EDITORIAL

"Not for self, not for the fulfilment of any worldly material, desire or gain....
But solely for suffering of humanity.... I will treat and exel all."

- **Charak Samhita**

Medical Practice, Research and Ethics

Medical ethics basically means consideration of moral values as they apply to medicine. A need for ethical guidelines for physicians or health providers was felt in the ancient time as well. It has been detailed in Charak Samhita, by Hammurabi in Mesopotamia and by Hippocratus around 4th century B.C.

The Hippocratic guidelines have been transformed into Hippocratic oath for Doctors. A new era of ethical guidelines were started after the fall of the Nazi Germany where gore experiments were carried out on prisoners and Jews including vivisections (ablative procedures and experiments on conscious and live persons). A trial famously known as ***The Doctor's Trial,*** which was carried out by American military court at Neuremberg (Germany) found many German doctors guilty of ethical crimes including Dr Carl Brandt and these doctors were awarded life imprisonment and death sentences.

In USA a patients bill of right was developed which elucidates the confidentiality of health information. Respectful and non discriminatory treatment of the patients. In Helsinki, the entire medical community and the jurists worked hard from 1964 to 1989 and developed the ethical guidelines known as "Helsinki declaration". In 1991, WHO finally developed a very elaborate guideline epidemiological researches. In crux the ethical principle revolves around the principle of beneficence (benefit to patient) and principle of non malfeasance (no harm to the research participant) .

It is extremely important for medical practitioners and health providers and research workers to understand the basic tenets of the ethical guidelines individually adopted by different countries otherwise, an ugly situation may have to be faced by the health personnel & research workers as many ethical guidelines, if broken are legally punishable.

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Clinico-Demographic Profile and Pregnancy Outcome in Placenta Previa: A Study from Tertiary Care Hospital

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ABSTRACT

Introduction: Placenta previa is an obstetric complication which causes considerable maternal and fetal morbidity and mortality during pregnancy. This study is done with the objective to find out the clinico-demographic factors associated with placenta previa and to analyze maternal and perinatal outcome in these cases. **Methods:** This was a retrospective study done in the department of Obstetrics and Gynecology of Nepalgunj Medical College Teaching Hospital, Nepalgunj, a tertiary care hospital from Midwestern Nepal. Relevant data were retrieved from maternity register from June 2015 to May 2017. All women who had undergone caesarean section for placenta previa were included in this study. **Result:** Out of total 5812 deliveries during the study period there were 50 caesarian sections done for placenta previa which is 0.86% of total deliveries. Maximum number of mothers belonged to 26- 30 years of age group. Commonest type of placenta previa was minor type. About 72% were multiparous. 20% had previous LSCS and 24% had previous abortion. Postpartum hemorrhage was present in 36% mothers and 32% received blood transfusion. About 64% new born were preterm and low birth weight. 34% babies had less than 7 apgar score at 5 min. Still births were 6%. **Conclusion:** Placenta previa poses greater risk and need of blood transfusion to mother as well as birth of preterm and low birth weight babies which leads to perinatal morbidity and mortality. Timely diagnosis, regular antenatal check up and effective management may improve pregnancy outcome.

Key words: *Profile, pregnancy outcome, placenta previa, Nepalgunj medical college*

INTRODUCTION

Placenta previa is an obstetric complication which causes considerable maternal and fetal morbidity and mortality during pregnancy[1]. When the placenta is inserted wholly or partially in the lower uterine segment it is termed as placenta previa. The incidence is approximately 4-5 per 1000 pregnancies[2,3]. About one-third cases of antepartum hemorrhage belong to placenta previa[4]. For clinical purpose, placenta previa is graded into major and minor types. If the placenta lies over the cervical os it is considered as a major previa, else it is a minor previa[5]. Advancing maternal age, multiparity, previous Cesarean delivery, abortion and male fetuses all conferred increased risk for placenta previa[3]. Pregnancies complicated with placenta previa had significantly higher rates of second-trimester bleeding, pathological presentations, abruptio placentae, congenital malformations, perinatal mortality, Cesarean delivery, Apgar scores at 5 min lower than 7, postpartum hemorrhage, postpartum anemia and increased hospital stay as compared to pregnancies without placenta pravia[6]. Present study was to find out the clinico-demographic factors associated with placenta previa and to determine maternal and perinatal outcome.

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MATERIAL AND METHODS

This is a retrospective study done in the department of Obstetrics and Gynecology, Nepalgunj Medical College Teaching Hospital, Nepalgunj, a tertiary care hospital from Midwestern Nepal. Relevant data were collected from maternity register for the period of two years from June 2015 to May 2017. Approval for the study was taken from department. Study population was 50 mothers. All women who had undergone caesarean section for placenta previa were included in this study. Relevant clinico-demographic data were collected and maternal and neonatal outcome were observed, tabulated, analysed and presented in percentage.

RESULT

During the two year period there were 5812 deliveries, out of them 1692 were undergone caesarian section. Among them, caesarean section done for placenta previa was 50, which is 0.86 percent of total deliveries. Table I shows 16 (32%) belonged to 26- 30 years of age group followed by 15 (30%) to 21- 25 years age group and 12 (24%) to 31-35 years of age group. Four (8%) women were more than 35 years of age.

Age group (yrs)	N=50	Frequency (%)
<20	3	6
21-25	15	30
26-30	16	32
31-35	12	24
>35	4	8
Total	**50**	**100**

Table I: Distribution of mothers according to age group

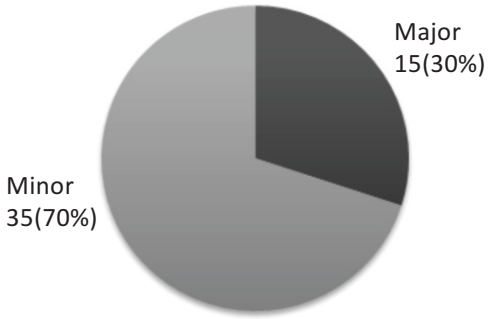

Figure 1 shows type of placenta previa.

Obstetric profile		N=50	Frequency (%)
Parity	Primi	14	28
	Multi	36	72
Previous LSCS		11	22
Previous abortion		12	24
Malpresentation		10	20
Placental abnormality (morbid adherent placenta)		1	2
No other associated factors		16	32

Table II: Obstetric profile of subjects

Factors	N=50	Frequency (%)
Postpartum Hemorrhage	18	36
Blood transfusion	16	32
No complication	16	32

Table III: Obstetrical complications

Factors		N=50	Frequency (%)
Gestational age (weeks)	28-33	13	26
	34-36	19	38
	>37	18	36
Preterm birth		32	64
Baby weight (gms)	<1500	3	6
	1500-2499	29	58
	2500-3500	14	28
	>3500	4	8
Low birth weight babies		32	64
Apgar score (<7 in 5 minutes)		17	34
Apgar score (>7 in 5 minutes)		30	60
Still birth (Apgar score 0)		3	6
Male baby		29	58
Female baby		21	42

Table IV: Neonatal outcome

Out of 50 participants, 15(30%) constituted major type while 35 (70%) were minor type. Majority of women i.e. 36(72%) were multi para. 11 (22%) were undergone previous LSCS and 12(24%) had history of previous abortion. Malpresentation was present in 10 (20%) subjects. One woman had morbid adherent placenta. 18(36%) cases of placenta previa were complicated by postpartum hemorrhage and 16(32%) women were given blood transfusion. No maternal mortality observed from placenta previa.

Table IV shows neonatal outcome. About 32(64%) babies were preterm and same numbers of babies were low birth weight. In 17(34%) babies, apgar score in 5 minute was less than 7. The still birth deliveries were 3(6%). Male baby outnumbered female baby, 29(58%) of all deliveries.

DISCUSSION

Placenta previa invites serious complications during pregnancy which is associated with increased maternal and perinatal morbidity and mortality.

In this study out of total 5812 deliveries, 0.86% cases were undergone caesarian section for placenta previa. This finding is slightly higher than the result obtained by Ojha N. who did similar study at TUTH, Kathmandu and found that 0.55% of caesarian sections were done for placenta previa[7]. This finding could be due to the reason that Nepalgunj medical college hospital is a major tertiary referral centre in mid western and far western region. High risk cases are usually referred from various district hospitals of the region. In the meta analysis reviewing studies on placenta previa between 1950-1996, among 13,992 patients diagnosed with placenta previa, the reported incidence of placenta previa ranged from 0.28%-2.0%[8]. This is similar with our observation. In this study, almost 1/3rd of subjects were more than 30 years of age and similar number belonged to 26- 30 years age group. This finding is similar with the finding obtained by Ojha N[7]. Minor type of placenta previa was the most common diagnosis in this study which is also similar to same study[7].

Study reveals that placenta previa was more common in multiparous women i.e. in 72% of cases. Various studies have shown that multi parity is an important risk factor for placenta previa[9,10]. Similar finding was reported in the study done by Lama S. et.al.[11] Findings suggest that 22% of participants were undergone previous LSCS and 24% had history of previous abortion. Study done by Ananth CV et al. shows a strong association between a previous cesarean delivery, spontaneous or induced abortion, and the subsequent development of placenta previa[8]. In a different study done by A.S Anzaku et.al. in 135 cases of placenta praevia among 10,895 deliveries found previous history of caesarean section in 40.7% and previous history of abortion in 20.4%[12].

This study indicates 18 (36%) cases of placenta previa were complicated by postpartum hemorrhage and 16 (32%) women were given blood transfusion. Similar result was observed in the study done by Ojha N[7]. In a A Systematic Review and Meta-Analysis by Dazhi Fan et.al, who draw result from 1148 studies, 11 included in the meta-analysis, which involved 5146 unique pregnant women with placenta previa found that overall pooled incidence of PPH was 22.3%[13].

Regarding neonatal outcome, Infants born to women with placenta previa had significant number of low birth weight, prematurity, Apgar scores of <7 at 5 min. and stillbirth. This observation is consistent with previous studies[7,14,15]**.** The possible explanation for these could be that the bleeding associated with placenta previa may lead to hypoxia, intrauterine growth restriction, and prematurity with underdeveloped organ systems. There was slight preponderance of male babies in our study. This finding is consistent with the study done by Wen SW et al[16].

CONCLUSION

Placenta previa is one of the main indications for caesarian sections. Grand multiparty mother has got more risk to have abnormal placentation. Placenta previa also commonly invites complications like post partum hemorrhage followed by blood transfusion. So that early detection of placentation by ultrasound and timeliness intervention prevents the maternal and perinatal morbidity and mortality.

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ORIGINAL ARTICLE

Acute Respiratory Distress and Its Risk Factors among Neonates Admitted in a Tertiary Care Center of Western Nepal

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ABSTRACT

BACKGROUND: Neonatal period is defined as a period from birth to under 4 weeks (<28 days) of age. It is a highly vulnerable time for an infant, who is completing many of the physiologic adjustments required for extra uterine existence. The term Respiratory distress (RD) is used to indicate signs & symptoms of abnormal respiratory pattern. **Methods:** All neonates admitted in neonatal intensive care unit of Nepalgunj Medical College, Kohalpur with respiratory distress were included. Same number of age and sex matched controls without RD were selected. **Results:** The NICU based hospital incidence of RD was 9.1% with male: female ratio 1.4:1. The most common etiology was neonatal sepsis (51.6%), followed by hyaline membrane disease (17.8%), TTN (12.7%), meconium aspiration syndrome (6%), birth asphyxia (5.08%), tracheoesophageal fistula (2%) and pneumothorax (2%). Newborns with poor APGAR score requiring resuscitation were more likely to develop RD (p=0.025). Newborns with birth weight <2.5 kg and >4 kg were 2 times likely to develop RD as compared to control group (p<0.012). There was 7 times higher risk of developing MAS when a baby was born through thick MSL as compared to control group (P<0.022). Inadequate ANC visit significantly increased RD in newborns (p<0.001). Babies born to mother with PROM for more than 18 hours were 5.5 times likely to develop RD (p<0.001) whereas those born to mother who had any source of infection were about 6 times at risk of developing respiratory distress than control group (p=0.007). **Conclusion:** Certain measures that could be taken to reduce the number of RD are: 1. discouraging early marriage and teenage pregnancy. 2. Increasing awareness regarding temporary and permanent contraceptive measures. 3. Promoting education of girls. 4. Increasing coverage of ANC visit in rural areas and 5. formulating integrated plan and policies from the Government level.

Key words: *Incidence, respiratory distress, risk factors*

INTRODUCTION

Neonatal period is defined as the first 28 days after birth. It is a highly vulnerable time for an infant, who is completing many of the physiologic adjustments required for extra uterine existence. The high neonatal morbidity and mortality rates attest to the fragility of life during this period; of all deaths occurring in the 1st yr of life two thirds are in the neonatal period[1]. Respiratory distress (RD) constitutes the commonest cause of morbidity in newborn babies and pulmonary pathology is the most frequent autopsy findings in the neonates[2].

The term Respiratory distress (RD) is often used to indicate signs & symptoms of abnormal respiratory pattern[1]. A newborn with RD is characterized by tachypnoea (more than 60 breaths per min), nasal flaring, stridor, grunting, dyspnoea, wheezing, central cyanosis, chest wall retractions & working of accessory muscles. Presence of two or more signs persisting for four hours or more suggest respiratory distress[1,3]. Severity of RD can be assessed by Downe's scoring system[4].

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RD is one of the most common emergency problems seen in newborn responsible for 30-40% admission in neonatal period[5]. The importance of RD in neonates can be realized from the fact that the neonates with respiratory distress are 2-4 times more likely to die than those without respiratory distress so its prevention and adequate management will decrease mortality[6]. Failure to readily recognize symptoms and treat the underlying cause of respiratory distress in newborn can lead to short and long-term complications, including respiratory failure and even death as short term and chronic lung disease or recurrent pneumonia as long term complication[7,8]. There are many identifiable maternal and neonatal risk factors causing respiratory distress which if recognized in time can give better neonatal outcome.

MATERIALS AND METHODS

A prospective case control study was carried out among newborns with respiratory distress admitted to neonatal intensive care unit (NICU) from labor room and obstretic ward of Nepalgunj Medical college Teaching Hospital, Kohalpur, Banke over the period of one year from January 2016 A.D to December 2016 A.D. Total of 118 neonates developed respiratory distress and all were included in the study**.** Another 118 newborns without respiratory distress were taken delivered at the same time, matched age and sex wise as a control group to determine the risk factors of respiratory distress. All newborns whose mothers were willing to participate and delivered in NGMCTH were included in the study whereas those mothers not willing to participate, delivered outside NGMCTH and neonates without respiratory

distress whose gestational age and sex not matched were excluded from the study. Every mother was interviewed personally in Nepalese language. Details of neonates regarding age, sex, birth weight and APGAR score, maternal factors like ANC visits, history of leaking, fever were recorded in interview forms, data was processed and analyzed by using Statistical Package for Social Sciences (SPSS 19). Variables were expressed in the form of frequencies and percentage. Chi square test and Odd Ratio was computed to analyze relationship between risk factors.

RESULTS

During the study period 1306 newborns (inborn) were admitted to NICU, out of which 118 neonates developed respiratory distress giving an incidence of 9.1% and all were included in the study**.** Another 118 newborns were taken delivered at the same time, matched age and sex wise as a control group to determine the risk factors of respiratory distress. Out of these, 69(58.5%) cases were male and 49(41.5%) were female giving male: female ratio of 1.4:1.

