 8 days and this is higher than the report⁶. For the 17 patients who developed Superficial SSI, median length of hospital stay was 10 days and for the 4 patients who developed deep SSI, the median length of hospital stay was 12.5 days.

CONCLUSION

Acute appendicitis can occur in any age group but more commonly seen in young adult. Majority of our patients present late in the hospital which may increase the number of complicated appendicitis, morbidity and treatment cost.

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A Comparative Study of patients, Undergoing Transurethral Resection of Prostate Gland With Or Without Otis Urethrotomy Before Surgery – A Single Institution Experience

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ABSTRACT

Background: Transurethral resection of prostate (TURP) is considered as the gold standard surgical treatment for Benign prostatic Hyperplasia (BPH). Among many post TURP complications, urethral stricture is one of the most dreaded urological complication, which may result in life long misery. The present study aimed to report the outcomes of Otis urethrotomy to prevent urethral stricture before TURP. **Method:** This was a comparative study between two equal groups of 100 patients who met inclusion criteria. Study conducted in the department of surgery, Urology unit, Nepalgunj Medical College from 2014 May to 2016 April. In group A, included all the patients underwent TURP without Otis urethrotomy and in group B, included all patients underwent TURP after doing Otis Urethrotomy. The patients were evaluated for evidence of urethral stricture formation. **Result:** In Group A, 20 patients out of 100(20%) developed urethral stricture whereas in Group B, 8 patients out of 100(8%) developed urethral stricture. The rate of Urethral Stricture in Group A is significantly more than in Group B ($p < 0.05$). **Conclusion:** The incidence of urethral stricture formation can be significantly reduced by doing Otis urethrotomy before TURP than TURP alone.

Key words- TURP, otis urethrotome, urethrotomy, stricture

INTRODUCTION

TURP is considered as the gold standard surgical treatment for BPH throughout the world. In the 1986 National Health Survey, 96% of the patients undergoing prostate surgery for BPH had TURP. It was estimated that 350,000 Medicare patients had a TURP that year¹. First TURP was reported in 1932. In 1876, the American Fessenden N. Otis developed a dilating urethrotome with a calibrating device.

An Otis urethrotomy is the blind transurethral incision of the urethra by an Otis urethrotome. After insertion of the Otis urethrotome, the urethra is dilated to the desired width and a blade cuts the stretched urethra at the 12 o'clock position. The Otis urethrotomy is reserved for the palliative treatment of long-segment strictures of the male urethra or to treat proximal narrowing of the female urethra. Otis urethrotomy is also performed before the use of resectoscopes (>26 CH) in a narrow urethra to prevent ischemic damage².

Like other surgeries, it is also not free from complications, such as TURP syndrome, urinary incontinence, bladder perforation, haematuria, septicemia. Urethral stricture is one of the late complication following TURP³. The urethra receives considerable trauma from instrumentation during TURP. In

most cases, the urethra heals without sequels. However, in <10% of patients the urethra heals by forming scar tissue that causes blockage of the lumen. This complication is treated with dilation or transurethral incision to re-establish urethral patency⁴.

This study compares the incidence of urethral stricture formation in patients undergoing TURP with or without using Otis urethrotomy before surgery.

MATERIAL AND METHODS

It is comparative study conducted from May 2014 to April 2016 in the department of surgery, urology unit, in NGMC. The patients, who met inclusion criteria, were divided into two group. Group A consisted the patients who underwent TURP alone and group B consisted those who underwent Otis urethrotomy before TURP.

Inclusion criteria for the present study were as follows:

- I. Patients who have no previous history of catheterization, urethral manipulation or trauma.
- II. Patients who did follow up.
- III. Patients who have no previous history of urethritis.
- IV. Patients with no history of urethral stricture, meatal stenosis or passage of stone from urethra.
- V. Patients with no additional procedure during TURP like per urethral cystolithotripsy or litholapaxy.

All patients were examined with Ultrasonography, x-ray, kidney ureter bladder (KUB), urine for routine, culture and sensitivity, prostate specific antigen. In some performed cystoscopy also. Further the patients were studied for clinical history and clinical examination. Routine laboratory test for operation were done.

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lubricated (with xylocain gelly) Otis urethrotome was introduced inside the urethra with the knife hidden inside the instrument. Instrument inserted up to bulbar part of urethra. After opening the instrument to 25 -28 fr , the cut was made by moving the roof like knife from the resting position and pulling it back at the 12 o clock position before TURP done. 26 fr karl storz TURP sheath with resectoscope and 1.5% glycine used as a continuous irrigating fluid to cut prostate. At the end of procedure 24 fr 3 ways foley's catheter placed with 50 ml. distil water inflated balloon which was kept on traction for 24 hours. Catheter removed after 48 hours, patient discharged on third or fourth post operative day.

All patients were followed up. Patients who complained of lower urinary tract syndrome (LUTS) underwent Ultrasonography (USG), urine test, cystoscopy to confirm urethral stricture formation. All the patients in follow up who diagnosed with urethral stricture were treated with filliform follower urethral dilation and further self calibration.

Statistical analysis:

Data analysis was performed with the program statistical package for social science (SPSS version 17.0) .The qualitative variables were presented as frequency and percentage. For the parametric test of two independent group data, independent t-test was used. A p-value less than 0.05 was considered statistically significant⁵.

RESULT

Total number of patients were 200, one hundred in each group. The age ranged from 62–79. The types and the respective rate of findings in both groups of patient having complain with lower urinary tract syndrome (LUTS) were detected through Ultrasonography (USG), urine test, cystoscopy are shown in the Table -I Furthermore, the common site of ureteral stricture is shown in the Table-II.

DISCUSSION

Enlargement of prostate gland is one of the main cause of bladder outlet obstruction in old age male patient. Due to associating other disease like chest infection and heart disease in this group, operating is so challenging. Since the TURP has developed, the complication has reduced in comparison to open surgery. But still it has also complications . urethral stricture formation is one of the late complication in any prostate surgery but TURP has reduced the incidence but still ranges between 7-9 %^{6,7}. But the routine use of internal Otis urethrotomy before TURP reduces the chance of urethral stricture formation^{8,9}.

This study also showed the advantages of Otis urethrotomy before TURP. By using Otis urethrotome decreases the rate of urethral stricture is due to increment of urethral caliber and decreases the chance of urethral injury caused by stretching and friction from wide resectoscope sheath. Although trauma during surgery is the commonest cause, but post operative urethritis caused by indwelling catheter or infection can also result in stricture formation. This is particularly true if the catheter is of large size and keeps for longer time. In addition the incidence of stricture formation is related to the size of gland and duration of resection¹⁰.

The present study showed the commonest site of urethral stricture formation was at meatus and this finding is supported by the study of Bilal H and Walton JK et. studies^{11,12}.

CONCLUSION

This study revealed that performing Otis urethrotomy before TURP can reduce the incidence of urethral stricture formation significantly than TURP alone.

Findings	Group A (only TURP) n (percentage)	Group B (TURP + Otis urethrotomy) n (percentage)	P- value
Urethral stricture formation	20(20%)	8(8%)	<0.05
UTI	11(11%)	9(9%)	>0.05
Mild BPH	15(15%)	16(16%)	>0.05

n= number of patients with respective findings.

Table I : Incidences of urethral stricture formation and others.

Part of urethral stricture	Number of patients	Percentage (%)
Penile urethra	8 out of 28	28.57 %
Meatus	20 Out of 28	71.42 %

Table II: common site of urethral stricture (n=28)

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Depressive Disorder Among Child And Adolescent Patients Attending Psychiatry OPD at Nepalgunj Medical College, Kohalpur

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ABSTRACT

BACKGROUND: Depression is one of the common psychiatric problem among child and adolescents especially during the peri pubertal stage. It is found to be more common in females than males. Poor and unhealthy family atmosphere, family dispute, broken family, parents working abroad, physical abuse are few of the causes of childhood depression. Signs and symptoms of childhood depression may present with vague and atypical physical symptoms as compared to adults. **Methods:** This is a descriptive study done in patients attending psychiatry OPD of Nepalgunj Medical College, Kohalpur for the period of six months from July to December 2015. **Results:** Out of 245 patients, 142(57.9%) patients were diagnosed as depressive disorder. Rest of the pediatric patients 103(42.1%) attending the psychiatry OPD were of seizure disorder, bipolar disorder, conversion disorder, mental retardation, adjustment disorder etc. There were 88(62%) females and 54(38%) male patients showing the majority of patients as females. The most common age group involved in the study population was 11-14 years 116(81.7%) followed by 6-10 years age group 23(16.2%) and up to 5 years 3(2.1%) respectively. **Conclusion:** Depression is quite common in pediatric population mostly during the peripubertal stage. It is seen most frequently in females.

Key words: Child and adolescent, depressive disorder, Nepalgunj Medical College

INTRODUCTION

Mental problem is very common but stigmatized medical and social problem worldwide. Mental disorders are not exclusive preserve of any special groups; they are truly universal. Mental and behavioral disorders are found in people of all regions, countries and all societies¹.

Mental problem is equally common in children and adolescents. Child has been divided into two phases: preschool child (3-6 years), school age child (6-12 years). Similarly adolescence is divided into early (10-13 years), middle (14-16 years) and late (17-20 years)².

The overall prevalence of depressive disorder in United States among 3-17 year old children is 2.1%. The male: female ratio is 1:1 during childhood and beginning in early adolescence rises to 1:1.5-3.0 in adulthood. Major depression may first appear at any age, but the likelihood of onset increases markedly with puberty³. Some study also shows poor and unhealthy family atmosphere causing more chance in adolescents to suffer from greater academic problems, depression, suicidal thoughts,

substance abuse and more sexual activity⁴. Signs and symptoms of childhood depression may present with vague and atypical physical symptoms as compared to adults.

The national prevalence study of United Kingdom found that almost one child in 10(9.5%) aged 5-15 years had psychiatric disorders based on ICD-10 (International Classification of Disease, 10th edition) classification system. Prevalence was higher in adolescents (11.2% at 11-15 years) than in children (8.2% at 5-15 years), and in boys (11.4%) than in girls (7.6%)⁵. Worldwide, it has been estimated that about 10-20% of children and adolescents suffer from mental problems⁶.

In developing country like Nepal, child and adolescent psychiatric problems are often neglected as there is no child psychiatrist and very few numbers of psychiatrists available at western part of Nepal. Also there is lack of awareness regarding child mental health among medical practitioners and other health care workers. Studies regarding depressive disorder among child and adolescent patients is very few from the western part of Nepal.

This study aims to show the prevalence and sociodemographic profile of child and adolescent depressive disorder from Tertiary care center from Western region of Nepal.

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MATERIAL AND METHODS

This is a descriptive study done in patients attending psychiatry OPD of Nepalgunj Medical College, Kohalpur for the period of six months from July to December 2015. All new pediatric patients who presented at Psychiatry OPD, those referred from Pediatric department and Emergency department were

included in the study. Total 245 patients were included in the study. Patients were diagnosed using ICD-10 classification of mental and behavioral disorders, clinical description and diagnostic guidelines.

Patients who did not want to participate in the study were excluded from the study group. Patients who needed psychological and pediatric intervention were sent to the psychologist and the pediatric department of the same hospital. Laboratory investigations required were done from the hospital laboratory. All the variables were recorded and analyzed using SPSS (Statistical Package for Social Studies) software and tabulated the percentage.

RESULTS

Out of 245 patients, 142(57.9%) patients were diagnosed as depressive disorder. Rest of the pediatric patients 103(42.1%) attending the psychiatry OPD were of seizure disorder, bipolar disorder, conversion disorder, mental retardation, adjustment disorder etc. There were 88(62%) females and 54(38%) male patients showing the majority of patients as females.