Etiology	Number(n)	%
Neonatal sepsis	61	51.6
Hyaline membrane disease	21	17.8
Transient tachypnea of newborn	15	12.7
Meconium aspiration syndrome	7	6
Birth asphyxia	6	5.08
Congenital heart disease	4	3.4
Tracheosophageal fistula	2	1.62
Pneumothorax	2	1.62
Total	**118**	**100**

Table I: Etiology of Respiratory distress in cases (n=118)

The most common etiology found in the study was neonatal sepsis (51.6%), followed by hyaline membrane disease (17.8%) and TTN (12.7%). Least common causes were tracheosophageal fistula (1.62%) and pneumothorax (1.62%). The study showed that newborns born with poor apgar score i.e. <5 requiring resuscitation were more likely to develop respiratory distress which was statistically significant (p=0.025).

Birth weight of newborn was divided into high risk group (<2.5 kg and >4kg) and normal weight group (2.5-4 kg). In this study newborn who had high risk birth weight were 2 times likely to develop respiratory distress as compared to control group which was statistically significant (p=0.012).

The study showed that there was 7 times higher risk of developing MAS when a baby born through thick MSL as compared to control group which was statistically significant (P=0.022). The mothers who had inadequate ANC visit were likely to have babies with RD which is statistically significant. (p<0.001)

The study showed that babies born to mothers with PROM for more than 18 hours were 5.5 times likely to develop respiratory distress which was statistically significant (p<0.001).

APGAR score	Respiratory distress		Total n (%)	0R (95% CI)	P value
	Present(%)	Absent (%)			
>5	109(92.37)	116(98.30)	221(93.64)	0.209 (0.044- 0.988)	0.025
<5	9 (7.63)	2 (1.7)	15 (6.35)		
Total	118(100)	118(100)	236(100)		

Table II: Association of RD with APGAR score

Birth weight (kg)	Respiratory distress		Total n (%)	0R (95% CI)	P value
	Present(%)	Absent (%)			
<2.5 >4	58(49.15)	38 (32.20)	96(40.67)	2.035 (1.200- 3.452)	0.012
2.5-4	60(50.85)	80 (69.80)	140(59.33)		
Total	118 (100)	118 (100)	236 (100)		

Table III: Association of birth weight with RD

MSL	Respiratory distress		Total n (%)	0R (95% CI)	P value
	Present(%)	Absent (%)			
Present	7 (5.93)	1 (0.84)	8 (3.38)	7.37 (60.93-0.893)	0.022
Absent	111 (94.06)	117 (99.1)	228 (96.61)		

Table IV: Association of RD with Thick meconium stained liquor

ANC visit	Respiratory distress		Total n (%)	0R (95% CI)	P value
	Present(%)	Absent (%)			
Adequate	87(73.72)	109(92.37)	196(83.05)	0.232 (0.105- 0.532)	<0.001
Inadequate	31 (26.27)	9 (7.6)	40 (16.94)		
Total	118(100)	118(100)	236(100)		

Table V: Association of RD with maternal ANC visits

PROM >18 hours	Respiratory distress		Total n (%)	0R (95% CI)	P value
	Present(%)	Absent (%)			
Present	37(31.35)	9 (7.6)	46 (19.4)	5.532 (12.10-2.52)	<0.001
Absent	81 (68.6)	109(92.4)	190(80.5)		
Total	118(100)	118 (100)	236(100)		

Table VI: Association of RD with PROM for more than 18 hours

Maternal infection	Respiratory distress		Total n (%)	0R (95% CI)	P value
	Present(%)	Absent (%)			
Present	11 (9.3)	2 (1.6)	13 (5.5)	5.963 (27.5- 1.29)	0.007
Absent	107 (90.6)	116 (98.3)	223 (94.5)		
Total	118(100)	118(100)	236 (100)		

Table VII: Association of RD with maternal infection

Maternal history of infection was taken as fever, foul smelling vaginal discharge or symptoms suggestive of urinary tract infection. This study showed that newborns born to mothers who had any source of infection were about 6 times at risk to develop respiratory distress than compared to control group which was statistically significant (0.007).

DISCUSSION

The importance of respiratory distress in neonates can be realized from the fact that the neonates with respiratory distress are two to four times more likely to die than those without respiratory distress[6]. Knowledge of respiratory distress is important so as to plan and provide the basic facilities for sick and low birth weight newborns[9]. In our study respiratory distress constituted 9.1% of all inborn cases admitted in Neonatal Intensive Care Unit during study period. This is similar to other studies done by Kumar et al[10] and Lui et al[11] where the incidence was reported as 6.7% and 6.8% respectively.

Out of 118 newborns, 69 (58.5%) were male 49 (41.5%) female with male: female ratio 1.4:1 suggesting more male preponderance which is similar with other studies[12,13,14]. This can be explained by the fact that due to the sex-limited biochemical process i.e. male fetuses are exposed to high level of androgens and Mullerian Inhibiting Substance (MIS) which inhibit lung development and thereby leading to relative immaturity of male fetal lungs as compared to female fetal lungs in last two months of pregnancy[15].

The most common cause of respiratory distress in our study was neonatal sepsis (51.6%) followed by hyaline membrane disease (17.8%), transient tachypnea of newborn (12.7%), meconium aspiration syndrome (6%), and birth asphyxia (5%). Other less common causes were congenital heart disease (3.4%), tracheosophageal fistula (1.62%) and pneumothorax (1.62%). The most common cause of acute respiratory disorder as reported by Ali Z in his study was pulmonary infection (39%) followed by hyaline membrane disease (29%) and birth asphyxia (10.9%)[12]. Another study from India conducted by Mathur et al reported that 29% of all admissions to neonatal unit were due to respiratory distress out of which pneumonia (68.6%) was the most common cause of respiratory distress[16]. Such a high incidence of neonatal sepsis in our study was due to high number of mothers with some focus of infection and premature rupture of membrane for more than 18 hours which are considered as the strong risk factors of neonatal sepsis.

The study showed that newborns born with poor APGAR score were statistically more likely to develop respiratory distress which is similar to other study conducted by Kumar et al.[10] About 50% of newborns with respiratory distress had high risk birth weight i.e. <2.5 kg, >4 kg. It was shown that newborns with high risk birth weight were 2 times more likely to develop RD as compared to control group which is similar to other studies[12,17,18]. It could be because of the fact that low birth weight babies could not initiate and sustain breathing soon after delivery, so more prone for RD and respiratory failure[19].

6% of newborn had MAS and all had thick meconium stained liquor and all were full term babies. Zazzou et al. reported 100% of MAS developed in newborns born to meconium stained liquor[14]. There are various studies reporting MAS who were delivered through meconium stained liquor[20,21,22]. It is because of the fact that meconium when aspirated into tracheobronchial tree causes airway obstruction, chemical pneumonitis, surfactant dysfunction and persistent pulmonary hypertension (PPHN) causing RD[15].

The mothers who had inadequate ANC visit were more likely to have babies with RD which is similar to other study[17]. It could be due to geographical restraint, financial issues, lack of awareness, family burden and lack of health facilities that most women don't get enough care during pregnancy.

In this study babies born to mothers with PROM >18 hours were 5.5 times more likely to develop RD (p value <0.001). Similar result was given by Merenstein G B et al and Zaazou et al[14,23]. It could be because of the fact that PROM leads to more chances of infection, prematurity, lung hypoplasia and fetal distress all being potential causes of neonatal RD[15,24].

In the present study newborns born to mother with any source of infection (UTI, fever, chorioamnionitis) were about 6 times more likely to develop RD as compared to control group which was statistically significant (p value 0.007). Similar result was given by Chan CJ et al[25].

CONCLUSION

Respiratory distress is one of the most common cause of morbidity and mortality in neonates. So to decrease the incidence of respiratory distress following measures should be taken at the Government level viz: early marriage and teenage pregnancies to be discouraged, knowledge about use of temporary and permanent contraceptive measure should be given, education level of every girl should be promoted, coverage of ANC visits should be increased helping early diagnosis as well as treatment of maternal infection and health care facilities of tertiary level should be provided in rural areas.

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ORIGINAL ARTICLE

Correlation Between Serum Prostatic Specific Antigen and Prostatic Volume in Benign Prostatic Hyperplasia

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ABSTRACT

Introduction: Benign prostatic hyperplasia (BPH) is a progressive condition characterized by prostate enlargement accompanied by lower urinary tract symptoms (LUTS). Benign prostatic hyperplasia arises in the periurethral and transition zones of the prostatic gland and represents an inevitable phenomenon for the ageing male population. An estimated 75% of men>50 years of age have symptoms arising from benign prostatic hyperplasia, and 20–30% of men reaching 80 years of age require surgical intervention for the management of BPH. Prostate specific antigen (PSA) is a serine protease produced by the prostate epithelium and periurethral glands in male. Serum PSA elevation occurs as a result of disruption of normal prostatic architecture that allows PSA to diffuse into prostatic tissue and gain access to the circulation. Benign prostatic hyperplasia, prostatic carcinoma and prostatitis are three common diseases where PSA in the serum is raised. **Aims and objectives:** To evaluate the PSA level and To find out the relationship between serum PSA level and the volume of prostate in Benign hyperplasia of prostate. **Material and Methods:** This is a Hospital based prospective study which was conducted in the Department of Surgery at Nepalgunj Medical College Teaching Hospital, Kohalpur, for a duration of 1 year from 13th July 2015 to 12th July 2016. A total of 30 cases were studied. Patients were chosen for the study on the basis of clinical history and DRE. Patient with LUTS symptoms and enlarged Prostate on DRE were further subjected to PSA screening through blood examination and Transabdominal ultrasound for measuring prostatic volume. Patients were explained about procedure and following consent, patients were subjected for TURP under spinal anesthesia/general anesthesia. Specimen was sent to the Department of Pathology, Nepalgunj Medical College for Histopathological evaluation. **Results:** Out of 30 patients, one patient was of 44 years of age, rest of them were above 50 years of age and the mean age was 63.9±8.64 years. All the patients had voiding problems, of which 28 patients (94%) had obstructive symptoms and 27 patients (90%) had irritative symptoms. Most patients had history of nocturia which was present in 24 patients (83%). Mean PSA level was 6.36 ng/ml with a range of 3.2-12 ng/ml. Mean prostate volume measured by TAUS was 60.30 ml. and that by DRE was 38.33 ml. There was statistically significant positive correlation between PSA level and prostate volume measured by TAUS with Pearson's correlation coefficient (r=0.679). **Conclusion:** The analysis of present study consisting of 30 patients showed that mean PSA and prostate volume increased with advancing age, and the correlation between PSA and prostate volume estimated by TAUS in BPH as found to be statistically significant (p< 0.05). DRE underestimated the volume of prostate with a mean difference 21.97ml. The correlation of age of the patient with PSA and prostate volume are (r=0.128) and (r=0.036) respectively. The above value shows that both are statistically weekly positive but the association between age of patient and PSA seems to be higher in comparison to age of the patient and prostate volume.

Keywords: *Benign prostatic hyperplasia (BPH), lower urinary tract symptoms (LUTS), Prostate specific antigen (PSA), Prostate volume (PV), Digital rectal examination (DRE).*

INTRODUCTION

Benign prostatic hyperplasia (BPH) is a progressive condition characterized by prostate enlargement accompanied by lower urinary tract symptoms (LUTS). Benign prostatic hyperplasia arises in the periurethral and transition zones of the prostatic gland and represents an inevitable phenomenon for the ageing male population. Benign prostatic hyperplasia is uncommon before age 40, roughly 50% of men develop BPH-related symptoms around 50 years of age. The incidence of BPH increases by 10% per decade and reaches 80% at approximately 80 years of age. An estimated 75% of men >50 years of age have symptoms arising from benign prostatic hyperplasia, and 20–30% of men reaching 80 years of age require surgical intervention for the management of BPH[1].BPH affects both glandular epithelium and connective tissue stroma to variable degrees in which adenosis, epitheliosis and stromal proliferation are seen in differing proportions[2].

Prostate specific antigen (PSA) is a serine protease produced by the prostate epithelium and periurethral glands in male. Serum PSA elevation occurs as a result of disruption of normal prostatic architecture that allows PSA to diffuse into prostatic tissue and gain access to the circulation. This can occur in the setting of prostate disease and prostate manipulation (prostate massage, prostate biopsy). Benign prostatic hyperplasia, prostatic carcinoma and prostatitis are three common diseases where PSA in the serum is raised[3].

Prostate volume (PV) varies widely throughout man's lifetime, and in the course of different prostatic diseases, including

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benign prostatic hyperplasia (BPH). Both PV and serum prostate-specific antigen (PSA) are key predictors of clinical progression and response to medical therapy in patients with BPH, thus helping to select the regimen for medical treatment (alpha-blockers, 5-alpha-reductase inhibitors (5-ARI), or their combination[4].

In normal person, the serum concentration of PSA are proportional to the volume of prostatic epithelium, but the release of PSA from BPH is three fold that from the normal prostate and in carcinoma of prostate the release of PSA is thirty fold. PSA is elevated approximately 0.12ng/ml/g of BPH tissue. Thus, patients with enlarged glands due to BPH may have elevated PSA levels[5,6].

The ratio of PSA to gland volume is termed as PSA density. The positive predictive value of PSA density is slightly higher than the use of a PSA level >4 ng/ml in several series (30–40% versus 20–30%). Instead of adjusting the PSA to total prostate volume, some have advocated adjusting it to transition zone volume (PSA transition zone density)[6].

The concept of PSA density (PSAD) has been described as, the PSA value (ng/ml) divided by the prostate volume (ml). PSA levels associated with a small prostate may have prostate cancer while the same value of PSA in a man with a large prostate may indicate BPH. It has been suggested that a PSAD greater than 0.15 is associated with 25% incidence of cancer, and a PSAD less than 0.10 is associated with 5% incidence of cancer[7].

During the past two decades, the development of highly specialized ultrasound equipment has allowed the application of this imaging technique in the diagnosis, treatment and follows up of prostatic disease, particularly BPH. Transabdominal ultrasound measurement of prostate volume is consistent and correlated to transrectal prostate volume when the bladder volume is less than 400ml. The maximum prostatic protrusion occurs when bladder volume is between 100 and 200ml. It is thus recommended that the transabdominal ultrasound measurement of prostatic protrusion should be carried out at bladder volumes between 100 and 200 ml and should be avoided at the extremes of bladder volumes[8].

There is paucity of data regarding reports of PSA level in Benign hypertrophy of prostate and its relationship with volume of prostate in Nepal particularly in this region of country. Therefore this study was conducted to estimate serum PSA level and its relationship with volume of prostate.

MATERIAL AND METHODS

This is a Hospital based prospective study which was conducted in the Department of Surgery at Nepalgunj Medical College Teaching Hospital, Kohalpur, for a duration of 1 year from 13th July 2015 to 12th July 2016**.** Patients were chosen for the study on the basis of clinical history and DRE. Patient with LUTS symptoms and enlarged Prostate on DRE were further subjected to PSA screening and Transabdominal ultrasound for measuring prostatic volume. Patients were explained about procedure and following consent, subjected for TURP under spinal anesthesia/general anesthesia. Specimen was sent for Histopathological evaluation.