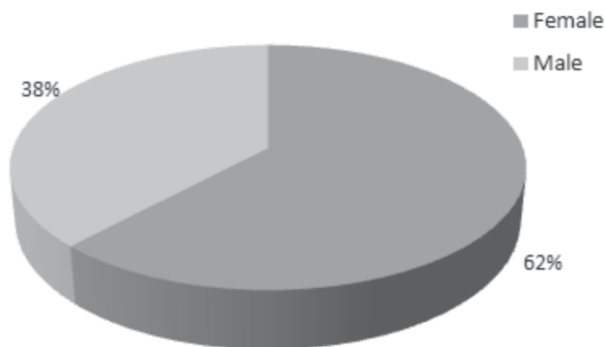


Figure 1: Sex distribution of patients

The most common age group involved in the study population was 11-14 years 116(81.7%) followed by 6-10 years age group 23(16.2%) and up to 5 years 3(2.1%) respectively.

Age (years)	Frequency	Percentage (%)
Up to 5	3	2.1
6-10	23	16.2
11-14	116	81.7
Total	142	100

Table I: Showing age distribution of patients

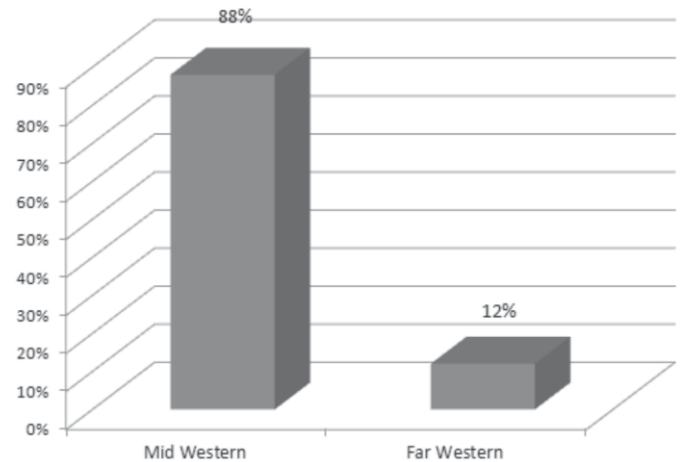


Figure 2: Figure showing geographic distribution of patients

As shown in Figure 2 maximum number of patients seeking psychiatric attention was from mid western region of Nepal 125(88%). Rests were from far western region 17(12%).

Ethnicity	Frequency (n=142)	Percentage (%)
Brahmin	38	26.8
Chhetri	55	38.7
Tharu	12	8.5
Gurung	8	5.6
Others	29	20.4
Total	142	100

Table II: Ethnicity distribution of patients

Chhetri were the most common ethnic groups seeking medical attention 55(38.7%) followed by Brahmin 38(26.8%), minority groups 29(20.4), Tharu 12(8.5%) and Gurung 8(5.6%) respectively.

DISCUSSION

Among the study population, females (62%) were more common to have depressive disorder than males (38%). The finding is similar to the another study done in tertiary hospital in Dharan, Nepal where majority of patients were female (53%) than male (47%)⁷. Also another study conducted at Dhulikhel Hospital showed female predominance (71.4%)⁸.

The most common age group in the present study was 11-14 years. This was comparable with the study done in western part of Nepal where 33.33% of patients were in the age group of 10-14 years⁹. In another study, the mean age of the patients was 14⁷. This surge in depressive cases in that age bracket could be due to pubertal hormonal changes³. Age distribution of this study shows that we had patients with younger groups as

compared with other studies^{7,8}. This was because the age of the study groups was limited to 14 completed years as most of the patients were referred from pediatric OPD.

Most of the patients seeking medical attention came from mid-western region of Nepal accounting for 125(88%) as compared to far-western region 17(12%). This is due to the mid-western location of this hospital and thus more patients from mid-western region can easily access medical help. Also, unawareness towards psychiatric problems to the people of far-western region land up to the traditional healers as compared to the medical facility.

Ethnic distribution was as per the distribution of national and regional population distribution given by the central bureau of statistics, government of Nepal in which the most common ethnicity is Chhetri¹⁰. Our study consisted of 38.7% of chhetri population.

In one study regarding mental health services for adolescents, it has been mentioned that mental health care should be integrated using cross-sectoral strategies into the communities in which adolescents live, the institutions they attend, the educational programs they receive, the media to which they are exposed and the organizations in which they participate¹¹. Hospital based study, small sample size, unable to randomize were limitations of the study.

CONCLUSION

Depression is quite common in pediatric population mostly during the peripubertal stage. It is seen most frequently in females.

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Clinical Profile and Outcome of Necrotizing Fasciitis

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ABSTRACT

Background: Necrotizing fasciitis is soft tissue infection which spreads through the fascial planes. It is a surgical emergency with its rapid onset and varied occult characteristic can cause diagnostic delays resulting in high mortality and morbidity. **Objectives:** To study the clinical profile and evaluate the determinants of outcome in patients with necrotizing fasciitis. **Methods:** A descriptive study of patients admitted and operated in the surgical units of Nepalgunj Medical College and Teaching Hospital Kohalpur with a diagnosis of necrotizing fasciitis from January 2013 to December 2015. **Results:** Total of 45 patients were included in the study. There were 27(60%) male and 18(40%) female, male to female ratio being 1.5: 1. The patient's age ranged from 2 to 76 years with mean age being 48.04±19.62 years. 38(84.44%) patients had no predisposing factor however trauma was the triggering factor in 4(8.89%) cases followed by surgery and insect bite. Diabetes mellitus 26(57.78%) and alcohol dependence 5(11.11%) cases were the most common co morbid condition associated with the disease. The lower limb 28(62.22%) was the most common site followed by upper limb, scrotum, perineum, trunk and abdomen. The growth was polymicrobial in 24(53.33%), mono microbial in 16(35.56%) and sterile in 5(11.11) cases. Staphylococcus aureus was predominant in 24(53.33%) cases followed by Streptococcus, E coli, Klebsiella, Enterococcus. The main procedure was debridement with secondary suturing 23(51.11%) and debridement with grafting in 18(40%) patient. Amputation was done in 2(4.44%) and secondary wound healing was observed in 2(4.44%) patients. 39(86.67%) cases improved with the above management while mortality was observed in 3(6.67%). 3(6.67%) cases left against medical advice so outcome was unknown **Conclusion:** On the basis of our study we concluded that high index of suspicion and awareness of the clinical presentation is required to diagnose this condition early. Diabetes mellitus is the most common co-morbid condition associated with necrotizing fasciitis. The presence of multiple co morbid conditions and delayed presentation reduces the survival rate. Early diagnosis and debridement, broad spectrum antibiotics with organ supportive intensive care will improve morbidity and mortality.

Key words: Diabetes mellitus, debridement, necrotizing fasciitis

INTRODUCTION

Necrotizing fasciitis is fatal life threatening soft tissue infection which is progressive and spreads rapidly through the fascial planes. It is a surgical emergency with increased mortality rate. The varied clinical presentation includes pain out of proportion to the physical finding, haemorrhagic bullae, edema, subcutaneous bleeding, ulcer and gangrene. Presence of systemic manifestation like hypotension, fever, tachycardia, tachypnea and mental disturbances further adds to the morbidity and mortality. Mortality rate has not changed significantly for several decades, and still remains high, ranging from 24-34%¹.

The term necrotizing fasciitis was coined by Wilson² in 1952 and referred it to as any infection of the soft tissue that is associated with necrosis requiring operative intervention. The purpose of the present study was to evaluate the common clinical presentation and the factors determining the mortality and morbidity of this disease in this part of Nepal.

MATERIALS AND METHOD

A descriptive study was conducted at the surgical units of Nepalgunj Medical College and teaching hospital Kohalpur from January 2013 to December 2015. All patients presenting with necrotizing fasciitis were included in the study. Clinical history and detailed examination, co morbidity, predisposing factor, duration of symptoms, site of involvement was noted. Biochemical parameters like white blood cell count, hemoglobin, renal parameters, serum levels of sodium, albumin and sugar at the time of admission was recorded. The presence of grayish necrotic fascia, demonstration of a lack of resistance of normally adherent muscular fascia to blunt dissection, lack of bleeding of the fascia during dissection, the presence of foul-smelling "dish-water" pus with obliterative thrombosis of arteries and veins were used for the diagnosis of the disease.

Patients were managed initially with broad spectrum antibiotics followed by culture-based antimicrobials along with

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debridement and repeated as required till the devitalized tissues were completely removed. Daily dressings followed by either secondary suturing or grafting of the wound were done. The time from admission to operative treatment, type of operative intervention, the culture and sensitivity reports, the need for amputation, the duration of hospitalization and mortality rate were recorded

RESULTS

Total of 45 patients were included in the study. There were 27(60%) male and 18(40%) female, male to female ratio being 1.5: 1. The patient's age ranged from 2 to 76 years with mean age being 48.04±19.62 years. The highest number of patients, 13(28.89%) were in the age group of 51 to 60 years as shown in table I.

Age in years	Number(n=45)	Percentage
1-10	3	6.67
11-20	3	6.67
21-30	3	6.67
31-40	2	4.44
41-50	8	17.78
51-60	13	28.89
61-70	11	24.44
71-80	2	4.44

Table I: Age distribution

Out of 45 patients, 38(84.44%) had no predisposing factor. Among the predisposing factor trauma was the most common cause in 4(8.89%). Other factors being surgery and insect bite as shown in table II.

Predisposing factor	Number(n=45)	Percentage
Idiopathic	38	84.44
Trauma	4	8.89
Surgery	2	4.44
Insect bite	1	2.22

Table II: Predisposing factor with frequency

The associated co morbidities as shown in table III revealed that diabetes mellitus was the most common which was found to be in 26(57.78%) patients followed by alcohol dependance in 5(11.11%) cases. However no co morbidities were found in 7(15.56%) cases. The lower limb 28(62.22%) was the most common site followed by upper limb, scrotum, perineum, trunk and abdomen. All patients had pain, tenderness, erythema and warm skin. 19(42.22%) also had bulla formation.

Co morbidities	Number(n=45)	Percentage
Diabetes mellitus	26	57.78
Alcohol addiction	5	11.11
Anemia	2	4.44
Immunosuppressant	2	4.44
IV drug abuse	1	2.22
Liver disease	1	2.22
Renal disease	1	2.22
No comorbidities	7	15.56

Table III: Associated co morbidities with frequency

The bacteriological study revealed that growth was polymicrobial in 24(53.33%) and mono microbial in 16(35.56%) patients, however in 5(11.11%) cases it was sterile. The common growth of organism found was *Staphylococcus aureus* in 24(53.33%) cases followed by *Streptococcus*, *E coli*, *klebsiella*, *Enterococcus*. *Pseudomonas* was isolated in a single case. *Staphylococcus aureus* was the most predominant organism found in polymicrobial growth in 18(40%) cases whereas Group A Beta hemolytic streptococci was predominant organism in monomicrobial growth in 12(26.67%) cases.

Out of 45 patients, 23(51.11%) patients underwent debridement with secondary suturing and debridement with grafting was done in 18(40%) patients. Amputation was done in 2(4.44%) patients to control the rapidly progressing infection. Secondary wound healing was observed in 2(4.44%) patients.

The aggressive and early intervention led to the improvement in 39(86.67%) cases. Mortality was observed in 3(6.67%) cases out of which two had uncontrolled diabetes mellitus and one patient had renal disease. The cause of death was sepsis and multi organ failure in these cases. Outcome in 3(6.67%) patients were unknown as they left against medical advices.

DISCUSSION

Necrotizing fasciitis is progressive fulminant bacterial infection of subcutaneous fat which spreads rapidly through the fascial plane causing extensive tissue damage. It is a surgical emergency and has a cumulative rate of mortality of 34%(6-76%)³. Similar finding of mortality of 21.9% was noted by Anogoue et al⁴ in his systemic review of necrotizing fasciitis. The difficulty of making early diagnosis and lack of cutaneous manifestation delays the surgical intervention leading to increased morbidity and mortality.