Grades of prostatic enlargement on DRE

Grading of prostate volume was categorized using the grading scale ranging from 0 to 4+.[9]

(1) Normal gland (20 g); about the size of a chest nut _____ 0.
(2) Enlarged prostate gland (about 25 g); about the size of a plum and occupies a bit < 1/4th of the rectum lumen_____1+.
(3) Enlarged prostate gland (about 50 g); about the size of a lemon and fills somewhat >½ of the rectum_____2+.
(4) Enlarged prostate gland (about 75 g); about the size of an orange and fills approximately three-fourth of the rectal diameter_____3+.
(5) Enlarged prostate gland (about 100 g); may attain the size of a grape fruit and fills so much of the rectal lumen that adequate examination is difficult_____4+.

PSA ESTIMATION

Blood sample was drawn before prostatic manipulation, waited at least for 24 hrs. After the manipulation. 5 ml of venous blood was collected in blood collecting tube. Standing at room temperature, centrifuging, separating serum part. PSA was estimated by chemi luminescence immunosorbent assay (CLIA), a solid phase two-site immunoassay. Transabdominal ultrasound was used to measure prostatic volume at Radiology Department. Patients with minimal bladder volume of 100 to 200 ml were subjected to USG for near correct estimation of prostate volume by USG[10].

Prostatic volume was measured using ellipsoid formula.
Ellipsoid formula (V) = length x height x width x 0.52. (V = volume of prostate). PSAD was then calculated by PSA (ng/ml) divided by prostatic volume (ml).[7]

All patients included in the study underwent transurethral resection of prostate. Following surgery the tissue resected were sent for histopathological examination to confirm the diagnosis of BPH and to exclude those patients with prostatic carcinoma. Bivariate correlation and regression analysis was done by using SPSS 20.0 for windows. P value of <0.05 was taken as statistically significant.

RESULT

A total of 30 patients were included in the study. Age of patients ranged from 44-82 years with mean age of 63.9 years (SD±8.64). The distribution of patient according to age group is shown in Table I.

Age group	No of patients	Percent
< 50	1	3.3
50 -59	7	23.3
60-69	12	40
70-79	8	26.7
>80	2	6.7
Total	**30**	**100**

Table I: Age distribution of patients (N=30)

PSA(ng/ml)	No of patients	Percent
<4.0	1	3.3
4.0- 10.0	27	90.0
>10.0	2	6.7
Total	**30**	**100.0**

Table II: Frequency distribution of PSA (N=30)

Prostate volume (gm)	No of patients	Percent
25 (1 +)	19	63.3
50 (2 +)	6	20
75 (3 +)	5	16.7
Total	**30**	**100**

Table III: Frequency distribution of prostate volume by DRE (N=30)

Prostate volume (gm)	No of patients	Percent
40-59	14	46.7
60-79	12	40
>80	4	13.3
Total	**30**	**100**

Table IV: Frequency distribution of Prostate volume by TAUS (N=30)

		PSA	USGV	p value
PSA	Pearson Correlation	1	.679**	
	Sig. (2-tailed)		.000	
	N	30	30	<0.01
USGV	Pearson Correlation	.679**	1	
	Sig. (2-tailed)	.000		
	N	30	30	

**.Correlation is significant at the 0.01 level (2-tailed).

Table V: Correlation between PSA and USGV

Model	Sum of Squares	Df	Mean Square	F	Sig.	p value
Regression	35.411	1	35.411	.465	.501[b]	<0.05
Residual	2131.289	28	76.117			
Total	2166.700	29				

Table VI: Correlation of PSA and age

		Age in years	USGV	p value
Age in years	Pearson Correlation	1	.036	<0.05
	Sig. (2-tailed)		.852	
	N	30	30	
USGV	Pearson Correlation	.036	1	
	Sig. (2-tailed)	.852		
	N	30	30	

Table VII: Correlation between age and USGV

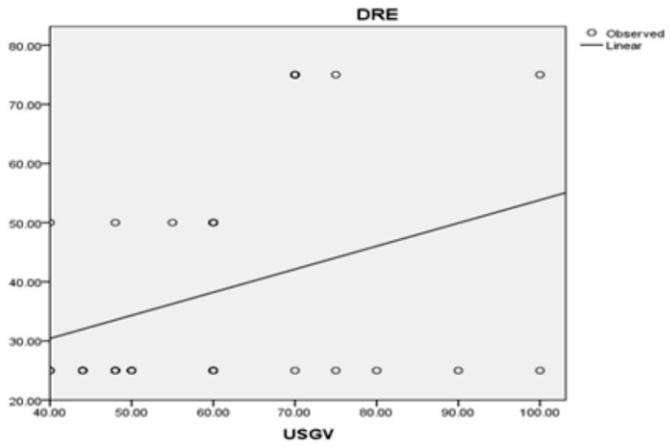

Figure 1: Correlation of prostate volume by DRE and TAUS

PSAD	No of patients	Percent
0.06	1	3.3
0.07	5	16.7
0.08	1	3.3
0.09	7	23.3
0.10	2	6.7
0.11	3	10.0
0.12	4	13.3
0.13	5	16.7
0.17	1	3.3
0.19	1	3.3
Total	**30**	**100**

Prostate specific antigen density (PSAD)

Table VIII: Distribution of PSAD (N=30)

PSA value ranged from 3.2-12 ng/ml with mean PSA of 6.36 ng/ml (SD±1.9). Out of 30 patients, 27 patients (90%) had PSA level in between 4.0 – 10.0 ng/ml. One patient (3.3%) had PSA less than 4 ng/ml whereas only 2 patients (6.7%) had PSA level more than 10 ng/ml as shown in table II.

Prostate volume was estimated by DRE. Prostate volume by DRE ranged from 25-75 gm, mean prostate volume by DRE was 38.3 ml (SD±19.4).19 patients (63.3%) had grade 1+ (25 gm), 6 patients (20%) had grade 2+ (50 gm) and only 5 patients (16.7%) had grade 3+ (75 gm). Almost more than half of patients had grade 1+ prostate enlargement. There was no patient with prostate enlargement grade 4 + as shown in table III.

All patients were subjected to transabdominal ultrasound. The volume of prostate is shown in Table IV. Prostate volume ranged from 40 ml to 100 ml, with mean prostate volume 60.3 (SD±16.8).

The mean difference of prostate volume by TAUS and DRE was 21.9 ml. DRE tend to underestimate prostate volume in comparison to TAUS.

There was moderately positive correlation between PSA and prostate volume estimated by Transabdominal ultrasound with Pearson's correlation coefficient r=0.679. The correlation was statistically significant ($p<0.01$).

There was a very weak correlation between PSA and age in years with Pearson's Correlation coefficient r=0.128. There was a very weak correlation between age and prostate volume by TAUS with Pearson's coefficient r=0.036.

Prostate specific antigen density in 30 patients with BPH was also calculated. Out of 30 patients, 7 patients (23.3%) had PSAD 0.09. The mean PSAD was 0.10 (SD±0.02).

DISCUSSION

BPH is most common benign tumour in men, and its incidence is age related. The prevalence of histological BPH in autopsy studies rises from approximately 20% in men aged 41-50. To 50% in men aged 51-60, and to >90% men older than 80. Although clinical evidence of disease occurs less commonly, symptoms of prostatic obstruction are also age related. At age 55, 25% of men report obstructive voiding symptoms. At age 75, 50% of men complain of a decrease in force and caliber of their urinary stream[11].

Most of the workers have shown that there is a strong relationship of age with PSA and prostate volume[12,13,14]. however, a few workers observed a weak relationship of age with PSA and prostate volume.[3,4]

The present study is the analysis to address the interrelationship among age, serum PSA and prostate volume in a small cohort of men without prostate cancer. This study involved serum PSA estimation using the same method, and all prostate volume measurements were done by TAUS, thus assuring good reproducibility of the results. The most important finding is that there is an age-dependent relationship between serum PSA and prostate volume. Knowing a patient's age and serum PSA allows clinicians to determine whether the patient has prostatic enlargement as well as the degree of enlargement with reasonable certainty.

Prostate volume (PV) is perhaps the most extensively studied risk factor for BPH progression. Men with a PV of ≥ 30 mL are more likely to have moderate-to-severe symptoms (3.5-fold increase), decreased flow rates (2.5-fold increase), and urine retention (three- to four-fold increase) than are men with a PV < 30 mL. So, PV information has become more and more important because the PV strongly predicts BPH-related morbidity such as acute urinary retention and the need for

surgery. Because PV is strongly related to serum PSA in men with no evidence of prostate cancer, it was suggested that serum PSA can be used to estimate the degree of prostate enlargement accurately enough for it was a useful tool in therapeutic decision making[15].

Generally, the typical method of measuring PV is Transrectal ultrasound (TRUS) (Stravodimos et al., 2009).[16] But, TRUS is relatively painful. Moreover, TRUS is also not cost-effective and routine evaluation of patients with BPH. In our setting, TRUS may not be available everywhere. Additionally, DRE is simple to perform and practical for estimating the PV, but it has been revealed that DRE underestimates the real prostate size[15].

Roehrborn and associates have introduced the concept of PSA as a surrogate measurement for prostate volume in patients with clinical BPH and LUTS[13]. However, Partin et al. (1990) have suggested that serum PSA does not correlate with prostate volume in BPH[17]. This study also support a positive relationship between PSA and prostate volume (Table V). There are evidence to suggest that a reasonable linear correlation exists not only in patients with LUTS and clinical BPH, but also in a large series of patients with histologically proven BPH. These data are comparable to recent correlations by Bosch et al. and others, between PSA and prostate volume noted in patients with clinical BPH and LUTS, with the correlation coefficient (r) ranging from 0.37 to 0.58[13,18,19].

The moderately positive correlation of PSA and prostate volume observed in this study may be due to the dissimilarities between the databases. While previous studies have examined only patients with clinically diagnosed BPH, This study represents patients with histologically proven BPH. The observation in present study is in conformity with findings of other worker indicating the prevalence of clinical BPH and LUTS match the prevalence of histological BPH[20]. The differences between histologically and clinically derived databases may indeed be explained by the diverse etiologies of LUTS in a given population.

Among many factors that contribute to prostate enlargement in BPH, the two most well known etiologic factors were aging and androgen[21]. Consistent with the theory that aging is an etiological factor of BPH, the observation made in this study showed a trend of increasing median PV with advancing age (Table VII). This increasing PV with aging is accompanied with an increasing trend of PSA with age (Table VI). This observation is consistent with other studies[12,13,14,22,23]. The correlation between age and PV in present study is the weakest (r=0.036) which was similar to the result of the study done by Mosli et al. in Saudi men[4]. Consistent with results from other studies, PSA was positively correlated with age in present study. However, the correlation is the weakest (r=0.12) compared with results from other studies[13,14,23,24]. Similar weak correlation was found in some of the studies done to correlate PSA and age[3,4,15]. The difference may be attributed to a selection bias. The age of our patients was not evenly distributed across the age range; about 40% of the patients were aged between 60-69 years. The uneven age distribution may have accounted for the difference in statistical analysis. There is a possibility that if we had enrolled more patients who were older in age the correlation between age and PSA might have become significant.

PSA has been suggested as an estimator for PV[13,24]. This is supported by the fact that prostatic epithelial cells are responsible for circulating PSA, and several studies had documented a positive correlation between PSA and PV[14,22,25]. Hochberg et al.[22] in 2000 reported a correlation coefficient of 0.33-0.41 in a series of white patients. Similar studies done by Roehrborn et al. and others showed a positive significant correlation coefficient between PSA and PV[13,14,23,24]. The findings of this showed a similar but moderately positive correlation with a correlation coefficient of ($r=0.679$, $p<0.01$) (Table V). The corresponding studies had a similar study design. The recent study by Putra et al. in 2016 suggested that difference between the degree of correlation of age with PV and age with PSA is probably attributable to the ethnic or geographical factors that may influence prostatic growth[26].

PSAD cut off value of 0.15 as reported by other workers was consistent with the result of this study. The indication of prostatic biopsy and chances of being malignancy beyond the level of 0.15 as reported in the previous studies[7,27,28] is similar to this study. Mean PSAD was 0.10 and no case had PSAD more than 0.15.

There is paucity of report from this part of Nepal showing the relationship between PSA and PV and we couldn't find any report to show the efficacy of PSA at predicting more precise PV in Nepalese man. Because of the ability to obtain more accurate estimates of the PV without the help of more expensive, invasive diagnostic evaluations, PSA would give a more reasonable contribution in the proper management of patients with BPH.

The present findings suggest that PSA is a good indicator of prostatic volume, but there appears to be a weak relation among Age with PSA and prostate volume. The results of the analyses presented here characterize the average prostate volume given PSA level and age based on the clinical trial population studied. Caution should be exercised in attempting to predict precisely an individual patient's prostate volume given his age and PSA because the error associated with the predicted prostate volume for an individual patient is greater than that associated with the predicted average prostate volume. In addition, PSA and prostate volume measurements vary appreciably with use of different measurement techniques, each with its own measurement error and variability, and there are inherent differences among clinical

practice settings that also will increase the uncertainty of prediction for individual patients. The relationship may not be applicable to patients with different characteristics from those in the clinical trials, so that the graphs may not be appropriate for patient populations and clinical settings different from those studied. Nonetheless, these relationships are likely to be useful as an aid in approximating average prostate size for men with given levels of serum PSA and age. However, larger and multicentric studies is suggested which will give more useful result.

CONCLUSION

The mean PSA and prostate volume increased with advancing age, and the correlation between PSA and prostate volume estimated by TAUS in BPH as found to be statistically significant ($p< 0.05$). DRE underestimated the volume of prostate with a mean difference 21.97ml. The correlation of age of the patient with PSA and prostate volume are ($r=0.128$) and ($r=0.036$) respectively. The above value shows that both are statistically weekly positive but the association between age of patient and PSA seems to be higher in comparison to age of the patient and prostate volume.

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Study of Cardiac Arrhythmias in Acute Myocardial Infarction: A Hospital Based Study

Kidwai A

ABSTRACT

Introduction: Coronary artery disease (CAD) remains the leading cause of death in the industrialized world. Majority of the deaths in MI are attributed to the development of arrhythmias during periods of myocardial infarction. Identification of the type of arrhythmia is of therapeutic and prognostic importance. **Materials and methods:** This was a prospective observational study conducted at the department of Internal Medicine, Nepalgunj Medical College teaching hospital, Nepalgunj for a period of 12 months. 61 consecutive cases of myocardial infarction were included in the study on the basis of inclusion and exclusion criteria. **Results and discussion:** Out of the 61 cases that were included in the study. 45 (73.8%) patients were above the age of 49. There was only 1 patient below 29 years of age. The commonest risk factor was hypertension which was present in 48 (78.7%) cases, followed by Diabetes Mellitus in 28(45.9%), smoking in 26(42.6%) and dyslipidemia in 12(19.7%) no. of subjects. Overall 41(67.2%) patients had anterior wall (anterior+anteroseptal+extensive anterior wall), 16(2.2%) had inferior wall (inferior+inferolateral) and 4(6.6%) had combined anterior and inferior wall myocardial infarction. Out of the 61 cases, arrhythmia was recorded in 55(90.2%) cases whereas in 6(9.8%) cases there was no evidence of any arrhythmia[13]. Ventricular premature complex was the commonest arrhythmia and was recorded in 48(78.7%) patients, followed by sinus tachycardia in 38(62.3%) patients. Ventricular tachycardia occurred in 11(18%) and ventricular fibrillation was recorded in 4(6.6%) cases. Complete heart block was seen in 7(11.5%) cases. **Conclusion:** Most cases of myocardial infarction develop cardiac arrhythmias. Further studies on a larger scale are needed to further understand the magnitude and spectrum of this problem in the Nepalese population.

Key words: *Acute coronary syndrome, cardiac arrhythmias, ST elevation myocardial infarction (STEMI), non ST elevation myocardial infarction (NSTEMI)*

INTRODUCTION

Acute coronary syndrome (ACS) refers to a spectrum of conditions compatible with acute myocardial ischemia or infarction due to an abrupt reduction in coronary blood flow[1]. It consists of ST elevation myocardial infarction (STEMI), non ST elevation myocardial infarction (NSTEMI) and unstable angina (UA). Myocardial infarction (MI) can be diagnosed by clinical features like typical chest pain(angina) lasting for more than 30 minutes, typical electrocardiographic (E.C.G.) findings like ST segments elevation, depression and T wave inversion, elevated values of biochemical markers (troponin, creatine kinase) of myocardial necrosis (differentiating it from angina/ischemia), by detection of regional wall abnormality by imaging (echocardiography), or may be defined by pathology. It is a major cause of death and disability worldwide[2]. Despite the considerable progress in management over the recent years, coronary artery disease (CAD) remains the leading cause of death in the industrialized world. Asians, specially Indians show higher incidence, morbidity and mortality than other ethnic groups[3]. Similar studies in the Nepalese population are lacking, although similar findings may be expected due the similarities in population genetics, nutrition and lifestyle. Majority of the deaths in MI are attributed to the development of arrhythmias during periods of myocardial infarction[4]. In particular, ventricular fibrillation is attributable to 60% of all deaths related with acute myocardial infarction that occur within 1st hour[5]. The recent improvement in arrhythmia detection and treatment has had a key impact on the result of myocardial infarction. Some arrhythmias may be benign while some can be life threatening. There is strong connection between the site of infarct and type of arrhythmias. Sinus bradycardia, escape rhythms and heart blocks are typically associated with inferior wall myocardial infarction. Atrial and ventricular premature beats are more frequently seen in anterior wall myocardial infarction[6]. With the advent of thrombolytic/reperfusion therapy, it was found that some rhythm disturbances in patients with acute myocardial infarction may be related to coronary artery reperfusion[3]. Identification of the type of arrhythmia is of therapeutic and prognostic importance as they can indicate either reperfusion, which is a good prognostic sign, or pathological arrhythmia, which can precipitate further ischemia, failure or shock[7]. This study was done to evaluate the incidence and profile of arrhythmias after acute myocardial infarction. This study was carried out at the department of Internal Medicine, Nepalgunj Medical College teaching hospital, Nepal. This study will help us to develop a better understanding of the incidence and profile of these arrhythmias in the Nepalese population.

MATERIALS AND METHODS

This was a hospital based observational study conducted at the deparment of Internal Medicine, Nepalgunj Medical College teaching hospital, Nepalgunj for a period of 12 months from

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November 2014 to November 2015. 61 consecutive cases of myocardial infarction were included in the study on the basis of inclusion and exclusion criteria.

Inclusion criteria

1. Age > 17 years
2. Criteria for acute MI according to the universal definition of myocardial infarction[2]:

   Detection of a rise and/or fall of cardiac biomarker values [preferably cardiac troponin (cTn)] with at least one value above the 99th percentile upper reference limit (URL) and with at least one of the following:

   a. Symptoms of ischaemia.
   b. New or dynamic ST segments changes (elevation or depression), dynamic T wave changes.
   c. Development of pathological Q waves in the ECG.
   d. Imaging evidence of new loss of viable myocardium or new regional wall motion abnormality.

Exclusion criteria

1. Age < 18 years.
2. Those who don't fulfill the inclusion criteria.
3. Chest pain due to other causes.
4. Those who do not give consent.
5. Patients who have arrhythmia before the onset of MI on the basis of history and documentation.
6. Patients who had to be referred to higher centers due to complications
7. Patients who wanted to go to a higher center after primary treatment.

Thorough history, clinical examination and relevant investigations including E.C.G., Echocardiography, Cardiac enzymes and other routine investigations were done in all cases. Informed consent was taken from all the patients or their guardians. All the patients were managed according to the standard protocol and guidelines of management of myocardial infarction and were shifted to the critical care unit for observation. Patients with STEMI who came within 12 hours of onset of chest pain and had no contraindication, received reperfusion therapy with Inj. Streptokinase 1.5 M.U. given slowly over one hours under cardiac monitoring. Cardiac monitors were attached to every patient and vitals were monitored closely. Monitoring and recording of any arrhythmia during stay of the patient in the critical care was done. Total no. and types of arrhythmia were recorded as such that if a single patient had two different arrhythmias then both were recorded as separate events. The results were analyzed using Microsoft Excel 2013.

RESULT

A total of 61 cases were included in the study. The age distribution was as follows:

Age Group (yrs.)	No. of patients	%
18-29	1	1.6%
29-39	4	6.6%
39-49	11	18.0%
49-59	23	37.7%
59-70	18	29.5%
>70	4	6.6%

Table I : Age distribution

Sex	No. of patients	%
Males	48	78.7%
Females	13	21.3%

Table II : Sex Distribution

Risk factor	No. of patients	%
Diabetes Mellitus	28	45.9%
Hypertension	48	78.7%
Smoking	26	42.6%
Dyslipidemia	12	19.7%
2 or more risk factors	23	37.7%
No risk factors	7	11.5%

Table III : Risk factors

Site	No. of patients	%
Anterior	9	14.8%
Anteroseptal	25	40.9%
Lateral	0	0%
Extensive anterior	7	11.5%
Inferior	14	22.9%
Inferolateral	2	3.3%
Anterior + inferior	4	6.6%

Table IV : Site of Infarction

Arrhythmias	No. of patients	%
Present	55	90.2%
Absent	6	9.8%

Table V : Incidence of arrhythmias

Type of arrhythmia	No. of patients	%
Sinus tachycardia	38	62.3%
Sinus bradycardia	12	19.6%
Atrial premature complex	6	9.8%
Supraventricular tachycardia	1	1.6%
Junctional rhythm	1	1.6%
Ventricular premature complex	48	78.7%
Ventricular tachycardia	11	18.0%
Ventricular fibrillation	4	6.6%
1st degree AV block	3	4.9%
2nd dedgree AV block	2	3.3%
3rd degree AV block (complete, CHB)	7	11.5%

Table VI : Types of arrhythmias

The most no. of patients were between the age group 49 -59 years which was 23(37.7 %). 45(73.8%) patients were above the age of 49. There was only 1 patient below 29 years of age.

The commonest risk factor identified was hypertension which was present in 48(78.7%) cases. 7 patients had no identifiable risk factor. 23 patients had 2 or more risk factors. 26 (42.6%)patients were smokers.

Anterior infarction (anterior+anteroseptal+extensive anterior) was seen in a total of 41(67.2%) patients and inferior in 16(26.2%). Combined anterior and inferior infarction was seen in 4(6.6%) patients.

Arrhythmia was recorded in 55(90.2%) cases. 34 patients developed more than one type of arrhythmia at different points of time.

DISCUSSION

Out of the 61 cases 45 (73.8%) were above 49 years of age and only 1 patient was below 29 years. This is similar to findings published by Lerner DJ et al in a follow up study of the Framingham population.[8] The findings are similar to the results of studies done by various Indian researchers[9,10,11]. There was a predominance of male patients, which were 48 78.7%), with only 13(21.3%) females. This is also similar to the results published by Yadav P et al and Singh PS et al in their studies[9,10]. The commonest risk factor was hypertension which was present in 48 (78.7%) cases, followed by Diabetes Mellitus in 28(45.9%), smoking in 26(42.6%) and dyslipidemia in 12(19.7%) no. of subjects. 23 patients had more than one risk factor and in 7 cases no risk factor could be identified.

Localization of the site of infarction was done by typical infarction patterns on ECG leads as per standard references[12]. The most common site of myocardial infarction was anteroseptal which was diagnosed in 25(40.9%) subjects.

Overall 41(67.2%) patients had anterior wall (anterior+anteroseptal+extensive anterior wall), 16(2.2%) had inferior wall (inferior+inferolateral) and 4(6.6%) had combined anterior and inferior wall myocardial infarction. Out of the 61 cases arrhythmia was recorded in 55(90.2%) cases whereas in 6(9.8%) cases no evidence of any arrhythmia. This result is similar to report published by Aufderheide who reported a incidence of 90%[13]. Ventricular premature complex was the commonest arrhythmia which was recorded in 48(78.7%) of patients. This result is similar to the result reported by Bigger JT et al and Volpi A et al in their respective studies which was between 80% to 90%[14,15]. Sinus tachycardia was the second most common arrhythmia which was seen in 38(62.35) cases. The incidence of sinus tachycardia has been reported between 31-68% in various studies[16-19]. Ventricular tachycardia occurred in 11(18%) and ventricular fibrillation was recorded in 4(6.6%) cases, all of which had anterior wall myocardial infarction. Complete Heart Block was seen in 7(11.5%) cases. This result is slightly higher than reported by most studies which report it between 3.2-6.5%[18-24]. All these patients had inferior myocardial infarction which is similar to the data published by most studies[19,21-24]. First degree AV block was seen in 3(4.9%) patients and second degree in 2(3.3%) patients, both of which were Mobitz type II. From this data it can be suggested that drugs that can precipitate AV blocks should be avoided in inferior myocardial infarction like beta blockers. On the other hand they should be used whenever possible in anterior myocardial infarction as they can prevent ventricular arrhythmias and may help in reducing mortality.

CONCLUSION

Most cases of myocardial infarction develop cardiac arrhythmias. In our study 55(90.2%) of patient developed arrhythmias. Ventricular premature complex was the commonest arrhythmia observed, followed by sinus tachycardia. Heart blocks were more commonly seen in inferior myocardial infarction and complete heart block was only seen in inferior myocardial infarction, though the incidence was higher than other reported in other studies.[18-24] Ventricular tachycardia and fibrillation only occurred in anterior myocardial infarction. It can be concluded from this study that arrhythmias in myocardial infarction are a common complication in the Nepalese population and incidence is similar to other Asian and western populations. A higher incidence of complete heart block was noted compared to other studies which was related to the higher incidence of inferior myocardial infarction in our study group. One limitation of our study was the small sample size. More studies on a larger scales are needed to further understand the magnitude and spectrum of this problem in the Nepalese population.

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Clinical Profile and Outcome of Neonates Admitted to Neonatal Intensive Care Unit of NGMC

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ABSTRACT

Background: Neonatal period is a period from birth to under 28 days of life. The common causes of mortality and morbidity in our region are preventable, among which neonatal sepsis is the commonest one. Most of the deaths occur within 7 days of life. **Objectives:** To study the clinical profile, pattern of diseases, causes of morbidity and mortality amongst newborns. **Materials and methods:** A hospital based descriptive study was done among total 967 newborns including both inborn and out born admitted in NICU, NGMC from January 2016 to December 2016. Age, sex, gestational age, diagnosis at admission, outcome of admitted newborns were the main variables under study. Data was entered in Excel and analyzed using SPSS 20th version. Data were presented through pie, bar graph and table with frequency and percentage. **Results:** Male were predominant in the study (65%). One third of the admitted newborns were preterms. Half of the admitted newborns were admitted on their first day of life. Neonatal sepsis was the most common cause of admission. Deaths occured in 7.4%of total babies. Seventy-six percent got improved after treatment. Only 2.8% were referred to higher center. **Conclusions:** Most of the neonates got admitted in first day of life with commonest cause being neonatal sepsis. Recovery rate was satisfactory. To reduce the mortality and morbidity of neonates, we need to increase awareness level in general population and proper aseptic practices in medical practitioners.

Key words: *Neonate, Neonatal Intensive Care Unit, Sepsis*

INTRODUCTION

Neonatal period defined as the period from birth to under 4 weeks (≤ 28 days) of age for an infant who is completing many of the physiological adjustments required for extra uterine existence. It is the most crucial period of life due to a variety of illnesses and most can be prevented [1]. Across the globe, approximately 130 million babies are born every year out of which 4 million die within 28 days of life. Seventy-five (75%) percent newborn deaths occur within first 7 days of life and 50% occurs within 24 hours of life [2]. The causes behind the neonatal morbidity and mortality are different in developed and developing countries [3,4,5]. Mostly non preventable causes are common in developed countries i.e. congenital anomalies and prematurity. On the other hand preventable causes are present in developing countries such as infections, birth asphyxia, and prematurity[6].

Neonatal mortality is very common (99%) in lower and middle income countries and more than 50% death occurs at home[7]. The neonatal mortality of Nepal is 24 per 1000 live births in the 1st week life and 3 per 100 live births during remaining 1st month[8]. Overall neonatal mortality is 21 per 1000 live births[9]. Most of the neonatal morbidity and mortality can be prevented by timely effective and appropriate perinatal and obstetric care.

MATERIALS AND METHOD

This is a hospital based cross-sectional descriptive study done at department of Pediatrics, Nepalgunj medical college, Nepalgunj from January 2016 to December 2016. A total number of 967 newborns including both in-born and out- born were admitted during the study period in our NICU. NICU of Nepalgunj medical college includes the facilities of mechanical ventilators, peripherally inserted canula, bubble CPAP, arterial blood gas monitoring, central oxygen and suction facilities, multichannel patient monitor, exchange transfusion and phototherapy. Data of all babies admitted were taken and analyzed. Variables were age at admission, gestational age, birth weight, gender, presenting complaints, complications, procedure done, final diagnosis, outcome whether the newborn was improved and discharged after completion of treatment, discharged on request, left against medical advice, reffered or expired. Those who refused to give consent were excluded. Data were entered in excel and analyzed in SPSS 20th version.

RESULTS

Total number of newborns was 967 during the study period. Outborns were 39%(377) whereas in born were 61%(590). Among the outborns, most of the babies were admitted through emergency or outpatient department. Sixty five percent (629) were male newborns and 35%(338) were female.