The majority of patients presented with pain which was out of proportion to apparent physical finding. Tenderness, erythematic and warm skin was present in all cases which is similar to the clinical profile described by Hasham et al⁵ and Hassell et al⁶ in their studies. Clinically pain precedes skin changes by 24-48 hours and apparently normal looking skin is

seen during the early pathological stages despite extensive infection underlying the fascia. An intermediate stage characterized by the formation of small bullae was noted as the disease progressed. Large haemorrhagic bullae, skin ulceration crepitation and motor and sensory deficits were late signs; often called as the “hard sign” of disease⁷.

Patients with necrotizing fasciitis may have some initiating factor such as trauma, surgery, scratch or bites⁸. However in our study 84.44%(38) patients had no predisposing cause while in remaining cases trauma 8.89%(4), surgery 4.44%(2) and insect bite in 2.22%(1) was found as an initiating factor which is in accordance with study done by Garg et al⁹.

Wong et al.¹⁰ in 2003 found that diabetes mellitus(71%) was the most common co morbidity followed by alcoholism(10.4%) which was similar to our study in which 26(57.78%) and 5(11.11%) had diabetes mellitus and alcoholism respectively. Out of 45 cases; 7(15.56%) had no associated disease. Anemia, chronic renal disease and use of immunosuppressant were other factor.

In our study, the lower limb was most commonly affected site in 62.22% (28) cases followed by upper limb 13.33% (6), scrotum 8.89%(4) perineum 6.67% (3) trunk 6.67% (3) and abdomen 2.22%(1). Similar findings were noted by Frazee et al¹¹ in 2008 and Nisbet et al¹² in 2012 where the involvement of extremities was seen in 73.7% and 70% respectively

The pattern of growth in our study was of polymicrobial 53.33% (24) followed by monomicrobial in 35.56% (16). 11.11% (5) of cases did not show growth. The common organisms found were *Staphylococcus aureus* in 53.33% (24) cases followed by *Streptococcus*, *E coli*, *Klebsiella*, *Enterococcus*. *Pseudomonas* was isolated only in a single case. *Staphylococcus aureus* was the most predominant organism found in polymicrobial growth in 40% (18) cases whereas Group A Beta hemolytic *Streptococci* was common in monomicrobial growth in 26.67% (12) cases. Similar profile of growth of organism was found by Elliot et al.¹³ and Brook et al.¹⁴ in their studies respectively.

In present study 51.11% (23) patient underwent debridement with secondary suturing and debridement with grafting in 40% (18) patient. Amputation was done in 4.44%(2) patient to control the rapidly progressing infection. Secondary healing of wound was observed in 4.44%(2) patients. Similar was the outcome in the study conducted by Madhumita et al.¹⁵ in 2011 where 48% of the patients underwent debridement with secondary suturing while 42% of the patients required skin grafting.

Our preference for the aggressive and early intervention led to the improvement in 86.67% (39) cases. Mortality was observed in 6.67% (3) cases out of which two had uncontrolled diabetes mellitus and one patient had renal disease. The cause of death was sepsis and multi organ failure in those cases. Outcome in

6.67%(3) patients were unknown as they left against medical advices. The mortality rate in studies conducted by Wong et al.¹⁰ and Elliot et al.¹³ was similar to our study.

CONCLUSION

Necrotizing infection remains one of the most devastating soft tissue polymicrobial infections in surgical practice. It is more common in middle aged group with diabetes mellitus being the most common morbidity associated with it. A high index of suspicion should be made if there is rapidly progressing swollen tender erythematous lesion with bulla and crepitation. Early surgical debridement under broad antibiotic coverage with dressing is the cornerstone of therapy. The presence of multiple comorbidity and delay in the diagnosis and intervention increases the morbidity and mortality.

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A Comparative Study of Electrocautery Versus Cold Scalpel For Skin Incision In Inguinal Hernia Repair

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ABSTRACT

Introduction: Electrocautery has been widely used except for the skin incisions; this is because of the fear of scarring of skin, post operative pain, poor wound healing and wound infection in view of devitalisation of tissues. Although still not very popular, yet the use of diathermy instead of scalpel for making skin incision and underlying tissue dissection is gradually gaining wide acceptance. The purpose of this study was to compare the scalpel incision with electrocautery incision over skin in patients undergoing hernia repair. **Aims and Objectives:** To compare the skin wound made by the diathermy and scalpel with a view in; intraoperative incisional time, post operative pain, requirement of analgesia and the quality of wound healing. **Material and Methods:** This is hospital based comparative study, undergone elective inguinal hernia repair in the department of general surgery at Nepalgunj medical college teaching hospital, Kohalpur from the period of July 2015 to January 2016. Group A, contained 30 patients who underwent skin incision with scalpel and Group B, also contained 30 patients who underwent skin incision with electrocautery. These groups were compared and statistical analysis using SPSS (version 20) was done and p value 0.05 was taken as significant. **Results:** Compared with a scalpel incision, cutting diathermy resulted in significantly shorter incision time ($p < 0.002$). The two groups did not differ in relation to post operative pain and the post operative analgesics requirements. The postoperative complications viz, seroma and purulent collections were in both the groups though the hematoma collection was seen more in scalpel skin incision. **Conclusion:** Skin incision made by cutting diathermy was less time taking and there was no appreciable differences in postoperative pain, the requirements of analgesia and the rate of wound complications like seroma, and purulent collection, though the hematoma was seen more in scalpel skin incision. So the use of diathermy for making skin incision is as safe as the use of scalpel in patients undergoing inguinal hernia repair.

Key words: *Electrocautery, scalpel, diathermy, postoperative pain*

INTRODUCTION

Traditionally, surgical skin incisions have been made with steel blade. This method of making skin incision is an old method and surgeons have always been in search of some new methods for making surgical skin incisions because incision made by scalpel were supposed to be more bloody, time consuming and more painful^{1,2}. To overcome such problems laser and cavitron electronic surgical aspirator have been introduced, but these instruments are costly³. Electrocautery was developed by Dr. Bovie in 1909 to fulgurate tumors but was first used in clinical surgery by Dr. Harvey Cushing in 1926. It has now become an integral and evolving part of surgical practice. However, most surgeons still make skin incision with a scalpel and divide the deeper structures with coagulation diathermy⁴.

The use of scalpels for surgical incisions dates back to ancient

Egyptian times. They used obsidian, which is naturally occurring volcanic glass, to make incisions for embalming. Modern surgical scalpels are usually made of hardened steel for better sharpness and precision. Basic scalpel design has remained almost the same but there has been a substantial improvement in the electrosurgical instruments⁵.

Fear of deep burns with diathermy and the resultant scarring continues compared with the scalpel, which produces a clean, incised wound with minimal tissue destruction. Cutting diathermy incision with an electrode delivering pure sinusoidal current allows tissue cleavage by rapid cell vaporization without damage to surrounding areas. This may explain the absence of tissue charring and subsequent healing with minimal scarring. Cutting diathermy can make hemostasis quicker and satisfactory, save the operative time, and can produce an incised wound that heals like the one created by cold scalpel^{6,7}.

Many other studies have been conducted to compare electrocautery skin incision over scalpel skin incision in terms of time taken for incision, postoperative pain and wound healing especially in cases of inguinal hernia surgery, some have reported that the use of diathermy for skin incision during inguinal hernioplasty is as safe as the use of scalpel in terms of wound healing⁴. There are others who have reported that the use of diathermy reduces the use of analgesic requirements in

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the postoperative period. But still, some studies have reported that the postoperative analgesic requirement are similar in both the techniques and likewise postoperative complications like seroma, hematoma and purulent collections are comparable amongst the two³.

MATERIAL AND METHODS

This is hospital based comparative study undergoing elective inguinal hernia repair in the department of general surgery at Nepalgunj Medical College, Kohalpur from the period of July 2015 to January 2016. A minimum of 60 cases of elective inguinal hernia repair were taken. The patients were allotted two groups alternately to remove bias. Group A (30 cases): Skin incision with scalpel. Group B (30 cases): Skin incision with electrocautery. Inclusion criteria were (1) All patients diagnosed as inguinal hernia, unilateral or bilateral clinically on admission and posted for hernia repair between the age groups 19-60 years.(2) Patient who agreed to participate in the study and gave a written consent. Exclusion criteria (1) Complicated inguinal hernia like irreducible hernia, obstructed hernia, strangulated hernia, recurrent inguinal hernia. (2) Patients with co-morbidities like immunosuppressed, diabetes mellitus, and on steroids and anticancer therapy.

After taking the detailed history and clinical examination to find out the various modes of presentation and the reasonable risk factors and the informed consent, the patients were allocated alternately into two groups on first come basis after admission. Group A: Here the skin incision was made with scalpel and bleeding was controlled by forceps coagulation using pulse sine wave on power supply of thirty watts. Group B: The skin incision was made with electrocautery needle using pulse sine wave current in "cut" mode and power setting of seventy watts. These 2 groups were compared for the intraoperative incisional time, post operative pain, requirement of analgesia and the quality of wound healing or wound complications and statistical analysis using SPSS (version 20) was done and p value 0.05 was taken as significant.

RESULTS

1. Incisional time: The incisional time was noted in seconds from the beginning of the skin incision to the dissection of the underlying fascia using either scalpel or cutting diathermy and analyzed using paired t-test.

Instrument used	Incisional time (seconds)
Scalpel	125.60±2.89
Electrocautery	86.20±3.49

Table I: Incisional time (Mean±SD)

t=53.19 and DF=29 which is >42.56 (p<0.002) at C.I. 95% so there is statistically significant difference between the two groups.

2. Post operative pain:

The post operative pain was assessed using visual analogue scale at the intervals of 6, 12 and 24 hrs. In this study results were analyzed using chi-square test as shown in Table III.

Time	Scalpel incision	Electrocautery incision	Chi-square test
6 hrs	6.7±0.53	6.6±0.81	P=0.357
12 hrs	3.73±0.64	3.83±0.83	P=0.741
24 hrs	2.47±0.50	2.57±0.85	P=0.776

Table II: Pain scores

There is no statistically significant difference between the two groups regarding the quantum of postoperative pain.

3. Analgesic requirements post operatively:

The dose of analgesic i.e. injection Diclofenac 75 mg. i.m. was given in both the groups post operatively and the results are shown in table IV. The results were analyzed using Mann Whitney U test.

Group	Dose of analgesics Mean±SD
Scalpel incision	1.67±0.47
Electrocautery incision	1.77±0.67

Table III: No. of doses of analgesics

P=0.610 Mann Whitney U test

There is no statistically significant difference in the dose requirements of analgesics for adequate pain relief among the two groups.

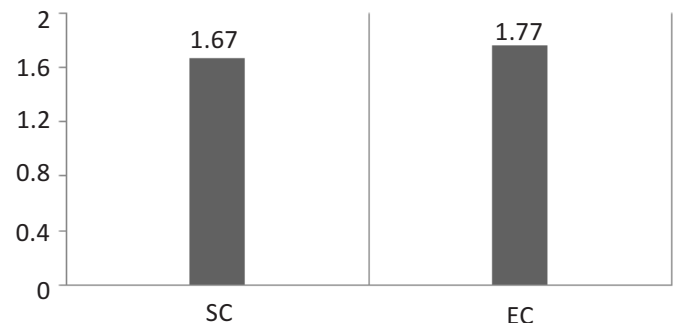


Figure 1: comparison of dose of analgesics

4. Local wound complications:

The overall wound complications viz hematoma, seroma and purulent collections were assessed for 7 days post operatively as shown in table V.

Group	Yes	No	Total
Scalpel incision	6(20%)	24	30
Electrocautery incision	1(3.33%)	29	30

Table IV: (a) Hematoma

Chi-square value=4.138 which is $<0.05(3.84)$ at $DF=1$, hence there is significant difference between the two groups, the scalpel incision showed more hematoma.