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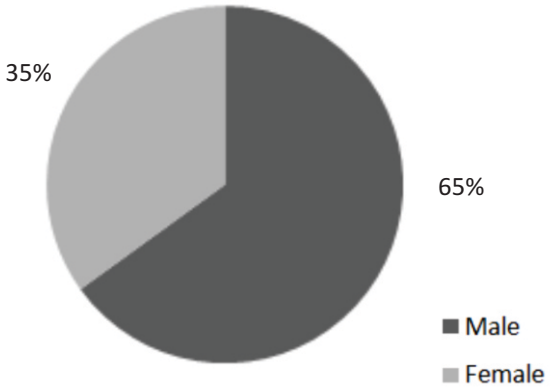

Figure 1: Sex distribution of newborns

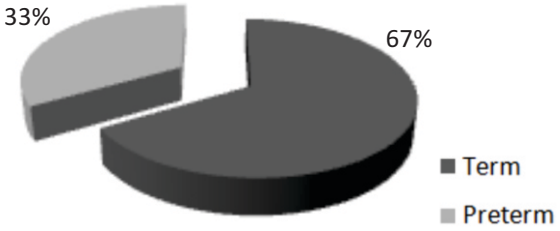

Figure 2: Distribution of newborns according to gestational age

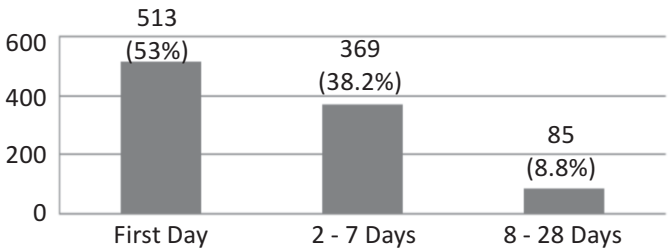

Figure 3: Admission pattern according to age at admission

Diagnosis	Number	Percentage(%)
Neonatal sepsis	368	38
Birth asphyxia	205	21.2
Low birth weight	174	18
Meconium aspiration syndrome	68	7
Neonatal jaundice	58	6
Transient tachyponea of newborn	48	5
Others	27	2.8
Congenital anamolies	19	2

Table I: Diagnosis of Neonatal Conditions for Admission

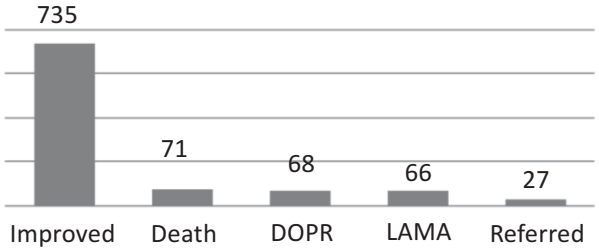

Figure 4: Outcome of newborns admitted to NICU

Newborns admitted in first day of life were 53%(513), similarly 38.2%(369) in second to seven days and 8.8%(85) were admitted up to 28 days.Neonatal sepsis was the most commonly present disease (38%) that indicated admission in NICU, followed by birth asphyxia, low birth weight, meconium aspiration syndrome, neonatal jaundice, and transient tachypnoea of newborn, congenital anomalies and others.

Seventy-six percent of neonates improved after the treatment, followed by 7.4% deaths, 7% were discharge on request, 6.8% left against medical advice (LAMA) and 2.8% were referred to higher center.

DISCUSSION

Our study showed that a total of 967 newborns were admitted in NICU of NGMC during the study period. NGMC is a tertiary care and teaching hospital in mid-western region of Nepal.

Two third newborns were males and rest were females which are in accordance to other studies as well[1,10,11]. This is due to the fact that our society is male predominant so male babies are given more priority than female for treatment as well. Present study shows 53% admissions in first 24 hours of life which is supported by other studies also with a first 24 hours of life admission ranging from 33.61 to 44.47%[1,412]. The reason for high admission within first 24 hours of life is due to the fact that this period being the most vulnerable period of life. Neonatal sepsis was the most common cause that indicated admission in our NICU followed by birth asphyxia and low birth weight. Rahim et al[1] also reported similar type of NICU admission pattern whereas another study which was done in Pakistan by Butt et al13 found birth asphyxia to be the commonest cause of NICU admission followed by neonatal jaundice, prematurity and sepsis. Similarly one more study done in Nepal[14] also highlights birth asphyxia to be one of the major cause of NICU admission whereas another study which was also carried out in Nepal[15] found neonatal jaundice to be the major cause of NICU admission. Cases referred to higher center mostly due to surgical causes like intestinal obstruction, duodenal atresia, tracheo-oesophegal fistula. Present study revealed 7.4% deaths of newborn which is less, compared to Study of Pakistan (30.9%)[16] and South Africa (63%)[17] and higher than study of Dharan (4.7%)[15].

In our study 323(33%) of newborns were preterm which was higher as compared to several other studies[14,15]. This may be due to lack of awareness, early marriages, poverty and illiteracy in this part of the country.

CONCLUSION

Neonatal sepsis is the predominant cause of admission in the neonatal intensive care unit followed by birth asphyxia and low birth weight including preterms. Neonatal sepsis is the predominant cause of morbidity and mortality in our part of the world. Hand washing, wearing mask, cap, practicing all the aseptic measures among the health staffs including doctors can reduce the mortality and morbidity among newborn admitted in our NICU. Morever timely arrival of patient to health facility is also important for recovery which indicates a good awareness program by the government in order to improve the knowledge regarding prevention and early identification of health problems of neonates.

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ORIGINAL ARTICLE

Retrospective Study of Conservative Management of Appendicular Lump

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ABSTRACT

Introduction: Appendicitis is very common surgical emergency and incidence of appendicular lump is about 2-6%.There are different approaches for management of appendicular lump among which most common and widely accepted approach is managing lump conservatively with interval appendicectomy 6 weeks after resolution of inflammation. The aim of the study is to evaluate the efficacy of the conservative management in appendicular lump. **Materials and methods:** Retrospective study of the 43 patients admitted with a diagnosis of appendicular lump from March 2015 to February 2016 at Nepalgunj medical college, Nepalgunj were carried out. **Result:** Out of 204 patients of appendicitis 43(21.07%) patients were found to have appendicular lump. Age ranged from 6 to 81yrs old. Appendicitis was found to be common at the age range of 21 to 30 years (44.18%).patient reported after 3 to 8 days of Onset of symptoms but most of the patients reported at 5 to 6 days of onset of symptoms. Among 43 patients, 40 patients (93.01%) managed successfully with conservative management. Only three patients (6.97%) developed complications. Out of these conservatively managed, 18(41.86%) underwent interval appendicectomy, 19(44.18%) patients lost to follow up,3(6.97%) had recurrent appendicitis. **Conclusion:** Our study concluded that most of the appendicular lumps can be managed conservatively with few complications, which can be managed with immediate intervention.

***Key words**: Appendicular lump, appendicitis, interval appendicectomy*

INTRODUCTION

Appendicitis is very common surgical emergency in surgical practice.Among most common sequel e being appendicular lump accounts for about 2-6% of the patients[1,2]. due to self defence mechanism of the body to localize the infection with in the lump formed by inflamed appendix,omentum,caecum and terminal ileum[1].Well accepted treatment strategy of appendicular lump is conservative regimen followed by interval appendicectomy after 6weeks following resolution of all the symptoms[3].

Lump formation are more common in extreme of ages (children and old ages)[4]. Futhermore appendicular lump can have complications like appendicular perforations,abscess formation,gangrene of appendix and sometime gangrene of caecum.In the management of appendicular lump three general approach has been employed[5,6]. Clasical and most accepted approach among the surgeons is conservative management till the inflammation subsides usually taking 6 weeks then going for interval appendicectomy so that the surgery is less hazardous,easy as all the inflammation and adhesions has already been subsided and has very less chance of lifethreatening complications like faecal fistula[7-9]. Semi conservative approach involves immediate appendicectomy after resolution of inflammatory process in few days after initial admission and third approach is to manage entirely with conservative approach and interval appendicectomy only when patient has recurrent attack of appendicitis.

As there are many approaches most common and widely accepted approach is first one that is managing lump conservatively and going for interval appendicectomy after 6 weeks which helps to avoid recurrence of appendicitis and misdiagnosis mostly in females[10-13].

The study was conducted to evaluate the outcome of the patients of appendicular lump managed by most acceptable approach ie managing conservatively for about 6 weeks then going for interval appendicectomy after resolution of all the inflammatory process.

MATERIAL AND METHODS

A retrospective study was conducted at Nepalgunj medical college hospital, Nepalgunj from March 2015 to February 2016, all the patients of all the age managed conservatively for appendicular lump were considered .The diagnosis of the appendicular lump was done with clinical evaluation which was confirmed further by ultrasound abdomen. All the patients considered were managed conservatively by Ochsner Sherren regime and further going for interval appendicectomy after 6 weeks. The study included data regarding demographics, symptoms duration, stay at hospital, complications, recurrence, rate of elective appendicectomies and follow ups. All the data were analyzed with SPSS software.

RESULTS

Total number of patients presenting with feature of appendicitis were 204. 43(21.07%) were diagnosed as appendicular lump who were managed conservatively. Age

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range varied from 6 to 81 years (Table I). Out of total 43 patients 28(65.11%) were male and 15(34.88) were female with a ratio of 1.8:1.The time taken for the presentation to the hospital after the onset of symptoms were ranged from 2 to 8 days but the maximum number (41.86%)of patients presented between 5-6 days (Table II). Among 43 patients, 40 patients (93.01%) managed successfully with conservative management. Only three patients (6.97%) developed complications in the form of an appendicular abscess among which 2 were managed with USG guided aspiration and one needed laparotomy. All the patient recovered well. Out of these conservatively managed, 18(41.86%) underwent interval appendicectomy after 6 weeks interval, 19(44.18%) patients lost to follow up, 3(6.97%) had recurrent appendicitis. all of them underwent emergency appendicectomy.

Age Group	Number of patients	%
1-10	3	6.97
11-20	7	16.27
21-30	19	44.18
31-40	5	11.62
41-50	3	6.97
51-60	3	6.97
61-70	1	2.32
71-80	1	2.32
81-90	1	2.32
Total	43	100

Table I: Age distribution

Duration of symptoms	Number of patients	Incidence %
<72hours	5	11.62%
4-5 days	11	25.58%
5-6 days	18	41.86%
>6 days	9	20.93%

Table II: Duration of symptoms at presentation

DISCUSSION

Appendicitis is very common surgical emergency in. If patient doesn't present hospital early ie with in 24 to 48 hours the body tries to localize the infection by forming lump or mass[14].

In our study the incidence of appendicular lump was 21.07% where as its about 2-6% in other similar study[1,2]. The higher incidence can be due to late presentation to the hospital and lack of knowledge about the disease and its consequences. Financial problem could be the other reason. The maximum number of the patient in this study group were between the age group of 21 to 30 years which shows that appendicitis is common in young age group which is similar to other studies though it can occur in any age group. The male to female ratio was 1.86:1 with a male predominance which is similar to other studies. Majority of the patient presented 5-6 days after the onset of symptoms, which is a late presentation than in other similar studies, reason behind could be the above mention factors[15].

The success rate of conservative management of appendicular lump was 90.02% (40 out of 43) which is comparable with other studies[16]. There were no mortality among conservatively managed as well as those requiring intervention for complications.

3(6.97%) patient developed appendicular abscess which was managed successfully, two requiring USG guided aspiration and one of them needed laparotomy with appendicectomy post operative period was uneventful. In similar studies failure of conservative management is about 2-3% of the cases with emergency exploration[17]. Similarly 3(6.97%) patient came with recurrent appendicitis and were successfully managed with emergency appendicectomy. 18 patients (41.86%) followed up in the duration of the study period of one year and underwent interval appendicectomy remaining 19 patients (44.18%) lost the follow up.

CONCLUSIONS

Most of the cases of appendicular lump can be managed conservatively but needs strict observation and regular clinical examination of the patient to timely identify complications like abscess formation or perforations and if identified they should be managed immediately.

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Prevalence and Risk Factors Associated with Anaemia Amongst Adolescent Girls Attending in Pediatrics OPD of Nepalgunj Medical College

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ABSTRACT

Background: The habits that children inculcate during adolescence remains with them throughout the life. Anaemia is one of the most prevalent health conditions amongst the Girls residing in developing countries. The present study was conducted with the aim to determine the prevalence and risk factors associated with anaemia amongst adolescent girls attending in paediatrics OPD of Nepalgunj Medical College. **Materials and methods:** The present cross sectional study was performed for a period of one year (February 2016 - March 2017). This study was conducted amongst the girls attending to the Paediatrics department of Nepalgunj Medical College and Teaching Hospital, Nepalgunj. The study included all the girls aged between 10-19 years. Each Girls underwent physical examination under trained supervision to record sign of anaemia like pallor. Body mass index of all the subjects was also calculated. The data obtained was arranged in a tabulated form and analysed using SPSS software. **Results:** A total of 200 girls were enrolled in this study. The mean age of the study sample was 21.10+/-10.67 years. Majority of the early adolescents (68.5%) had anaemia. Least number (36%) of anaemic patients was seen in mid adolescence. There were 47.5% girls in late adolescence that showed signs of anaemia. There were 47.9% Girls who had passage of worms and 50.1% had no worm infestations. Majority (63.5%) of non anaemic Girls were in their post menarche stage. **Conclusion:** There were 52% of the girls who were anaemic in our study. The proportion of undernourished girls were significantly higher, therefore body mass index significantly affects anaemia.

Key words: *Adolescence, anaemia, haemoglobin*

INTRODUCTION

Adolescents are defined as Girls who are aged between 10 to 19 years of age; this definition is as per World health organisation[1]. It is regarded as transition from childhood to adulthood. Out of 2.7 million population of Nepal, there are 23% adolscenst[2,3]. The habits that children inculcate during adolescence remains with them throughout the life. At this stage a child is at his cross roads and they make important and crucial decisions during this stage. According to World Health Organisation, anaemia is defined as a condition in which haemoglobin falls to less than 11g/dl for Girls aged less than 6 years and haemoglobin less than 12 g/dl for Girls more than 6 years[4]. Anaemia is one of the most prevalent health problem amongst the Girls residing in developing countries[5]. The epidemiology of anaemia varies amongst different nations according to ecology and sociocultural environment. As per a Nepalese survey that was conducted in 2006, there were 48% subjects who were anaemic between the age group of 6-59 months[6]. According to some other studies there is 42-60% population of Nepal was anaemic[7,8]. There have not been much surveys concentrating only on adolescent subjects especially girls. The availability of iron is a crucial factor amongst girls especially in the reproductive age group. Due to this reason special attention needs to pay to girls of this age group. Therefore the present study was conducted with the aim to determine the prevalence and risk factors associated with anaemia amongst adolescent girls attending in paediatrics OPD of Nepalgunj Medical College.

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MATERIALS AND METHOD

The present cross sectional study was carried out for a period of one year (February 2016- March 2017). This study was conducted amongst the girls attending to the Paediatrics department of Nepagunj Medical College and Teaching Hospital, Nepalgunj, Banke. The study included all the girls aged between 10-19 years. Unmarried, non lactating girls reporting to the hospital due to any illness were included in the study. Ethical committee clearance was obtained prior to initiation of the study. All the Girls were informed about the study and a written consent was obtained from institute's ethical committee. Girls with Thalassemia, chronic illness or any malignant disorder were excluded from the study. Patient's demographic details, education, diet, menstrual history, medical condition were recorded in a predesigned Performa. Each subject underwent physical examination under trained supervision to record sign of anaemia like pallor. Body mass index of all the subjects was also calculated.

Procedure- under complete aseptic condition, 5 ml of venous blood was withdrawn from the anticubital vein and stored in EDTA vial. Haemoglobin estimation was done using cyanmethaemoglobin method. Recording of anaemia was done as per the World Health organisation protocol. The data obtained was arranged in a tabulated form and analysed using SPSS software.Chisquare test and Man Whitney test were applied as a test of significance. Probability value of less than 0.05 was considered significant.