Group	Yes	No	Total
Scalpel incision	10(33.3%)	20	30
Electrocautery incision	9(30%)	21	30

Table IV: (b) Seroma

Chi-square value=2.857 which is $>0.05(3.84)$ at $DF=1$ and Fischer's exact test $p=0.10$, hence seroma in both the scalpel and electrocautery groups are comparable, the difference is not statistically significant.

Group	Yes	No	Total
Scalpel incision	10(33.3%)	20	30
Electrocautery incision	9(30%)	21	30

Table IV: (c) Purulent collection

Chi-square value=0.231 at $DF=1$ and Fisher's exact test $p=0.538$, which is >0.05 , hence there is no significant difference in purulent collection among the two groups.

DISCUSSION

Earlier days when explosive anesthetic agents were in use, electrosurgical instruments had limited use because of explosive risks associated with anesthetic agents. After the invention of nonexplosive anesthetic agents like halothane, electrosurgical instruments like diathermy were increasingly used for tissue dissections except for skin incision. This reluctance for use of electrocautery was attributed to the belief that the electrosurgical instruments caused devitalisation of tissue within the wound which consequently lead to wound infection, delayed wound healing and wound scar formation^{4,7}.

Surgeons have always been in search of an ideal method of making skin incision which would provide quick and adequate exposure with minimum blood loss. The electrocautery was mainly used for hemostasis and less often for skin incision.⁴ The use of electrosurgery or cold scalpel for making incisions largely

depended on surgeon's preference though the conventional diathermy tended to minimize the blood loss and reduce the operating time without compromising the outcome. On the contrary, the surgical scalpels lacked any haemostatic component⁸.

The role of diathermy now is not only limited to general surgical procedures and in fact many clinical trials have compared the usefulness of scalpel and diathermy in making skin incisions in other specialties too^{9,10}. The aim of this study was to compare the effect of the cold scalpel and diathermy skin incisions for inguinal hernia repair regarding the incisional time, post operative pain, requirement of analgesic doses and post operative wound complications and only one operation was selected for the study so as to remove the confounding variables in terms of different operations.

The 60 patients of indirect inguinal hernia were allocated alternately into two groups to remove bias, Group A and Group B. The skin incision was made with scalpel in Group A and electrocautery for Group B.

a) The incisional time: In Group A was 125.60 ± 2.89 and in Group B, it was 86.20 ± 3.49 . There was a statistically significant difference in incisional time between the scalpel skin incisions with the diathermy incision ($p < 0.002$). Likewise significant difference for incisional time was seen in a study done by Shamim M (mean 6.25 ± 0.51 vs. 9.47 ± 0.84 s/cm²; $p < 0.001$)²⁰. Kearns et al also found that laparotomy incisions using diathermy were significantly quicker than scalpel skin incisions (mean 6.1 ± 0.4 vs. 7.5 ± 0.5 s/cm²; $p < 0.04$)¹¹.

b) Postoperative pain scores:- Regarding the postoperative pain assessed by VAS at 6, 12 and 24 hrs. postoperatively, the results analyzed with chi-square test resulted in no significant differences between the two groups. The mean pain score at 6 hours for (Group A is 6.7 ± 0.53 and for Group B is 6.6 ± 0.81 ; $p=0.357$), The mean pain score at 12 hrs. for (Group A is 3.73 ± 0.64 and for Group B is 3.83 ± 0.83 ; the p value is ($p=0.741$), The mean pain score at 24 hrs. for (Group A is 2.47 ± 0.50 and for Group B is 2.57 ± 0.85 ; the p value is $p=0.776$). In the study by Hussain results of visual analogue pain scale, the mean pain score for diathermy was 4.35 ± 2.02 and for scalpel was 6.75 ± 2.29 , there was no significant difference at 18 hrs postoperatively ($p > 0.05$) between the two groups¹². In the study by Shivagouda P et al, the p value at 6 hours was ($p=0.475$), at 12 hours it was ($p=0.556$) and at 24 hours it was ($p=0.762$)⁴.

c) Analgesic requirements: The mean analgesics requirements for scalpel were 1.67 ± 0.47 and for electrocautery was 1.77 ± 0.67 . The parenteral analgesics requirements analyzed using Mann Whitney U test resulted in no significant differences ($p=0.610$), in the dose requirements of analgesics for adequate pain relief between the two groups.

In a similar study by Shivagouda P et al⁴, the p value for the doses of analgesics given was (mean 1.6 ± 0.48 vs. 1.8 ± 0.66 : $p=0.499$), analyzed again by Mann Whitney U test. This too shows that the results are comparable with our study.

d) Wound complications:

In the present study for haematoma, seroma and purulent collection between the two groups, the results were analyzed using Pearson chi-square test and Fischer's exact test as:

The incidence of hematoma in scalpel group was 20% but the incidence of hematoma was 3.33% in electrocautery. The chi-square value resulted 4.138 which is <0.05 (3.84) at $DF=1$, hence there was significant difference between the two groups, the scalpel incision showed more hematoma. The seroma collection was 33.3% in scalpel group and 30% for electrocautery group. The chi-square value is 2.857 at $DF=1$ and the Fischer's exact test ($p=0.10$), which is >0.05 , hence seroma in both the scalpel and electrocautery groups were comparable, the difference is not statistically significant. The purulent collection was seen in 16.7% of scalpel group and 13.3% of electrocautery group. The chi-square value is 0.231 at $DF=1$ and Fisher's exact test ($p=0.538$), which is >0.05 , hence there was no significant difference in purulent collection among the two groups.

This study of hematoma resulted with significant difference between the two groups, the hematoma being more with scalpel incision but for seroma and purulent collections, the results concluded with no statistically significant differences between the two groups.

In the study by Shivagouda P et al⁴, Hematoma, X_2 with Yates's correction= 2.588 and ($p=0.108$), Seroma, X_2 with Yates's correction= 0.077 and ($p=0.108$), Purulent collection, X_2 with Yates's correction= 0 and ($p=1$): the results were not significant among the two groups.

CONCLUSION

Skin incision made by cutting diathermy was less time consuming compared to a scalpel skin incision ($p<0.002$) and there was no significant differences between the two groups regarding the postoperative pain ($p=0.357$ at 6 hrs, $p=0.741$ at 12 hrs and $p=0.776$ at 24 hrs), the requirements of analgesics ($p=0.610$) and the rate of wound complications like seroma ($p=0.10$) and purulent collection ($p=0.538$), though the hematoma was seen more in scalpel skin incision ($p<0.05$). So the use of diathermy for making skin incision is as safe as use of scalpel in patients undergoing inguinal hernia repair.

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Percutaneous Cystolithotripsy As A Reliable Modality To Treat Pediatric Vesiculolithiasis

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ABSTRACT

Background: Primary vesical stones are common in children in underdeveloped and developing countries. The treatment options available for managing bladder calculi include transurethral cystolithotripsy, open cystolithotomy and shock wave lithotripsy (SWL). Although the majority of vesical calculi in adults can be treated by transurethral lithotripsy, this procedure is restricted in children due to the narrow caliber of the urethra. For this reason, percutaneous cystolithotripsy (PCCL) is a good choice as a safe and effective method for the treatment of bladder stones in children. **Aim of the Study:** The study was aimed to evaluate outcome of PCCL in pediatric population coming with vesiculolithiasis in our center. **Materials and Methods:** Pediatric age group patients diagnosed as vesical calculus were undertaken for PCCL. Ten patients who presented between November 2014 to December 2015, were included. The procedure was done under general anesthesia. After performing cystoscopy, suprapubic puncture was made and tract dilated upto 26 Fr. Nephroscope was used for visualization and pneumatic lithotripsy for fragmentation of the stone followed by removal of all fragments. Perurethral and suprapubic catheters were placed at the end to be removed on 1st and 2nd post operative day, respectively. **Results:** Median age of the patients was 5.5 (3-13) years. Majority were male patients from hilly region of western Nepal. Mean stone size was 15 mm. All patients were rendered stone free with average operative time of 32.2 minutes. Except one minor complication of mucosal injury patients were discharged after mean hospital stay of 3.9 days. **Conclusion:** Percutaneous suprapubic lithotripsy is a safe and effective method for the treatment of bladder stones in children. It is fast and associated with negligible complications.

Key words: Bladder calculi, children, cystolithotripsy

INTRODUCTION

Bladder calculi have plagued mankind since time eternal. Archeologists discovered a stone resting in the pelvis of an ancient Egyptian skeleton dating back more than 7000 years¹. Fortunately, in the past 50 years, the incidence of vesical calculi in developed countries has declined significantly. Currently, they represent roughly 5% of all urinary calculi in the Western world². Underdeveloped nations still suffer from endemic bladder calculi, especially in children³.

Various modalities, as conventional surgery, shock wave lithotripsy (SWL), suprapubic and transurethral cystolithotripsy are used to treat the vesical calculi. With all the options of treatment, the method of choice should be both relatively non-invasive and expeditious. Open cystolithotomy is only occasionally needed⁴. The majority of vesical calculi in adults can now be treated perurethrally with the use of lithotripsy. However, the use of these devices is restricted in pediatric patients because of the narrow caliber of the urethra^{5,6}. The

role of SWL is restricted due to high retreatment rate and difficulty in the voiding of fragments. A percutaneous suprapubic approach to the bladder circumvents the problem of the narrow urethra in these situations⁷.

Using the well established principles of percutaneous access and tract dilation that have been developed with renal stone surgery, one can treat bladder stones through a percutaneous suprapubic approach in an expeditious manner. We review our experience in treating pediatric vesiculolithiasis by suprapubic approach.

MATERIALS AND METHODS

This observational study was conducted at Nepalgunj Medical College, Nepalgunj Hospital, Nepalgunj in urology unit of Department of Surgery from November 2014 to December, 2015. A total of 10 pediatric patients underwent percutaneous cystolithotripsy (PCCL) during this period.

The diagnosis was based on ultrasonography and plain X-rays. Stone diameter was determined by reviewing plain X-rays. Urine was tested for culture and sensitivity.

The procedure was performed under general anesthesia. It was initiated with urethrocystoscopy to exclude any subvesical obstruction (urethral valve, urethral stricture) or rather to push the urethral stone back into the bladder (one patient in current series). Bladder was distended with saline and suprapubic puncture was made and confirmed with the same telescope. Floppy tip guide wire was inserted and approximately 1 cm

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incision made over puncture site. Fascial dilator up to 12 Fr was used and placing guide rod one step dilatation was done with amplatz dilator of 26 Fr (Figure 1).

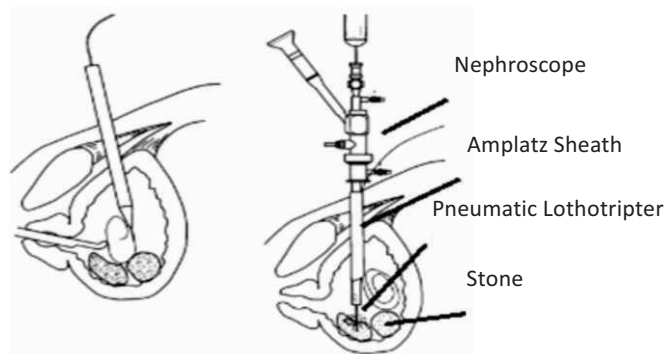


Figure 1: Diagrammatic representation of PCCL

The procedure was performed under direct vision by telescope. Nephroscope was introduced and after full inspection stone was taken intact or after fragmentation depending on the size. After the procedure suprapubic catheter was placed and left for one day while perurethral catheter was removed on 2nd post operative day.

RESULTS

A total of 10 patients of pediatric age group presented to us during one year of study period. Majority (9/10) were from hilly region of western Nepal. None of the patients had previous history of vesical calculus.