RESULTS

A total of 200 girls were enrolled in the study. The mean age of the study sample was 21.10+/-10.67 years. Table I shows the prevalence of anaemia. There were 104 Girls (52%) in which the level of haemoglobin was less than 12 g/dl. Approximately 48% Girls (n=96) had haemoglobin more than 12 g/dl.

Table II shows age wise distribution of the anaemic patients. Majority of the early adolescents (68.5%) had anaemia. Least number (36%) of anaemic patients was seen in mid adolescence. There were 47.5% girls in late adolescence that showed signs of anaemia. There were52.5% Girls in late adolescence and 64% Girls in mid adolescence who were not anaemic.

Out of the anaemic population, there were 67.3% vegetarian and 32.6% non vegetarian. There were 51.9% subjects who had passage of worms and 48.1% had no worm infestations. Majority (64.4%) of anaemic subjects were in their premenarcheal stage. There were 48.1% who were undernourished, 38.5% subjects had normal BMI and rest were overweight. Out of the non anaemic population, there were 23.9% vegetarian and 76.1% non vegetarian. There were 47.9% Girls who had passage of worms and 50.1% had no worm infestations. Majority (63.5%) of non anaemic Girls were in their post menarche stage. There were 27% who were undernourished, 52.1% Girls had normal BMI and rest were overweight. There was a significant difference in BMI amongst anaemic and non anaemic Girls.

DISCUSSION

Approximately 1 billion people in the world are iron deficient, nutritional deficiency is the major cause of anaemia[9]. There is scarcity of data on the prevalence of anaemia amongst the adolescent girls. As per the present study, there were 52% subjects who were anaemic. In the studies conducted by Chaturvedi et al and Ahmed F et al the prevalence of anaemia was 40 to 60%[10,11]. As per a study conducted by Saroj K et al[12]

HAEMOGLOBIN	FREQUENCY	PERCENTAGE
<12g/dl	104	52
>12g/dl	96	48

Table I: Prevalence of anaemia

AGE GROUP	FREQUENCY	ANEMIA	
		PRESENT	ABSENT
Early adolescent	70	48(68.5%)	22 (31.4%)
Mid adolescent	50	18 (36%)	32 (64%)
Late adolescent	80	38 (47.5%)	42 (52.5%)

Table II: prevalence of anaemia amongst different age groups

CHARACTERSTICS	ANEMIC N=104	NON ANEMIC N=96	P VALUE
Diet consumed			
Vegetarian	70 (67.3%)	23 (23.9%)	>0.05
Non vegetarian	34(32.6%)	73 (76.1%)	
Passage of worms			
Yes	54 (51.9%)	46 (47.9%)	>0.05
No	50 (48.1%)	50(50.1%)	
Menstrual status			
Pre menarche	67 (64.4%)	35(36.5%)	>0.05
Post menarche	37(35.6%)	61 (63.5%)	
Nutritional status			
Undernourished	50(48.1%)	26(27%)	<0.05
Normal	40(38.5%)	50 (52.1%)	>0.05
overweight	14(13.4%)	14(14.6%)	>0.05

Table III: prevalence of anaemia according to personal characteristics

there were 42.4% Girls at school of Morang, 31.6% Girls at school of Udaipur, 45.3% children at school of Bhojpur and 34.8% in school of Ilam district that were anaemic. The increased prevalence of anaemia amongst the girls is chiefly due to deficiency of iron. In our study, out of the anaemic population, there were 67.3% vegetarian and 32.6% non vegetarian. There were 51.9% Girls who had passage of worms and 48.1% had no worm infestations. Majority (64.4%) of anaemic Girls were in their premenarcheal stage. There were 48.1% who were undernourished, 38.5% Girls had normal BMI and rest were overweight.

Out of the non anaemic population, there were 23.9% vegetarian and 76.1% non vegetarian. There were 47.9% Girls who had passage of worms and 50.1% had no worm infestations. Majority (63.5%) of non anaemic Girls were in their post menarche stage. There were 27% who were undernourished, 52.1% Girls had normal BMI and rest were overweight. There was a significant difference in BMI amongst anaemic and non anaemic subjects. In a study conducted by Gupta et al[13] Body mass index was not significantly associated with anaemia amongst the girls. As per a study conducted by P. Kanodia et al[14] majority of the under nourished girls were anaemic similar to our study. As per our study, majority of the early adolescents (68.5%) had anaemia. Least number (36%) of anaemic patients was seen in mid adolescence. There were 47.5% girls in late adolescence that showed signs of anaemia. There were 52.5% Girls in late adolescence and 64% subjects in mid adolescence who were not anaemic. In a study conducted by Verma et al[15] amongst children of Punjab, India, there were higher proportion of vegetarian girls who were anaemic as compared to non vegetarian girls. In our study, worm infestations were another major cause of anaemia. Iron supplementation with regular deworming sessions can help reduce the incidence of anaemia amongst girls. Community based programs should be initiated by the authorities to reduce its occurrence. Students should also be educated towards importance of nutrition in daily life.

CONCLUSION

There were 52% of the girls who were anaemic in our study. The proportion of undernourished girls were significantly higher, therefore body mass index significantly affects anaemia occurrence. Educational programmes and medical checkups should be conducted at regular interval at both institute and community to encourage an anaemia free nation.

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ORIGINAL ARTICLE

Diagnostic Value of Bronchoalveolar Lavage

Acharya S[1], Yogi S[2]

ABSTRACT

Introduction: Bronchoalveolar lavage has a high diagnostic utility for cytology and bacteriology. It can be done as an outpatient procedure for both immunocompetent and immunocompromised patient. Material obtained by bronchoalveolar lavage can give a definite diagnosis in conditions such as infections and malignancies. **Aim:** The aim of this study was to assess the diagnostic value of bronchoalveolar lavage (BAL) in cases which underwent routine bronchoscopy for evaluation of lung disease. **Materials and methods:** This is a hospital based descriptive study done from 16th June 2016 to 15th June2017. One hundred twenty bronchoalveolar lavage (BAL) cases were analyzed for differential count, cytological evaluation and bacteriological examination. All cases were included which were sent as BAL specimen to the laboratory department. Bronchoscopy was done as an outpatient procedure and lavage fluid obtained was analyzed. **Result:** Out of 120 cases, 69 were male and 51 were female. The age ranged from 10 to 80 years. Among 120 cases, eight (n= 6.66%) cases were unsatisfactory, twelve (n= 10%) cases were of tuberculosis, one (n= 0.83%) case was of fungal infection, two (n= 1.67%) cases were of malignancy, ninety one (n= 75.84%) cases were of small airway infection and six cases were satisfactory but with no diagnostic value. (n= 5%). **Conclusion:** Bronchoalveolar lavage is valuable in diagnosis of tuberculosis, infections and malignancies.

Key words: *Bronchoalveolar lavage (BAL), immunocompetent,* immunocompromised

INTRODUCTION

Bronchoalveolar lavage (BAL) is a saline fluid obtained through outpatient procedure in which fiberoptic bronchoscope is inserted through nose or mouth in selected bronchopulmonary segment. Minimum of 100 ml and maximum of 300 ml normal saline is installed into particular segment and reaspirated by bronchoscope. A minimal volume of 5 ml of a pooled BAL sample is needed for cellular analysis. The optimal volume is 10 to 20 ml[1].

Bronchoalveolar lavage cellular differential counts with greater than 15% lymphocytes are labeled as lymphocytic cellular pattern, greater than 3% neutrophils as neutrophilic cellular pattern, greater than 1% eosinophils as eosinophilic cellular pattern, and greater than 0.5% mast cells represent as mastocytosis[1].

Cytologic examination in bronchoalveolar lavage has been used to identify malignancy. Criteria to detect for malignancy in bronchoalveolar lavage fluid samples are similar as in other procedure[2]. In bacteriological study, bronchoalveolar lavage (BAL) is the best diagnostic material even in sputum smear negative cases for the diagnosis of pulmonary tuberculosis[3].

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The number of studies on BAL in Nepali literature is few. This study is done to highlight the diagnostic value of BAL material in making a definite diagnosis. BAL material has a very important role in diagnosis of infections and malignancies. It is a relatively safe procedure and is well tolerated.

MATERIAL AND METHOD

Bronchoalveolar lavage was obtained in one hundred and twenty cases over a period of one year. Procedure was done at medicine department as outpatient procedure and lavage fluid obtained was analyzed. Differential count was done on air-dried slide stained by Leishman stain. Routine Giemsa and PAP stains were done for cytology screening. Stain for acid fast bacilli (AFB) was done on all BAL samples.

Inclusion criteria:

All cases which were sent as BAL specimen to the laboratory department within study period were included. Adequacy of samples was assessed based on definite criteria. Chamberlain et al. criteria were used to categorize sample as unsatisfactory for evaluation under microscope[4].

The criteria are -

1. Paucity of alveolar macrophages <10/10 hpfs.
2. Extensive epithelial cells.
3. Mucopurulent exudates.
4. Numerous red blood cells.
5. Degenerating changes.

RESULT

Bronchoalveolar lavage was done in 120 cases. Age of patients ranged from 10 years to 80 years; 69 were males and 51 were females. Out of the 120 cases, eight were unsatisfactory for

evaluation, fungal infection in one case [figure 1], tuberculosis in twelve cases, malignancy in two cases [figure 2], small airway infection in ninety one cases and satisfactory but with no diagnostic value in six cases. [Table I].

In cellular differential count, neutrophilic cellular pattern was seen in 68 cases, lymphocytic cellular pattern in two cases and absence of any cellular pattern in 50 cases including eight unsatisfactory cases. [Table II].

Diagnosis	Number of cases
Unsatisfactory	08
Pulmonary Tuberculosis	12
Fungal infection	01
Malignancy	02
Small airway infection	91
Satisfactory but with no diagnostic value	06

Table I: Distribution of cases based on cytological diagnosis

Diagnosis	Number of cases
Neutrophilic cellular pattern	68
Lymphocytic cellular pattern	02
Absence of any cellular pattern	50

Table II: Distribution of cases based on cellular differential count

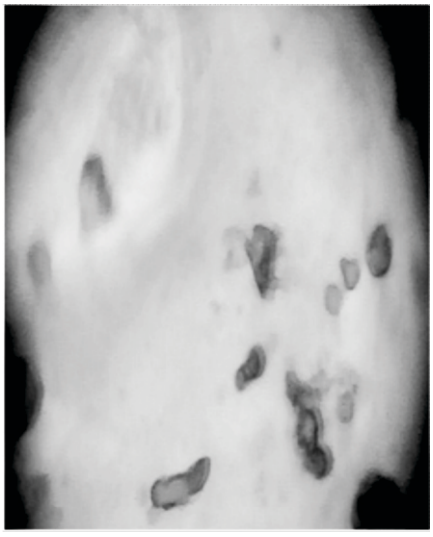

Figure 1: Fungal spores (Periodic acid Schiff stain PAS, x1000)

Figure 2: Singly dispersed malignant squamous cells (Pap, × 400)

DISCUSSION

In this study, attempt to assess the diagnostic value of BAL by cytology; bacteriology and cellular differential count have been made. It is easier and better investigative tool compared to other techniques like aspiration cytology and needle biopsy[5]. Result can be obtained in lesser time as compared to histopathology which is helpful in treatment modalities[5]. It helps to diagnose tuberculosis in sputum negative tuberculosis[3]. In this study, cases which were positive with acid fast bacilli stain and diagnosed as tuberculosis in BAL have shown neutrophilic cellular pattern only.

Eum SY et al.[6] have also found similar findings in BAL study as predominance of neutrophilic cellular pattern in cases of tuberculosis [Table III].

Diagnosis in BAL	Cellular pattern
Pulmonary tuberculosis (Present study)	Neutrophilic cellular pattern
Pulmonary Tuberculosis (Eum SY et al)[6]	Neutrophilic cellular pattern

Table III: Comparison for predominance of neutrophilic cellular pattern in pulmonary tuberculosis diagnosed in bronchoalveolar lavage with other study

Lymphocytic cellular pattern more than 25% suggests sarcoidosis, cellular nonspecific interstitial pneumonia, drug reaction, lymphoid interstitial pneumonia, cryptogenic organizing pneumonia, or lymphoma. Neutrophilic cellular pattern more than 50% supports acute lung injury, infection, aspiration pneumonia, or suppurative infection. Eosinophilic cellular pattern more than 25% is diagnostic of acute or chronic eosinophilic pneumonia[1]. In this study a case was diagnosed as fungal infection in alcohol fixed smears and was confirmed by Periodic acid Schiff (PAS) stain. Knox KS and Meinke L[7] have also

concluded that bronchoalveolar lavage is a supplementary diagnostic tool to culture for diagnosis of pulmonary and disseminated fungal infections.

Two cases were diagnosed as malignancy in present study. Levy *et al*.[8] concluded that findings of malignancy in BAL was superior (66%) as compared to washings (57%), brushings (40%) and transbronchial biopsy (44%). BAL has been used for therapeutic applications as well. Whole lung lavage is a treatment for pulmonary alveolar proteinosis[9].

One of the major limitations of bronchoalveolar lavage is classification of interstitial lung diseases. However, categorization of interstitial lung disease has fewer roles in therapeutic management[10].

CONCLUSION

Bronchoalveolar lavage has a high yield in diagnosis of tuberculosis, fungal infection and malignancies. Definite diagnosis outnumbered the undiagnosed cases so we conclude that bronchoalveolar lavage should be used as routine diagnostic tool for lung diseases. It can be used for culture, ancillary techniques and research purpose.

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Effects of Adding Intrathecal Fentanyl as Adjunct to Hyperbaric Bupivacaine in Vaginal Hysterectomy: A Double Blinded Randomized Controlled Trial

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ABSTRACT

Introduction: Spinal anesthesia is the preferred means for gynecological surgeries. Adjuvants to local anesthesia for spinal anesthesia may enhance quality and duration of analgesia. Our study aimed to evaluate efficacy and safety of fentanyl added to bupivacaine for spinal anesthesia. **Methods:** A prospective, randomized, double blind study was conducted on 60 ASA I or II adult female patients undergoing vaginal hysterectomy under spinal anesthesia. Patients were randomly divided into two groups. Patients in Group B (n=30) were administered 3 mL of 0.5% hyperbaric bupivacaine with 0.4 ml NS and Group F (n=30) were given 3 mL of 0.5% hyperbaric bupivacaine with 0.4 ml (20µg) fentanyl intrathecally. Hemodynamic variables (i.e. heart rate, noninvasive blood pressure, oxygen saturation), onset of motor and sensory block, duration of sensory and motor blockade and any side effects observed were recorded intraoperatively and postoperatively. **Results:** The duration of sensory and motor blockade was significantly prolonged (P<0.05) in fentanyl group (268.6±55.4 and 182.8±43.87) compared to control group (235.03±51.97 and 149.47±38.75). Similarly, the onset of sensory and motor block was significantly earlier (P<0.05) in group F (5.2±2.55 and 7.8±2.91) compared to group B (6.63±2.88 and 9.97±3.28). There was no significant statistical difference in the incidence of side effects and changes in hemodynamic variables in both the groups. No adverse events were observed during study. **Conclusion:** Addition of fentanyl to hyperbaric bupivacaine for spinal anesthesia offers early onset, better surgical analgesia, prolongs the duration of analgesia without any significant adverse effects.