Median age of the patients was 5.5 years. Male outnumbered the procedure with ratio of 8:2. With median symptoms duration of 6.5 days, majority presented with dysuria and acute urinary retention (Table I). Median size of the stone was 17 mm. All patients were rendered stone free in one single session (Table II). All patients were voiding spontaneously at the time of discharge. There was no postoperative complication noted in short term follow up.

DISCUSSION

Nowadays, urolithiasis in childhood is rare in the developed world, it represents 1-5% of all urinary tract stones². Moreover, urinary bladder stone is very rare⁸. However, in the developing countries, the occurrence of pediatric urolithiasis is 30% of all urinary tract stones, and the so-called endemic bladder stone is still common in the childhood in the Third World⁹.

As opposed to the elderly, where the stones are invariably secondary to outflow obstruction or infection¹⁰, childhood vesical calculi are primary in nature, caused most often by dietary deficiency¹¹. In adults, transurethral disintegration for

Variables	Values
Age in years(Mean±SD)	5.4±3.02
Gender (Male:Female)	8:2
Symptom Duration in days (Mean±SD)	16 ± 26.6
Clinical Presentation	
Dysuria	7
Acute retention of urine	4
Increased frequency	4
Decreased stream of urine	6
Stone size in millimeter (Mean±SD)	15±5

Table I: Patient characteristics (n=10)

Variables	Values
Operative time in minutes (Mean±SD)	32.2±6.3(25-45)
Stone free rate	100%
Hospital stay in days (Mean±SD)	3.9±2.23
Retreatment rate	0
Intraoperative complications (mucosal injury)	1
Postoperative complications	0
Additional procedures	0

Table II: Operative and post operative data

urinary bladder stones is a common method and with the availability of different energy sources, virtually all vesical calculi can be treated endoscopically. However, urethral injury is a strong possibility in few instances specially in larger stones^{5,12}. Similarly, in children, narrow caliber of the urethra precludes the use of this procedure¹³.

High male to female ratio not exactly known but is similar to other studies^{5,7}. Clinical presentations are similar to other studies where vesiculolithiasis was studied¹⁴. With percutaneous suprapubic approach, 26 Fr or if needed 30 Fr to 32 Fr Amplatz sheath can be introduced into the bladder without urethral injury. In this manner, the large and hard stones can be disintegrated and removed in big fragments, so the intervention can be fast⁷. Here, in our series also only one minor complication of mucosal injury was noted which did not have any unfavorable outcome. Also, the procedure was fast owing to larger sheath size and fast fragmentation.

In current series, none of the additional procedure was required because mostly it is primary vesical calculus in this age group. In adults, or in cases where features of obstruction are present, they might require other concomitant procedures to relieve obstruction¹⁴.

The morbidity of PCCL is significantly less than that of open cystolithotomy. Hospital stay is far shorter and chances of wound infection is negligible⁵. Our result is consistent with the successful and encouraging results of other authors^{12,15}.

CONCLUSION

Percutaneous suprapubic lithotripsy is a safe and effective method for the treatment of bladder stones in children. It is fast and associated with negligible complications.

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Significance of Adenosine Deaminase in Diagnosing Tuberculous Pleural Effusion in Nepalgunj Medical College Teaching Hospital Kohalpur

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ABSTRACT

Background: Tuberculosis (TB) is a major public health problem in developing countries including Nepal. One of the common presentations of TB is pleural effusion. The diagnosis of tubercular pleural effusion can be difficult because of the low rate of detecting tubercular bacilli by direct stain and culture of pleural fluid for acid-fast bacilli (AFB). Pleural biopsy can be useful but is invasive and requires experts. In this context, pleural fluid Adenosine Deaminase (ADA) level has been proposed as easy, cheap and highly sensitive test for diagnosis of TB pleural effusion. **Objectives:** The present study was undertaken to define the role of pleural fluid ADA value in accurate diagnosis of Tubercular pleural effusion. **Methods:** A Prospective analysis of 68 patients admitted in Nepalgunj Medical College teaching Hospital was done from January 2014 to December 2015 with pleural effusion. Pleural fluid ADA level was evaluated in all patients, and significance of pleural fluid ADA level in TB pleural effusion was studied. **Results:** Age of patients were between 20 to 80 years, with the minimum being 20 years and maximum being 79 years. In this study 85% of cases had pleural effusion due to tuberculosis. Out of the 68 patients with pleural effusion, 58(85%) were finally diagnosed to be due to tuberculosis, 2 were diagnosed to be due to malignancy, 4 due to pneumonia leading to parapneumonic effusion, 1 due to congestive heart failure and 3 due to nephrotic syndrome. **Conclusion:** It is difficult to diagnose TB pleural effusion by other conventional methods, as it has also been shown in our study also. Previous literatures have also mentioned AFB detection rate to be low from pleural fluid sample. Determination of ADA is a cheap and easy test which we now consider in the early routine evaluation of patients with pleural effusions, particularly if diagnosis of tuberculosis is suspected and in places where prevalence of the disease is still high as is in our country. The other method considered for diagnosing TB pleural effusion is pleural biopsy which is invasive blind procedure and requires high expertise as well.

Key words: Adenosine deaminase, tuberculosis, pleural effusion, AFB

INTRODUCTION

Pleural effusion is a common chest problem, yet it is difficult to establish the aetiological diagnosis in as many as 20% cases in spite of good history, thorough clinical, radiological, full examination of aspirated fluid and pleural biopsy¹. The initial event in the pathogenesis of primary TB pleural effusion is the rupture of subpleural caseous focus in the lung². Tuberculous pleural effusion is thought to result from a delayed hypersensitivity reaction in response to the presence of mycobacterial antigens in the pleural space that follows this rupture³. The accumulation of fluid in pleural cavity results due to increased capillary permeability as well as due to impairment of lymphatic clearance of exudative fluid from pleural cavity due to occlusion of pleural stomata. The

diagnosis of tuberculous pleural effusion can be difficult because of the low sensitivity of various diagnostic methods. Lymphocytic exudate seen in tuberculous pleural effusion also can occur in other diseases such as malignancy and collagen vascular diseases. Mycobacterium tuberculosis in pleural fluid is scanty and rarely observed on direct examination by AFB staining. Cultures for AFB in TB pleural effusion are positive in only 20 to 30% of pleural fluid samples and in 50 to 80% of pleural biopsy specimens⁴.

The sensitivity of polymerase chain reaction for active disease is 78%⁵. The cutaneous response to purified protein derivative (Mantoux test) may also be negative in one third of the patients⁶. In this context, attempts have been made to identify markers which allow more rapid and accurate diagnosis. One such marker is adenosine deaminase (ADA), which has been proposed to be a useful diagnostic marker for tuberculous disease in pleura, pericardium, and peritoneum⁷. Several reports have suggested that an elevated pleural fluid ADA level predicts tuberculous pleurisy with a sensitivity of 90 to 100% and a specificity of 89 to 100%⁸. ADA is an enzyme in the purine salvage pathway that catalyses conversion of adenosine and deoxyadenosine to inosine and deoxyinosine with the release of ammonia⁹. Its distribution in the human organ is ubiquitous, but its physiologic role is especially important in lymphoid tissue.¹⁰

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Material and Methods

A Prospective analysis of 68 patients of pleural effusion from January 2014 to December 2015 was done. Both male and female, above the age of 15 years who were admitted in the Nepalgunj Medical College Teaching Hospital Kohalpur Banke Nepal. Patients in whom history of typhoid fever, acute viral hepatitis and active cirrhosis were present, were excluded. Detailed history was taken and thorough clinical examination was done in each and every patients and they were then subjected to a batteries of investigation which included routine haemogram, urine examination, skiagram chest PA view, sputum smear examination for AFB and sputum culture for mycobacterium tuberculosis, pleural fluid for protein, glucose, cell count, malignant cells, Gram's stain, pleural fluid examination for AFB, pleural fluid culture for Mycobacterium tuberculosis the other relevant investigation as per need of cases. ADA was measured in pleural fluid by colorimetric method of Guisti and Galanti¹¹. Patients with relevant clinical history and examination findings with exudative pleural fluid supported by Mantoux test as well as all those patients with ADA value >40 U/L were provisionally diagnosed to have TB pleural effusion and standard ATT regimen was started.

RESULTS

Age of patients was between 20 to 80 years years, with the minimum being 20 years and maximum being 79 years. Among 68 patient 32(47.05%) were male and 36(52.94%) were female shown in Table-I. Age of the patient is shown in Figure 1. The signs and symptoms elicited in patients are as shown in the Table-II. Of 68 patients with pleural effusion, 58 were finally diagnosed to be due to tuberculosis, 2 were diagnosed to be due to malignancy, 4 due to pneumonia leading to parapneumonic effusion, 1 due to congestive heart failure and 3 due to nephrotic syndrome. Number of sputum positive for Acid Fast Bacilli is shown in Figure 2. Analyzing pleural fluid by Light's criteria, all cases with TB, malignancy and pneumonia had exudative effusion, all cases with CHF had transudative effusion whereas 50% of cases of nephrotic syndrome had exudative and 50% had transudative effusion.

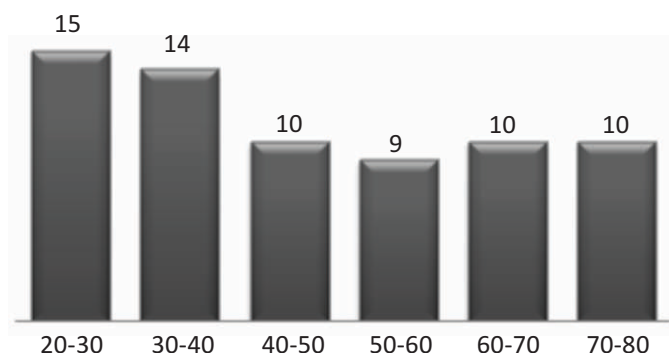


Figure 1: Age distribution

Sex	No. of patient	Percentage
Male	32	47.05%
Female	36	52.94%

Table I: Sex distribution

Clinical features	No. of cases	Percentage
H/O Smoking	52	76.47%
Fever	25	36.76%
Cough	61	89.70%
SOB	63	92.64%
Chest pain	38	55.88%
Hemoptysis	15	22.05%
Others	30	44.11%

Table II: Signs and symptoms

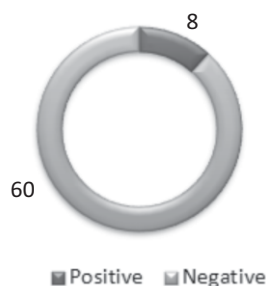


Figure 2: Showing sputum positive and negative cases

Out of the 2 cases which were diagnosed as malignancy 1 patient had positive pleural fluid cytology for malignant cells. All cases provisionally diagnosed as TB (58 cases) were put on anti-tubercular treatment as per DOTS, of which 10 cases were lost follow up, 2 did not respond to treatment and the remaining 46 cases were cured. There were 58 cases with pleural fluid ADA value more than 40 U/L, out of which majority (23 cases) had ADA more than 60 U/L. The values of ADA in pleural fluid in all patient is shown in figure 3.