Key words: *Adjuvants, bupivacaine, fentanyl, spinal anesthesia.*

INTRODUCTION

Spinal anesthesia is the preferred means for gynecological surgeries, being simple to perform, economical, produces rapid onset of anesthesia and complete muscle relaxation. Hyperbaric bupivacaine is an amide type of local anesthetic, has high potency, slow onset (5-8 minutes) and long duration of action which is commonly used drug for spinal anesthesia[1]. Intrathecal bupivacaine has good sensory block intraoperatively however, postoperative pain control is a major problem because spinal anesthesia using only local anesthetics is associated with relatively short duration of action, and thus early analgesic intervention is needed in the postoperative period.

Acute post-operative pain is a complex physiological reaction to tissue injury which may result in unpleasant, unwanted sensory and emotional experiences[2]. It can result in delayed healing, delayed mobilization and increased risk of myocardial infarction or ischemia, risk of tachycardia and dysrhythmia. Other published reports indicate that post-operative pain can lead to thromboembolic events, peripheral vasoconstriction, and metabolic acidosis[3].

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Several agents have been administered epidurally and intrathecally with local anaesthetic; such as opioids, benzodiazepines, neostigmine, clonidine, non-steroidal anti-inflammatory agents, vasoconstrictors. The objective of adding such agents is to provide more adequate analgesia, reduce the use of oral analgesics with unwanted side effects, and to prolong the duration of intraoperative and postoperative analgesia. The role of opioid in controlling post-operative pain has developed from understanding for the role of spinal cord for modulating and processing nociceptive stimuli, and discovery of opioid receptors in spinal cord[4].

Despite with various advantages intrathecal opioids are also associated with numerous complications including respiratory depression, urinary retention, pruritus, nausea and vomiting. Fentanyl is lipophilic opioid, has rapid onset of action and it does not tend to migrate to the fourth ventricle in sufficient concentration when administered intrathecally leading to decreased risk of delayed respiratory depression[5]. Hence, the purpose of this study was to evaluate the effects of intrathecally administered fentanyl (20 mcg) on the onset and duration of hyperbaric bupivacaine induced sensory and motor block, quality of intraoperative and postoperative analgesia and side effects associated with its intrathecal use.

MATERIALS AND METHODS

The study was carried out in department of Anesthesiology, Nepalgunj Medical College Teaching hospital, Kohalpur. The duration of study was of one year from March 2016 to March

2017. After approval by the ethical committee, written consent was obtained from all patients preoperatively. Sixty patients (ASA I and II) aged 18 to 65 years scheduled for vaginal hysterectomy under spinal anesthesia were included in this prospective randomized, double blinded study. Patients with contraindication to spinal anesthesia or patients with allergy to the study drugs were excluded from the study. Patients received no premedication, and upon arrival of patients into the operating room, ECG, pulse oximetry, and non-invasive blood pressure were monitored. Following infusion of 500 mL Lactated Ringers solution and while the patient in the sitting position lumber puncture was performed at L3-L4 level through a midline approach using a 25-gauge Quincke spinal needle (B Braun medical, Germany). Using a computer generated random numbers, patients were allocated into two groups: group F received hyperbaric bupivacaine 15 mg and 20 µg fentanyl into total of 3.4 mL volume. Group B received 15 mg hyperbaric bupivacaine and 0.4 ml NS into total of 3.4 mL volume.

After intrathecal injection, patients were positioned in lithotomy position. The doctor anesthetist performing the block was blinded to the study drug and recorded the intraoperative data. Vital signs were recorded at 5 min interval intraoperatively until the end of surgery. In the Post Anesthesia Care Unit (PACU), vital signs were recorded every 15 min. The sensory block level was assessed by cold alcohol swap along the midclavicular line bilaterally. The motor block was assessed according to the modified Bromage scale: Bromage 0, the patient is able to move the hip, knee and ankle; Bromage 1, the patient is unable to move the hip but is able to move the knee and ankle; Bromage 2, the patient is unable to move the hip and knee but able to move the ankle; Bromage 3, the patient is unable to move the hip, knee and ankle. Sensory and motor block was assessed every 2 min for first 20 mins and then every 15min intra and post-operatively.

The times to reach T10 dermatome sensory block (onset of sensory block), peak sensory level and Bromage 3 motor block (onset of motor block) were recorded before surgery. All durations were calculated considering the time of spinal injection as time zero. Duration of effective analgesia was defined as the time when patient first complained of pain. Duration was motor block was defined as the time when Bromage 0 was observed. Intraoperatively and postoperatively nausea, vomiting, pruritus and respiratory depression were recorded. Hypotension was defined as a decrease in systolic blood pressure > 30% of the baseline value or systolic blood pressure < 90 mm Hg, hypotension was treated with intravenous blouses of 6 mg mephentermine and crystalloid fluids. Bradycardia was defined as a pulse rate of < 50 beat/ min and was treated with boluses of 0.5 mg atropine.

Parameter	Group B	Group F	p - value
Age (yrs)	48.83±9.09	47.77±7.48	0.622
Weight (Kg)	52.47±6.15	54.43±6.91	0.249
Height (cm)	153.83±5.75	156.5±6.55	0.099
BMI	22.12±1.7	22.13±1.59	0.967

Values are in Mean±SD.

Table I: Demographic parameters.

Parameter	Group F	Group B	p - value
Onset of sensory block (min)	5.2±2.55	6.63±2.88	0.046
Onset of motor block (min)	7.8±2.91	9.97±3.28	0.009
Duration of sensory block (min)	268.6±55.4	182.8±43.87	0.00
Duration of motor block (min)	235.03±51.97	149.47±38.75	0.00

Values are in Mean±SD.

Table II: Onset of motor and sensory block and duration of motor and sensory block

Parameter	Group F	Group B	p - value
Maximum block height	T3-7	T3-7	
Nausea / vomiting	2/30	3/30	0.5
Pruritus	3/30	0/30	0.119

Table III: Maximum block height, nausea/ vomiting and pruritus

RESULTS

Sixty ASA I and II female patients aged between 18 to 65 years posted for vaginal hysterectomy under spinal anesthesia were selected for the study. The study was undertaken to evaluate the efficacy of fentanyl (20 μg) as adjuvant to hyperbaric bupivacaine (0.5%) in comparison with hyperbaric bupivacaine (0.5%) with NS (0.4 ml.) for spinal anesthesia. The demographic parameters were comparable between the groups (Table I).

The onset of sensory block (T10 level) was earlier in group F (5.2±2.55 min) compared to group B (6.63±2.88 min) and it was statistically significant. Similarly, onset of motor block was also earlier in group F (7.8±2.91 min) compared to group B (9.97±3.28 min) and it was statistically significant (Table II).

The duration of effective analgesia was 268.6±55.4 min in group F compared to 182.8±43.87 in group B. The result was statistically significant ($p<0.05$). At the same time duration of motor block was longer in group F (235.03±51.97 min) compared to group B (149.47±38.75) and it was statistically significant (Table II).

Maximum block height in both the group ranges from T3-7. Nausea/ vomiting occurred in two patients in group F and three patients in group B and the difference was not statistically significant. Pruritus was observed in three patients in group F and none of the patient in group B (Table III).

Heart rate, systolic blood pressure, diastolic blood pressure, mean arterial pressure and oxygen saturations were comparable between groups and did not change significantly in the intraoperative or postoperative period. No adverse events were encountered in either group of patients.

DISCUSSION

Gynecological surgeries are preferred under spinal anesthesia as it is simple, easy to perform, economical with rapid onset of anesthesia and complete muscle relaxation. Bupivacaine is long acting amide local anesthetic agent most commonly used for spinal anesthesia. However, the limitation lies on fixed duration of those local anesthetic. So various adjuvant such as opioids, benzodiazepines, neostigmine, clonidine, non-steroidal anti- inflammatory agents, vasoconstrictors are added to prolong duration of anesthesia and analgesia. The discovery of opioid receptors and subsequent development of the technique of epidural and intrathecal opioid administration is undoubtedly one of the most significant advances in pain management of last four decades. Plethora of studies has shown that spinal opioids can provide profound analgesia with fewer central and systemic adverse effects than the opioids administered systemically. In the same line we tried to evaluate the effects of intrathecally administered fentanyl (20mcg) on the onset and duration of hyperbaric bupivacaine induced sensory and motor block, quality of intraoperative and postoperative analgesia and side effects associated with its intrathecal use.

In my study, included female patients posted for vaginal hysterectomy under spinal anesthesia with 30 patients in each group. The demographic parameters i.e. age, height, weight and BMI were comparable between the groups. The onset of both sensory and motor block was earlier in group F (5.2±2.55; 7.8±2.91min) compared to group B (6.63±2.88; 9.97±3.28min) and the result was statistically significant. The finding was similar to study done by Safdari H et al[6]. Similarly, in studies done by Bogra J et al.,[1] Mahendru VN et al.,[7] Biswas BN et al.[8] and Shende D et al.,[9] the onset of sensory and motor block was earlier in fentanyl group but the results were not statistically significant. The earlier onset with fentanyl can be attributed to its lipophilic properties. The lipophilic opioids rapidly traverse the dura mater, where they are sequestered in the epidural fat and enter the systemic circulation; they also rapidly penetrate the spinal cord where they binds opioid receptors within the white matter as well as dorsal horn receptors and eventually enter the systemic circulation as they are cleared from the spinal cord. It may also exert a supraspinal action by intrathecal cephalic spread[10].

The duration of sensory block (effective analgesia) was significantly prolonged in group F (268.6±55.4) compared to group B (182.8±43.87). The result was similar to study done by various authors[1,6-9]. In our study the duration of analgesia was longer than study done by Safdari H et al.,[6] that may be due to larger volume of local anesthetic used in our study. Similarly, duration of motor block was also significantly prolonged in group F (235.03±51.97) compared to group B (149.47±38.75). The finding is similar to finding of various authors[6,7]. But the results are in contrast to study done by Biswas BN et al.[8] and Gauchan S et al.[11] where they have found no significant difference in duration of motor blockade. The prolongation of duration of sensory and motor blockade are as expected because opioids have synergistic effect with local anesthetics[12].

Side effects such as nausea, vomiting and pruritus were observed. The mechanism for intrathecal opioid-induced nausea and vomiting is thought to be a result of cephalad migration of the opioid in CSF to opioid receptors in the area postrema and chemotactic trigger zone in the medulla[13]. In our study nausea and vomiting occurred in two patients in group F and three patients in group B and it was statistically insignificant. The findings were similar to studies done by Shende D et al.,[9] Gauchan S et al.[11] and Chavan G et al[14]. Some authors have also mentioned decreased incidence of nausea and vomiting with use of intrathecal fentanyl[1,8,15,16].

The exact mechanism of pruritus is not known. Fan P[17] reported that morphine could activate serotonin Type 3 receptors in the dorsal horn of the spinal cord and in the medulla which may be a possible mechanism for the pruritus by intrathecal injection

of opioids. In our study pruritus was observed in three patients in group F and none of the patient in group B. The incidence was not so high which was similar to finding of various authors[9,11,14]. Pruritus was mild in all patient and no treatment was requested for it.

In our study 20µg of fentanyl was added intrathecally and no incidence of respiratory depression was found. The reason may be low dose of fentanyl was used so late rostral spread of the drug is less. The finding was similar to finding of various authors[8,9,11,14]. No incidence of any neurotoxicity was observed postoperatively. The hemodynamic variables were comparable between the groups and no other significant adverse effect was observed. The limitation of our study was significant prolongation of duration of motor blockade in fentanyl group which is not desirable for early post-operative recovery.

CONCLUSION

In conclusion, addition of 20µg fentanyl as adjuvant to bupivacaine offers early onset, better surgical analgesia, prolongs the duration of analgesia without any significant adverse effects. So, it can be recommended that 20µg fentanyl is a safe and promising drug to be used as adjuvant with 0.5% hyperbaric bupivacaine for spinal anesthesia in infra-umbilical surgeries.

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Prescribing Pattern of Antimicrobial Agents in Neonates at Nepalgunj Medical College, Kohalpur, Banke, Nepal

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ABSTRACT

Introduction: Neonates are most vulnerable to infections due to poor immune system leading to high morbidity and mortality, which justifies early diagnosis and prompt treatment with antibiotics. Antibiotics are the most frequently used drugs in Neonatal Intensive care units. **Aim and Objective:** The objective of present study was to identify the pattern of use of antimicrobial agents in neonates at the neonatal intensive care unit (NICU) of NGMC. **Materials and Methods:** A hospital-based, retrospective study (prescription audit) was conducted over a period of 5-month duration at Nepalgunj Medical College by reviewing case records of NICU. Data were collected and analyzed. **Results:** A total of 150 case records were reviewed and were included in the study. Out of the 150, Neonates 86 (57.33%) were male babies and 64 (42.67%) were female babies. Maximum number (72.66%) neonates admitted to NICU were of low birth weight and most common reason for NICU admission was neonatal septicaemia. The majority of neonates (68.67%) received 2 antimicrobial agents (AMAs), 21.33% received 3 AMAs and average number of antibiotic per case was 2.44. The most commonly prescribed antimicrobial agent was Cefotaxime (58.66%), followed by Amikacin (48%), Ceftriaxone (32%). In fixed dose combination Piperacillin + Tazobactum (28%) was most commonly prescribed. All of the antimicrobial agents were prescribed by brand name. **Conclusion:** Measures need to be undertaken to encourage physicians to prescribe AMAs in generic names to minimize health care cost. Present study suggests that Antibiotics policy to be framed & periodically reviewed: to reduce unnecessary use of antibiotics and associated problems.

Key words: *Antimicrobial agents, neonates, prescription*

INTRODUCTION

Over 9 million deaths occur each year in the perinatal and neonatal periods globally and 98% of these deaths take place in the developing world. Nepal has a high neonatal mortality rate (NMR) of 38.6 per 1000 live births (2001). Two thirds of the newborn deaths usually occur in the first week of life (early neonatal death). Newborn survival has become an important issue to improve the overall health status and for achieving the millennium developmental goals of a developing country like Nepal[1].

The use of drugs in newborns admitted to Neonatal Intensive Care Units (NICUs) is characterized by a great variability in the management of the most common diseases and is a widespread phenomenon observed both within and between different countries[2]. Neonates are a special group of population for dosing because they have a rapidly changing body surface area and weight; a rapidly developing system of drug absorption, metabolism and excretion and inability to communicate with the provider[3].

Although it has been shown that patterns of drug utilization of antibiotic in neonatal intensive care are changing dynamically, current data on drug utilization patterns in neonatal intensive care are limited[4]. There is no universally accepted and standardized guidelines regarding the rational prescribing and individualizing the medication in neonatal intensive care. For the purpose of drug therapy, pediatric age group especially neonates, remains in controversies mainly due to lack of standard drug prescribing information for several drugs. Unfortunately for children, most drug manufacturer insert contain precautionary disclaimer, because safety & efficacy in children have not been established.