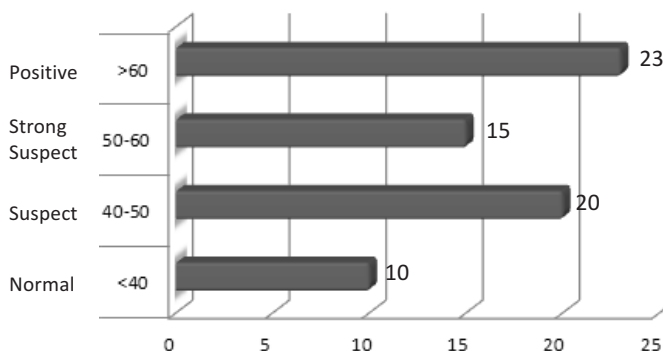


Figure 3: Value of ADA in all cases

DISCUSSION

In this study 85% of cases had pleural effusion due to tuberculosis. All cases of TB pleural effusion were exudative which is explained by the pathogenesis of formation of effusion in TB. Considering pleural fluid ADA level in different conditions, ADA level was high (more than 40U/L) in 58 cases which was 85% as compared in parapneumonic effusion, in malignancy and in cases with miscellaneous diagnosis. Similar findings have been found in several previous studies. Ocana et al¹² found mean pleural fluid ADA level to be 92.43±29.43 U/L in TB pleural effusion. Valdes et al¹³ found pleural fluid ADA level in TB pleural effusion to be 111.1±36.6 U/L. Thus, high ADA value in pleural fluid can diagnose TB with high accuracy. Several studies have defined several cut-off values for diagnosis of TB pleural effusion ranging from 40 to 70 U/L. Our study also shows that there are no other causes of pleural effusion for ADA level >40 U/L than TB, except for few cases due to parapneumonic effusion. Ocana et al found 97% sensitivity and 100% specificity for value more than 45 U/L. Banales et al found ADA level of >70 U/L to be 98% sensitive and 96% specific.¹⁴ DE Oliveira et al found ADA level of >40 U/L to be 90.7% sensitive and 97.7% specific¹⁵.

Abnormally high levels of pleural fluid ADA level in all patients with TB pleural effusion indicated pleural fluid ADA could be a good diagnostic marker for TB pleural effusion. In our study, patients diagnosed as TB, depending on relevant clinical history and high ADA level in pleural fluid, were put on standard ATT regimen and almost all were cured. This observation provides evidence in support of using pleural fluid ADA level as a diagnostic marker for TB pleural effusion.

In conclusion, determination of ADA is a cheap and easy test, which we now consider in the early routine evaluation of patients with pleural effusions, particularly if diagnosis of tuberculosis is suspected and in places where prevalence of the disease is still high as is in our country. By using ADA as a marker for the diagnosis of tuberculous pleural effusion, the accurate diagnosis can be made in more than 95 percent of cases and it helps avoid invasive test like pleural biopsy as well.

CONCLUSION

ADA is an enzyme in the purine salvage pathway that catalyses conversion of adenosine and deoxyadenosine to inosine and deoxyinosine with the release of ammonia. Its distribution in the human organ is ubiquitous, but its physiologic role is especially important in lymphoid tissue. ADA is a predominant T lymphocyte enzyme, with variation according to cellular differentiation, and its plasma activity is high in diseases where cellular immunity is stimulated. It is well known that tuberculosis is one of these diseases. The ADA activity is raised in lymphocytic pleural effusions of tuberculous origin only. ADA analysis is a sensitive marker of tuberculous pleural effusion, even in HIV patients with very low CD4 counts.

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Detection of Hemoglobin D in Tharu Community of Banke, Nepal

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ABSTRACT

Background: Patients presenting with microcytic anemia, hepatosplenomegaly, abnormal hemoglobin level in electrophoresis and negative sickling test should have high suspicion for HbD disease. This occurrence is more in certain communities. While investigating the etiopathogenesis of subjects with microcytic anemia (n=30), we came across 3 patients with HbD disease. **Aim:** Present study describes the clinical and hematological findings of 3 patients. **Material and Methods:** This was an observational study conducted between August, 2014 to July, 2015 in Department of Pathology of Nepalgunj Medical College. Of 30 patients diagnosed as microcytic anemia, 3 patients were selected. **Results:** The patients belonged to Tharu Chaudhary community of Banke district of Nepal. Age of the patients ranged from 8 to 13 years. All the patients had generalized pallor. Two of 3 patients had fever, joint pains and jaundice. One of the patients had hepatosplenomegaly. Total hemoglobin ranged from 7.1 to 8.4 gm/dl. Patients had microcytic anemia. Sickling test was negative in all the 3 patients. Hemoglobin (Hb) electrophoresis revealed peaks in HbS region. Due to negativity of sickling test, the abnormal hemoglobin peak was interpreted as HbD. Thus, 2 patients had homozygous HbD disease while another patient had heterozygous HbD trait.

Key words: Anemia, HbD disease, microcytic.

INTRODUCTION

Patients with anemia and abnormal Hb level are occasionally seen by us at Nepalgunj Medical College teaching hospital. These patients belong to Tharu community of Banke district. In this region, vivax malaria is also endemic. Plasmodium infection might have influenced the evolution of abnormal hemoglobins in mid-western region of Nepal.

HbD Punjab is most commonly found in India. It is identical to HbD Los Angeles¹. It has also been found in Africa and Northern Europe¹. Four forms of HbD disease may exist. First, heterozygous HbD trait, where HbD is about 30 to 40%. This condition may be clinically silent. Second, homozygous HbD disease, where HbD is about 80% to 90%, but most of homozygous HbD patients have normal red cell indices, no evidence of hemolysis and have normal HbF and HbA₂ levels. Third, HbD thalassemia may cause mild hemolytic anemia, thalassemic red cell indices, no evidence of hemolysis and have normal HbF and HbA₂ levels. Fourth, hemoglobin SD disease which causes moderate to severe sickling disorder².

Herewith, we describe clinical and hematological features of 3 cases of HbD disease from this area.

MATERIAL AND METHODS

This study was conducted at Nepalgunj Medical College, Nepalgunj from August, 2014 to July, 2015. Thirty subjects with microcytic anemia were selected for establishing their etiology. The subjects were prospectively recruited and preformed proforma was filled up. Subjects were collected from neighbouring areas, e.g. Banke, Bardiya and Dang. Detailed investigations revealed a diagnosis of HbD disease in 3 of 30 subjects. These 3 subjects were labeled as **patients**.

Present study was done on 3 patients with microcytic anemia. About 2.5 ml of venous blood was collected from each patient in EDTA vial. Blood smears were also prepared and stained by Leishman method. Hemoglobin was estimated by cyanhemoglobin method. Hemogram was estimated using Nihon Kohden Celltac E, Europe GmbH, Rosbach Germany, a 5 parts differential coulter counter. It worked using the principle of volumetric impedance. Results of tests were obtained as hemoglobin (Hb), hematocrit (Hct), total red blood cell count (RBC), mean corpuscular volume (MCV), mean corpuscular hemoglobin (MCH), mean corpuscular hemoglobin concentration (MCHC) and red cell distribution width (RDW).

Preparation of hemolysate

Two milliliter of EDTA blood was washed thrice with normal saline. The packed cells were lysed with distilled water and were centrifuged. Supernatant was collected as hemolysate and stored at +4°C.

Agarose gel electrophoresis at alkaline pH 8.6 Hemolysate (5 µl) was transferred into well plates using unit applicator, the sample was applied into the alkaline agarose gel along with suitable controls and immediately placed in electrophoresis chamber. The chamber was connected to a power supply and

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electrophoresed for 45 min at 100V. This was used to separate and identify different hemoglobins by their migration patterns within an electric field. This agarose gel was then transferred to a developer unit where it was fixed, stained, de-stained and dried for 50 min. Later, agarose gel film was studied in computerized software (Biotec-Fischer GMBH 101, Germany).

RESULTS

Table I shows results of clinical findings of 3 patients with anemia. Age of patients ranged from 8 to 13 (median 9) years. All the patients had generalized pallor. Two patients had fever, joint pains and jaundice. Moderate hepatosplenomegaly was also detected in a patient (no.2).

Table II shows results of red cell indices in patients. Total hemoglobin ranged between 7.1 to 8.4 gm/dl. Total RBC was relatively higher in patient no.3 as compared to RBC counts in two other patients.

Patient no.	Age Yrs.	Pallor	Fever	Joint Pain	Jaundice	Liver	Spleen
1	13	+	+	+	+	np	np
2	8	+	+	+	+	4 cm	9 cm
3	9	+	-	-	-	np	np

np = non-palpable

Table I : Shows clinical findings in patients with HbD disease.

Patient no.	Hb gm/dl	Hct cc%	RBC million/mm ³	MCV fl	MCH pg	MCHC cc%	RDW %	Reticulocyte %
1	7.9	24.3	3.36	72.3	23.5	32.5	17.9	2
2	7.1	24.2	3.19	75.9	22.3	29.3	19.6	1.5
3	8.4	24	5.2	74	23	32	14	1.1

Table II : Results of red cell indices in 3 patients with HbD disease.

Patient no.	Sickling test +/-	Hemoglobin electrophoresis				Globin genotype	Globin phenotype	Clinical diagnosis
		HbA2 %	HbD %	HbF %	HbA %			
1	-	11.3	88.7	-	-	$\alpha_2 \beta^D / \beta^D$	$\alpha_2 \beta^D \uparrow \uparrow \uparrow$	Homozygous HbD disease
2	-	1	99	-	-	$\alpha_2 \beta^D / \beta^D$	$\alpha_2 \beta^D \uparrow \uparrow \uparrow$	Homozygous HbD disease
3	-	0.7	5.3	-	94	$\alpha_2 \beta \beta^D$	$\alpha_2 \beta \uparrow \uparrow \beta^D \uparrow$	Heterozygous HbAD disease (HbD trait)

+ positive, - negative

Table III : Results of sickling test and hemoglobin electrophoresis in patients with HbD disease

Table III shows results of sickling tests and Hb electrophoresis. Sickling tests were negative in all the patients. However, separate peaks were seen in HbS region at alkaline pH. Peaks in HbS region were interpreted as that of HbD due to negative sickling tests. Two patients had high level of HbD (88.7% and 99%), suggesting homozygous HbD disease. Another patient (patient no.3) had low level of HbD concentration (5.3%). Therefore, in this patient, a diagnosis of heterozygous HbD disease (HbD trait) was made. In this patient, HbA concentration was 94%.

DISCUSSION

Most important feature of this study was the detection of peaks in the region of HbS. Due to its failure to produce sickling, these peaks were interpreted as that of HbD and these patients were diagnosed as suffering from HbD disease (HbS and HbD are known to have similar mobility at alkaline pH. However, they can be separated by agar gel electrophoresis at an acid pH).

Two of 3 patients had high percentage of HbD (88.7% and 99%). In these 2 patients, a diagnosis of homozygous HbD disease (HbDD) was made. Another patient (patient no.3) had low level of HbD (5.3%). In this patient, a diagnosis of heterozygous HbD disease (HbAD trait) was made.

HbD disease is caused by β chain mutation at position 121, where glutamine replaces glutamic acid². Homozygous HbD disease (HbDD) is characterized by a mild microcytic anemia, poikilocytosis, minimal hemolysis and mild to moderate splenomegaly³. Osmotic fragility may be decreased¹.

All the patients had moderate anemia. In addition, one of the patients with homozygous HbD disease (no.2) had moderate hepatosplenomegaly. Two patients with homozygous HbD disease had jaundice. Jaundice might have developed as the result of excessive hemolysis, leading to rise in unconjugated bilirubin.

The patient with heterozygous disease (no.3) had relatively milder disease as compared to other 2 patients with homozygous HbD disease. High level of HbA in this patient might have resulted in a milder disease. Heterozygous HbD disease may be clinically silent⁴⁻⁵. However, severe hemolysis developed in an HbD trait mother following physiological stress during twin pregnancy⁶. In addition, clinical variation in the behavior of HbD traits may occur. In a previous study⁵, 6 of 30 patients with HbD traits were symptomatic. A rare case of HbD trait has been described in a 1 year old child having jaundice, hepatosplenomegaly and hemolytic anemia⁷.

CONCLUSION

HbD disease is an uncommon condition present in Tharu community of Midwestern Nepal. Two of the 3 patients had rare homozygous HbD disease while another patient had heterozygous HbD disease

Conflict of Interest: None

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Results of Retrograde K-Wire Fixation in Diaphyseal Fractures of Forearm in Children

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ABSTRACT

Background: Diaphyseal fractures of forearm is the third most common fracture in children. Majority of these fractures can be treated with close reduction and cast immobilization due to the growth potential of the immature skeletal. But in elder age group Intramedullary K wire fixation through retrograde approach is the most invasive and less complicated procedure to ensure the prevention of deformity and restore the functions. **Aim:** To evaluate the effectiveness of the treatment of diaphyseal fractures of forearm in children with intramedullary K wire fixation through retrograde approach and look for short term and immediate results. **Methodology:** This was a prospective observational hospital based study carried out in Nepalgunj Medical College Teaching Hospital from January 2012 to December 2013, in children between 5-15 years with K wires for diaphyseal fractures of forearm through retrograde approach which was followed up for 12 months. All patients underwent close reduction and intramedullary K wire fixation retrogradely. At 6, 12 and 48 weeks; range of motion and tenderness were looked for. **Results:** There were 32 patients in the study with average age of 10.41 years for male and 10.21 years for female. Average time for union was 7.3 weeks. There were no nonunions and malunions in follow ups. At 6 months all had full range of motion without any complications. **Conclusion:** Operative treatment with K wires through retrograde approach for diaphyseal fractures of forearm is an invasive procedure for less complications, patient's comfort and early range of motion.

Key Words: Diaphyseal fractures of forearm, retrograde K wire fixation

INTRODUCTION

Diaphyseal fractures of forearm in children are the common paediatric traumatic fractures which comprises six to ten percent of all paediatric fractures^{1,2,3,4}. and are among the most challenging to the orthopaedic surgeon because of their treatment complexity and frequent complications^{4,5,6}.

The peak incidence corresponds to the peak velocity of growth when the bone is weakest owing to a dissociation between bone growth and mineralization. They may occur in distal third, middle third or proximal third of diaphysis. They are more common in the middle third^{5,6,7,8}. They may be closed, may be displaced or undisplaced. The displacements encountered are angulations, rotation and overriding depending upon the nature, amount of force and mechanism of injury. These displacements result in deformities more frequently because of the difficulty in reducing and maintaining the reduction of two parallel bones in the presence of the pronating and supinating muscles that have angulating and rotational influences.

A practical classification of shaft fractures of the forearm in the paediatric population recognizes the existence of two bones, three levels (the proximal, middle and distal thirds) and four fracture patterns i.e., plastic deformation, greenstick, complete and comminuted⁸.

The goal of treatment of diaphyseal fractures of forearm in children is to regain length, apposition, rotational alignment of fragments and to allow the fracture to unit in desirable position⁹. The majority of these fractures can be treated well with close reduction and cast immobilization due to the unique property of the growth potential of the immature skeletal. Beside this, with advancement in anaesthesia and in antisepsis and the development of inert implants paediatric forearm fracture treatment has changed towards operative to ensure the prevention of deformity and restore the functions.

MATERIALS AND METHODS

The present study was a prospective observational study conducted in Nepalgunj Medical College Teaching Hospital (NGMCTH) Kohalpur from January 2012 to December 2013. All paediatric patient (5-15 years of age) attending to the Orthopaedic outpatient department (OPD) or emergency (ER) department with diaphyseal fracture of forearm were included, which comprises of 32 patients. There were 20(62.5%) boys and 12(37.5%) girls. Eighteen (56.25%) patients had fracture on the left and Fourteen (43.75%) had on the right forearm. The study strictly adhered to the tenets of declaration of Helsinki. An ethical informed consent too was taken from the patient party and NGMCTH to carry the study.

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After primary management in the ER, examination of the patients was carried out by 2 orthopaedic surgeons. Two view x-rays were done including antero-posterior and lateral. Patients with displaced closed and open diaphyseal fractures of both bones of forearm between the age of 5-15 years, who arrived within seven days of injury were included in the study. Patients with Galeazzi's and Monteggia's fracture dislocation, radial head fractures, isolated single bone fracture of forearm and patients losing in follow ups were excluded from the study.

After the clinical diagnosis of diaphyseal fracture of both bone of forearm, first aid long arm plaster of paris slab were applied in the position of deformity and relevant routine investigations was done and after dressing the open wound if any, patient were admitted in the orthopaedic ward with limb elevation.

OPERATIVE TECHNIQUE

All surgeries were performed by the authors under tourniquet control and under all aseptic precautions a small longitudinal incision was made over dorsolateral aspect of radius and over dorsomedial aspect of ulna, about one centimeter proximal to the distal physis of these bones. The portal of entry was made by bone awl, protecting superficial radial nerve and dorsal tendons¹⁰. Similarly portal in ulna was also made by bone awl about one centimeter proximal to the physis in the interval between extensor carpi ulnaris and flexor carpi ulnaris tendons¹¹. A hole was deepened first perpendicularly and then obliquely towards the elbow¹². Breach in the cortex was ascertained by the feel of loss of resistance and oozing of marrow and the negotiation of medullary canal was confirmed under image intensifier. Depending on the size of medullary cavity, a well fitting round 316L stainless steel K- wire with a diameter of about two third of diameter of medullary canal as described by Ali et al¹³, Cellebi et Al¹⁴ and Ge et al¹⁵ were chosen. The range of size of nail used was 2-3 mm in diameter and the advancing blunt end of K-wire was bent at 30 degree to avoid perforation of the opposite cortex and was inserted using T-handle¹². Reduction was done by external manipulation and advanced into the proximal fragment. Then the K-wire was bent and cut 5-10 mm from the bone to prevent its migration and was buried under the soft tissue, skin was closed and above elbow slab was applied and limb was kept elevated. Active finger movements were started after the patient woke up. In the absence of wound infection and neurovascular complications, patients were discharged on an average hospital stay of 3-5 days.

Subsequent follow up were done first at 2 weeks, stitches were removed. Second follow up was done at 6 weeks, at that time slab were removed. Third follow up at 12 weeks. On every follow up clinical and radiological evaluations were done to assess progress of function and evidence of union. In our study all fracture united at an average of 7.3 weeks with maximum time to union being 14 weeks in two patients. The K-wires were removed only after the full union. The cases were followed up

for 12 months and were graded according to the system described by Price et al. All the relevant information were entered into the microsoft word, statistical package for social services (SPSS) version 19, Microsoft Excel and analyzed.

RESULTS

A total of 32 patients enrolled in the study. Gender wise male is to female ratio was 3:1. Average age of study subjects was 10.41 years for males and 10.21 years for females, range 5-15 years. Fall from tree was the commonest cause of fracture followed by ground level fall and road traffic accident. Out of 32 patients 28 had excellent (87.5%), 3 had good (9.3%) and 1 had fair (3.1%) results according to the Price et al grading system.

DISCUSSION

Forearm shaft fractures are the common traumatic injuries in children. Its standard treatment is usually conservative by close reduction and POP cast immobilization¹⁶, but because of higher incidence of redisplacement, compartment syndrome, prolonged immobilization and also the idea of moving a fractured limb soon after injury, there has been shift of trend from managing these fractures by close reduction and POP cast immobilization to open/close reduction and internal fixation with intramedullary or extramedullary devices¹⁷. Multiple techniques are available to immobilize the fragments after surgery including plates and screws, intramedullary rods and external fixation.¹⁸ With advent of image intensification, close reduction and percutaneous intramedullary fixation came out to be attractive alternative in the management of unstable paediatric forearm fractures¹⁹.

The present trend in treatment of displaced diaphyseal forearm fracture in children is closed reduction and stabilization with elastic intramedullary nails^{20,21,22}. Usually the portal of entry of nail adopted by various authors is through distal end of radius and proximal end of ulna^{23,24,25}. But this approach is fraught with complications like injury to physis of lower end of radius and upper end of ulna and restriction of wrist and elbow movements in 20% to 30% cases. To avoid these complications the portal of entry made through distal metaphysis of radius and ulna avoiding the physis is thought to be harmless^{26,27,28}. Our Study was designed to avoid complications due to injury of lower radial and upper ulnar physis and impairment of functions of wrist and elbow by fixation of forearm fractures with 316L stainless steel wires, which were cheaper, easily available and can be passed with comfort across the diaphyseal forearm bones fracture through retrograde approach.

The incidence of nail prominence in the present study was minimal since the nail was well covered underneath soft tissues after closing the wound. However six (12%) patients who had nail prominence, they developed superficial bursitis and the nail was removed at 4 months as the fracture had united. During nail removal the inflamed bursa was excised. These patients had no complain in the subsequent follow-ups.

Sex	Age in years		Total	Average age at surgery	Percentage
	05 - 09	10 - 15			
Male	10	10	20	10.41	72%
Female	4	8	12	10.21	28%

Table II : Distribution of patients according to age and sex

Mode of injury	Age group in years		Total	Percentage
	05 - 09	10 - 15		
Fall from tree	8	10	18	56.25%
Ground level fall	4	2	6	18.75%
Fall from bicycle	3	3	6	18.75%
RTA	0	2	2	6.25%

Table III : Age group distribution in relation to mode of injury

Outcome	Number of patients	Percentage
Excellent	28	87.5%
Good	3	9.3%
Fair	1	3.1%
Poor	0	0%

Table IV : Distribution of functional outcome in relation to the Grading system of Price et al.⁴⁷

Figure 1: X-ray A/P and Lateral view of forearm after injury



Figure 2: Follow up X-ray at 4 weeks

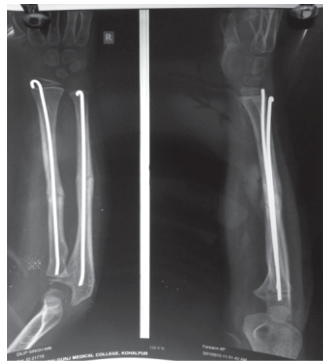


Figure 3: Follow up X-ray at 8 weeks

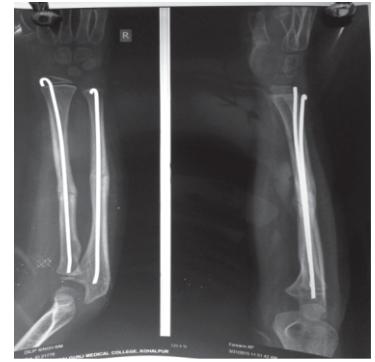


Figure 4: Follow up X-ray at 12 weeks



Figure 5: X-ray after removal of implants

Two (4%) patients suffered from a transient loss of sensibility of the thumb post-operatively which were probably caused by irritation of the superficial branch of the radial nerve during insertion of the radial intramedullary nail at the portal of entry. But the complaints gradually improved by the third month.

There were two (4%) cases of delayed union, both with Grade I open fractures. One was 12 and the other was 14 years old. Their fractures united by 14 weeks without any intervention.

The stainless steel intramedullary nails are as effective as titanium nails for the treatment of displaced diaphyseal forearm bones fracture in children. There is no difference in union rates, complications and functional outcomes between stainless steel and titanium nails used for stabilization of fractures. Moreover stainless steel nail is more cost effective when compared to the titanium alloy.

In the present study, all the fractures were stabilized by closed reduction and intramedullary K-wire fixation. There were not significant intraoperative complications. The child after surgery was discharged after an average hospital stay of $4.04 \pm .832$ days, as such for school going children there was not much school hour loss.

CONCLUSION

Intramedullary elastic nailing is minimally invasive and less technically demanding. The patients usually require a hospital stay of an average of three to four days, unless there are complications like compartment syndrome and wound infection. It prevents the loss of school hours for the children as well as reduces the economical burden off the family.

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Maternal and Foetal outcome in Cholestasis of Pregnancy

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ABSTRACT

Background: Obstetric cholestasis has been associated with an increased risk of preterm delivery, intrapartum meconium, foetal distress and intrauterine foetal death. **Objectives:** To know the perinatal outcome of cholestasis in pregnancy. **Materials & Methods:** This is a hospital based Observational study conducted in the department of Obstetrics & Gynaecology at Nepalgunj Medical College Teaching Hospital Kohalpur between August 2015 to January 2016. A total of 40 patients were included in the study with diagnosis of obstetric cholestasis. Data were recorded & analysed. **Results:** The study group of 40 mothers delivered 40 new born. Mean age group of women in the study was 24.9±5.5 years & 70% were primigravida. The mean gestational age at onset of pruritus was 30.33±4.24 weeks. The rate of caesarean section was 40%. Premature membrane rupture noted in 20% cases while 17.5% were postpartum haemorrhage. Regarding foetal outcome; meconium baby 32.5%, Intrapartum foetal distress 17.5%, preterm baby 10% while 37.5% were complication free. There was 2.5% of intrauterine foetal death, where pregnancy continued beyond 38 weeks. Thirteen new borns (32.5%) were admitted to neonatal intensive care unit. **Conclusion:** Cholestasis in pregnancy is high risk group with adverse perinatal outcomes.

Key words: cholestasis, perinatal

INTRODUCTION

Intrahepatic cholestasis of pregnancy (ICP) is defined as pruritus with onset in pregnancy which is associated with abnormal liver function in the absence of other liver diseases which resolves following delivery.¹ ICP develops during second half to third trimester of pregnancy. In the first description of ICP in 1883, Ahlfield described maternal pruritus and jaundice in the last trimester of pregnancy disappearing after delivery.² A low incidence of 0.2% in Europe and a high incidence of 4-14% in Chile have been reported.³ ICP affects 1.2-1.5% women of Indian Asian and Pakistani Asian origin.⁴ One study has suggested that it is more common in women over the age of 35 years. A higher incidence is seen in twin pregnancies (20-22%)^{5,6}

The most common presenting symptom is pruritus that usually presents in the third trimester, becomes progressively more severe as the pregnancy advances and typically resolves within 48 hours of delivery. Approximately 80% of affected women present after 30 weeks of gestation,^{7,12} but ICP has been reported as early as 8 weeks¹³. It has been reported that itch may be present either prior to or after abnormal liver function is detected,¹⁴ Clinical jaundice is rare, affecting approximately

10-15% of pregnant women with ICP and the biochemical abnormalities resolve within 2-8 weeks of delivery².

Uterine and Placental consequences-A significant increase in uterine contractility has been shown during the course of the disease, an event that has been related to the high incidence of spontaneous preterm labour. Perinatal consequences-Higher incidences of clinical markers of intrauterine asphyxia, such as meconium staining of amniotic fluid and foetal distress^{11,5} have been described. There is association between ICP and Preterm labour^{11,5,15-7} The reported frequency of ICP related still birth is as high as 35% which is double that of normal population¹¹. A higher incidence of unexplained 3rd trimester foetal death has been described in association with severe ICP. The foetus shows no evidence of growth restriction and has normal surveillance tests 1 week or less before the foetal death¹⁸.

Recent studies suggest that oral use of Ursodeoxycholic acid improves maternal clinical and biochemical features and may prevent the foetal effects of ICP¹⁹⁻²⁴. Careful foetal assessment and appropriate medical intervention have improved the perinatal outcome⁵. Labour is induced unless contraindicated, at 38 weeks of gestation, In patients with jaundice the induction will be planned from 36 weeks onwards, after evaluation of lung maturity by amniotic fluid and amniotic fluid analysis⁸. As the incidence of Cholestasis of pregnancy in southeast Asia is 1.2-1.5% and as it has adverse maternal and perinatal consequences, so this study has been conducted.

MATERIAL AND METHODS

Hospital based Observational study was conducted from August 2015 to January 2016 at Nepalgunj Medical College Teaching Hospital, Kohalpur, Banke, Nepal. Forty women with

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Obstetric Cholestasis were included in the study. The pregnant lady, both primigravida and multigravida, may or may not be in labour, with Cholestasis of Pregnancy were included while Viral Hepatitis (A, B, C and E), Gallstone Diseases & Preexisting Liver Disease, IV Drug abuse, Alcohol abuse, other concomitant drug use such as Methyldopa were excluded from the study. A detailed history and clinical evaluation was done. Written informed consent was taken.

All the patients were subjected to routine ANC investigations, ultrasonogram for foetal assessment and Biophysical profile of foetus, maternal scan to rule out gall stone diseases, serology to rule out Hepatitis A, B, C, E and liver function Tests. Patients were admitted in the hospital depending upon the severity of symptoms, state of liver and period of gestation at the time of presentation.

Babies were evaluated for features of prematurity, weight, meconium aspiration at birth and for any other complications.

RESULT

Table I shows age distribution of subjects. Maximum number of subjects belong to age group of 18-35 years (87.5%). Table II shows number of subjects having onset of pruritis belong to 32-36 weeks of gestation constituting 40%. Table III shows Complications of Pregnancy with obstetric cholestasis, 12 subjects constituting complications like emergency caesarean section. Figure 1 shows Foetal outcome. 37.5% having no complications. Amniotic fluid meconium was next common

Age in years	Number (n=40)	Percentage
<18yrs	4	10
18-35yrs	35	87.5
>35yrs	1	2.5
Total	40	100

Table I: Age distribution

Weeks of gestation at onset of pruritus	Number (n=40)	Percentage
>36	2	5
<24	4	10
24-28	7	17.5
28-32	11	27.5
32-36	16	40
Total	40	100

Table II: Gestational age at onset of pruritus

complication of pregnancy. Figure 2 shows Neonatal intensive care unit admission. Neonatal sepsis (54%) was most common cause to be admitted in NICU.

Complications of Pregnancy	Number (n=40)	Percentage
Premature rupture of membrane	6	15
Prelabour premature rupture of membrane	2	5
Spontaneous Preterm Delivery	4	10
Oligohydramnios	5	12.5
Elective Caesarean section	4	10
Emergency caesarean section	12	30
Postpartum haemorrhage	7	17.5

Table III: Complications of Pregnancy with obstetric cholestasis

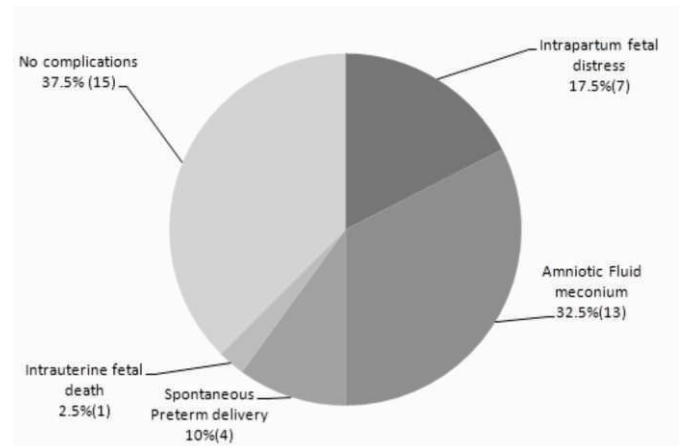


Figure 1: Foetal outcome

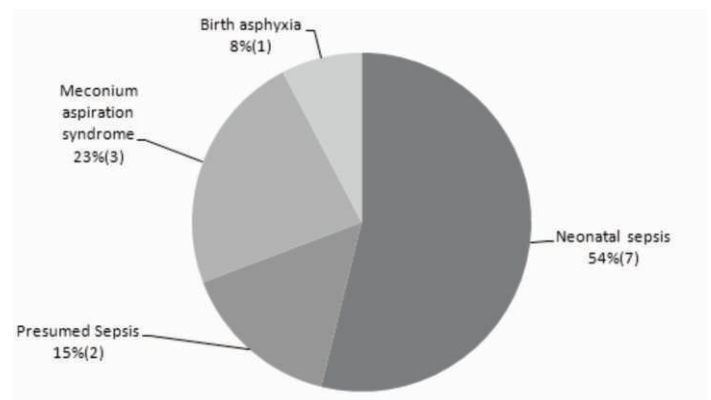


Figure 2: Neonatal intensive care unit admission

DISCUSSION

Intrahepatic cholestasis of pregnancy (ICP) or jaundice in pregnancy is usually observed in third trimester. The usual symptom is pruritus and deranged liver function test. This condition has adverse effect in the delivery, causing maternal and foetal morbidity & mortality.

The majority of patients in our study underwent lower segment cesarean section which was 40%(16). Out of 16 cases, 25%(4) underwent Elective caesarean section while 75%(12) underwent emergency caesarean section. According to Turunen et al (2010), the incidence of Cesarean section was found to be 14.8%²⁵ which is very low, as most of the women in this study were induced and delivered vaginally. Similarly the study conducted by Padmaja et al (2010) and Wang et al (2006), the incidence of Cesarean section was found to be 93.3%⁹ and 85.9%²⁶, respectively which is very high, attributed to high incidence of complicated pregnancies in their hospital

Alokanada et al in 2005 found that the incidence of post partum hemorrhage was 25%(8/32)³, which somehow correlates our study as 17.5%, (7/40) while Wang et al (2010) the incidence of post partum haemorrhage in their study was only 1.4%²⁶.

In our study, Prelabour rupture of membranes (PROM) was found in 15%(6/40) and Premature prelabour rupture of membranes (PPROM) was seen in 5%(2/40) of cases. According to Padmaja et al where the incidence of Premature Prelabour rupture of membranes was observed to be in 8.9% of cases⁹ as most of the women were delivered before 37 weeks of gestation (either spontaneous or iatrogenic) in this study.

Regarding the preterm delivery the incidence was 10%(4/40), which was similar to Sultana et al (2009) study, having the incidence of spontaneous preterm delivery as 10%⁴. Wang et al (2006), the incidence of Preterm delivery was found to be 24%²⁶ whereas In Rioseco et al (1994), the incidence was 12.1%⁵, higher than ours.

We have found that the incidence of meconium staining of amniotic fluid in women with Obstetric cholestasis as 32.5%(13/40). It was similar to Mei-ting et al (2014) study, where the incidence of meconium stained liquor was found to be 33.3%.¹⁰ Similarly Sultana et al (2009) observed the incidence of 20%(6/30)⁴ in their subjects and Wang et al (2006), found the incidence of meconium stained liquor to be 23.2%²⁶.

The incidence of Intrapartum fetal distress in women with Obstetric cholestasis was found to be 17.5%. According to Padmaja et al, Intrapartum fetal distress seen in 4.4%⁹ women with obstetrics cholestasis which is low attributed to proper ANC visits and timely treatment of obstetrics cholestasis. Rioseco et al, incidence of intrapartum. Fetal distress was found to be 12% which is low attributed to proper ANC visits and proper treatment of cholestasis⁵.

Intrauterine Fetal Death was found to be 2.5%. According to Sultana et al (2009), the incidence of IUFD was found to be 6.67%⁴, which is high, attributed to no previous ANC visits and the study conducted by Alokananda et al (2005) where the incidence of IUFD was found to be 3.1%(1/32)³ which is similar to our study.

Finally, in our study, the incidence of baby admission in neonatal intensive care unit was 32.5% (13/40). The causes for higher incidence of Neonatal admissions were attributed to Neonatal sepsis and Meconium aspiration syndrome in babies. According to study conducted by Sultana et al (2009), the incidence was 26.67%⁴, which was similar to our study. Alokananda et al (2005), observed the incidence of Neonatal admissions was found to be 40.6%(13/32), which was very high³ attributed to high incidence abnormal cardiotocograph and meconium staining of amniotic fluid.

CONCLUSION

The cholestasis in pregnancy belongs to high risk group during pregnancy. The pharmacological therapy could improve maternal & foetal outcome provided that variety of strategies taken during delivery with active management. The larger study is needed to establish the management protocol & to reduce maternal and foetal morbidity & mortality. Though this study is a small scale but it provides an important framework for management of Cholestasis in Pregnancy.

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