Infants and children are among the most vulnerable population groups to contract illnesses. The use of antimicrobial agents, especially antibiotics has become a routine practice for the treatment of paediatric illnesses[2,3]. The key role of antibiotics for the treatment of infectious diseases that are prevalent everywhere in developing countries may not be denied. However, there are also reports of an irrational use of antibiotics which may even lead to infections that are worse than the originally diagnosed ones. The pediatricians and other medical personnel who provide health care for infants and children in developing countries confront a number of challenges during the day to day practice of medicine due to the shortage of appropriate drugs and other facilities[4,5]. The rising

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incidence of bacterial resistance to common antibiotics, particularly, multi- drug resistant pneumococci, has prompted the need to use antibiotics judiciously in paediatric practice. Many of the antibiotics are unnecessarily prescribed for viral infections such as common cold. In a Kentucky study, 60 percent of patients were prescribed antibiotics for the common cold.[6]

Developing countries have limited funds available for health care and drugs hence it becomes very important to prescribe drugs rationally, so that the available funds can be utilized optimally[6]. Most of reported drug utilization studies have been carried out in adult patients with only a few being reported from pediatric patients. So present study is taken up to evaluate the drug prescribing pattern of antimicrobial agents seen in patients admitted to NICU of Nepalgunj medical college teaching hospital kohalpur banke Nepal.

Materials and Methods

A hospital-based, retrospective study (prescription audit) was conducted between December 2016 to April 2017 in the 150 case records of neonates patients admitted to NICU at Nepalgunj Medical College Teaching Hospital Kohalpur for a period of five month.

Necessary permission from the concerned authorities was obtained for data collection. The neonate (0-4 week age) who were prescribed antimicrobial agent (AMA) were included in the study. Neonate with Incomplete patient case sheet, discharged within 24 hrs. of admission, transferred to other specialty intensive care units, patients aged more than 4 weeks, patient who died before hospital discharge were excluded from the present study. To evaluate the drug prescribing pattern, a data collection pro forma sheet was prepared. Data were collected through review of case records of neonates admitted and treated in the NICU of pediatrics department.

Consecutive 150 case records of neonates admitted and treated in the NICU between December 2016 and April 2017 were obtained from the medical records department of the hospital. Study parameter were Demographic data: including age and sex of the baby and address, provisional and final diagnoses, group, number and type of antimicrobial agents prescribed per record, dosage, durations, and frequency of all AMAs, Route of administration and drug prescribed by brand or generic drugs.

Collected data were entered in Microsoft Office Excel 2007 and analyzed using SPSS Inc. Statistical Software Version 16.0. Descriptive statistical analysis was done using proportion, percentages and mean ± standard deviation.

RESULTS

Out of the 150, Neonates 86 (57.33%) were male babies and 64 (42.67%) were female babies. Maximum number (72.66%) neonates admitted to NICU were of low birth weight. Table [I] and most common cause of NICU admission was neonatal septicaemia (47.33%) followed by perinatal birth asphaxia (12%) Table [II].

The Number of antimicrobials prescribed to a neonate during the course of the therapy ranged from 2 to 5, highest number of patients, i.e. 103 (68.67%) received 2 antimicrobials, which was followed by 32 patients (21.33%) received 3 antimicrobials, 11 patients (7.33%) received 4 antimicrobials etc (Figure 1).

Catagory	Number of Neonates	Percentage
Normal (>2500 g)	26	17.33
Low birth weight (1500-2499 g)	109	72.66
Very low birth weight (1000-1499 g)	14	9.34
Extreme low birth weight (<1000 g)	1	0.67
Total	150	100

Table I: Birth weight in grams (g) and maturity wise disitibution of Neonates

Disease	Number(%)
Neonatal Jaundice	17 (11.33%)
Neonatal Sepsis	71 (47.33%)
Respiratory Distress syndrome	5 (3.33%)
Perinatal birth Asphyxia	18 (12%)
Pneumonia	7 (4.68%)
Convulsions	6 (4%)
Meconium Aspiration Syndrome	12 (8%)
Prematurity	14 (9.33%)
Total	150 (100%)

Table II: Disaease pattern in The NICU

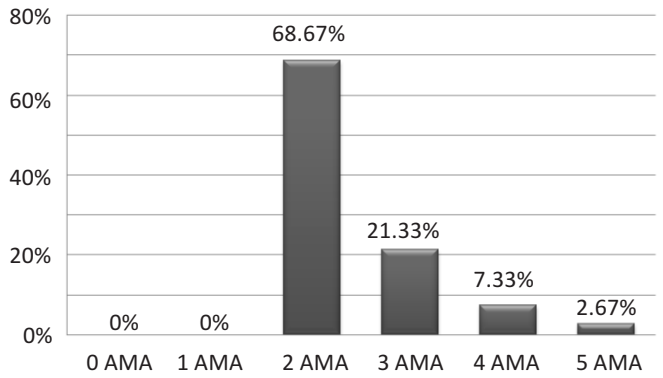

Figure 1: Number of antimicrobial agents (AMA) prescribed

Total number of patients	**150**
Total Number of Antimicrobial agents	366
Mean Number of antimicrobial agents per patients	2.44
Total number of antimicrobial agents prescribed by generic name	Nil
Total number of fixed dose combinations	60

Table III : Description of General Prescription Data

Antimicrobial agent	**Number and percentage of Neonates exposed (n =150)**
Cefotaxime	88 (58.66%)
Ampicillin	14 (9.33%)
Amikacin	72 (48%)
Gentamicin	16 (10.66%)
Ceftriaxone	48 (32%)
Cloxacillin	9 (6%)
Vancomycin	34 (22.66%)
Meropenem	14 (9.33%)
Metronidazole	2 (1.33%)
Imepenem	9 (6%)

Table IV: Prescribing frequency of systemic antimicrobial agents in the NICU

Antimicrobial agent	**Number and prescription (%)**
Piperacillin + Tazobactum	42 (28%)
Cefoperazone + Sulbactum	11 (7,33%
Ampicillin + Cloxacillin	7 (4.66%)

Table V: Prescription pattern of fixed dose drug combination Antibiotics in NICU

In 150 patients, 366 times antimicrobials were prescribed and the mean of antimicrobial prescribed per record was 2.44. All (100%) were prescribed by brand name and all the antimicrobial agents were administered by intravenous route. The number of fixed dose combinations was 60 [Table III].

Fourteen different types of AMAs were utilized. (Fixed drug combinations such as piperacillin + tazobactam prescriptions were considered as a single type of AMA for analysis). Cefotaxime (58.66%), amikacin (48%), Ceftiaxone (32%), Vancomycin (22.66%) were the most frequently prescribed AMAs in the NICU (Table IV). In Fixed dose combinations the Piperacillin + Tazobactum combination (28%) was most commonly prescribed fixed dose combinations. [Table V].

DISCUSSION

In present study, among the NICU patients, male preponderance (57.33%) in admissions was noticed .These finding were similar to the finding of Amin et.al[7], Neubert et.al[4], Kumar et.al[8]. It have been found that morbidity and mortality rates are higher in males than in females throughout life which could be attributed to stronger humoral and cellular immune response to infection or antigenic stimulation in females than in males[9].

This study showed that majority of the patient (72.66%) had low birth weight and main cause of admission to NICU was due to neonatal septicaemia (47.33%). These findings were similar to the study of Amin et.al[7], Pandiamunian et.al[10], Uppal et al[11]. Which may be because of the fact that during early neonatal age neonates are more susceptible to infection. Furthermore, prematurity is a major cause of low birth weight in preterm babies and these two factors, i.e. prematurity and low birth weight may be responsible for higher chances of infection[7].

Majority of the patients were given either 2 (68.67%) and 3 (21.33%) antimicrobials and average number of antimicrobial per prescription was 2.44 which was similar to study of Neubert et.al[4], Amin et.al[7]. Average number of drug is an important indicator for assessing rationality of prescription. It is preferable to keep the mean number of drugs per prescription as low. The WHO recommends that the average number of drugs per prescription should be less than 2. The average number of drugs per prescription value should be as low as possible to prevent the unfavourable outcomes of polypharmacy such as increased risk of drug interactions, increased cost of therapy, non-compliance and emergence of resistance in case of use of antimicrobials[12].

All of the drugs were prescribed by brand name which unnecessarily adds to the cost of therapy. Increasing generic prescribing would rationalize the use and reduce the cost of drugs[13].

All neonates received drugs via parenteral (intravenous) route. This result complies with prospective study done by Amin et.al[7]. Use of oral route in neonates is usually not preferred and in neonates oral administration is difficult.[7]

Most frequently prescribed antimicrobials were cefotaxime in 58.66% of patients, and amikacin in 48% of patients. These findings were similar to study of Amin et al[7], Pandiamunian et.al[10], Chatterjee et.al[14]. It is generally established that combination therapy of penicillin/cephalosporin and aminoglycoside is effective. Due to emerging resistance to ampicillin, cephalosporin and aminoglycoside combination is recommended as first-line therapy[15]. Higher prescription rate of cephalosporin could be attributed to its broad spectrum of activity and tolerance across all age group[16].

Aminoglycoside like amikacin and Gentamycin were also among the most frequently utilized group of antimicrobials. In combination with either a cephalosporin or penicillin, one of the aminoglycosides were prescribed to the majority of the neonates who received AMAs in the NICU. This is in accordance with other study reports, wherein gentamicin was found to be widely used in combination with β-lactam antibiotics, especially crystalline penicillin and ampicillin as this combination will provide synergistic activity against the most common pathogens isolated in early onset sepsis (e.g., Klebsiella pneumoniae and coagulase-negative Staphylococci)[17,18]. The fixed dose combination of Piperacillin and Tazobactam was used most commonly in 28% in the neonates. These finding was similar to study of Subash et al.[19], Fanos et al[20]. This fixed dose combinations may be prescribed for treatment of severe infection due to gram negative organism like Pseudomonas and other beta-lactamase producing organisms.

LIMITATIONS

The limitations of the study are shorter duration of study and study was conducted in single center only. Seasonal infection and geographic area also have a role on infection which may have impact on antimicrobial usage.

CONCLUSIONS

Prescription aduit studies are powerful exploratory tools to ascertain the role of drugs in society and create sound socio-medical and health economic basis for health care decision-making. There is little information is available regarding the extent and pattern of Antimicrobial drug use in NICU. There is a great need to study the drug utilization pattern in neonates. The study of antibiotic utilization pattern in our study showed that Cefotaxime, Amikacin, Ceftriaxone and Piperacillin + Tazobactum were used more in our NICU. The study concludes the prescription pattern at our neonatal intensive care unit complies with international studies. It is being evident from the study result that AMAs are prescribed predominantly in brand names in the NICU. Measures need to be undertaken to encourage physicians to prescribe AMAs in generic names to minimize health care cost. Present study suggests that Antibiotics policy to be framed & periodically reviewed: to reduce unnecessary use of antibiotics and associated problems.

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Doxorubicin Deteriorates the Histomorphology of the Kidneys of Albino Rats

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ABSTRACT

Background and Objectives: Nephrotoxicity is one of the limiting factors for using doxorubicin as an anticancer chemotherapeutic. Reactive oxygen species and cytokines have been implicated in the nephrotoxicity induced by doxorubicin. The main objective of the present study is to identify and compare the histomorphological features in kidneys of albino rats and gross morphological features such as weight of rats and weight of the kidneys due to administration of doxorubicin. **Materials and Methods:** In the study, albino rats were taken as the animal model. Sixty animals were taken as the sample size. They were divided into two equal groups: experimental (n=30) and control (n=30). Rats of experimental group were treated with anticancer drug doxorubicin at a single intraperitoneal dose of 10 mg/kg body weight while the Control group of rats received a similar volume of 0.9% normal saline. The ethical clearance was taken prior to the research from IERB committee BPKIHS Dharan. **Results:** Our results showed that there was high effect of drug in experimental groups of rats. It was seen that there was significant decrease in the body weight and weight of kidneys. The final body weight and kidney weight between experimental and control group showed the significant difference. Similarly there were no significant differences in the normal architecture between the male and female rats. The normal renal histological features were seen on the kidneys in the control group whereas the rats intervened with the drug had some disrupted histological features which reveal the toxicity of the drugs in the kidneys. **Conclusion:** The study showed toxicity of the drug in the kidneys of experimental groups of rats irrespective of gender and suggest that doxorubicin causes significant loss of the body weight and weight of kidneys and causes the disruption in the normal histological features.

Key words: *Doxorubicin, nephrotoxicity, rats*

INTRODUCTION

Doxorubicin, an anthracycline isolated from Streptomyces peucetius, has potent antitumor activity against a wide range of human malignancies[1]. The optimal use of doxorubicin is limited by a number of side effects; the most important are cardiotoxicity, haematotoxicity and a dose limiting nephrotoxicity[2]. Doxorubicin has been used for more than 30 years for the treatment of various malignancies, including tumors in breast tissue, bile duct, endometrial tissue, esophagus and liver as well as osteosarcomas, soft tissue sarcomas, and non-Hodgkin's lymphoma[3]. It acts by inhibiting the enzyme topoisomerase II, which leads to double strand breakage in the DNA double helix and also by intercalating with the DNA[4,5]. The exact mechanism and chance of doxorubicin induced obvious nephrotoxicity is not yet specifically known. However, it has been suggested by many investigators that cellular damage induced by doxorubicin is mediated by the formation of an iron anthracycline free radical[6]. Cardiac and renal damage has also been reported in laboratory animals following treatment with doxorubicin. Nephropathy has also been reported in cancer patients on doxorubicin therapy, as well as in experimental animals treated with doxorubicin. However, it is not yet clear what duration of doxorubicin therapy induces nephrotoxicity[7]. Doxorubicin induced changes in the kidneys of rats include increased glomerular capillary permeability and tubular atrophy. Nitric oxide is a free radical gas which acts both as a cytoprotective and cytotoxic agent. Nitric oxide is generated by either endothelial nitric oxide synthase or inducible nitric oxide synthase. Possible role of doxorubicin in nitric oxide synthase metabolism occurs via direct or indirect stimulation of nitric oxide production, and this might be a consequence of increased free radical generation. Free radical production and/or nitric oxide release induced by doxorubicin has been found to be responsible for the doxorubicin-induced toxicity[8]. The most frequently investigated effect of Doxorubicin on a molecular level is its tendency to generate a large amount of reactive oxygen species through the formation of semiquinone-type free radicals[9].

Since kidneys are the important organs for the survival of living beings and anticancer drugs have much more effect on kidneys. Therefore the present study has been designed to identify the histomorphological changes in kidneys of albino rats due to administration of doxorubicin in comparision to control groups.

METHOD AND MATERIALS

Animals

Sixty healthy Wistar Albino rats weighing 150-200gm were obtained from the animal house of BPKIHS, Dharan. They were housed in well ventilated room at controlled ambient

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temperature (25±5˚C) with a 12 hours alternating light and dark cycle. Animals were kept in groups consisting of less than five rats per cage made up of propylene (size=40cm×25cm×15cm) with husk bed. The cages were cleaned and husks were changed at regular intervals. The water bottles were also regularly cleaned to inhibit any fungal growth. The ethical clearance was taken prior to the research from Institutional Ethical Review Board (IERB) Committee, BPKIHS Dharan.

Diet Regimen

All rats were fed standard pellet diet and Bengal gram. They were given tap water and libitum. All the experimental works were carried out as per the ethical guidelines of Nepal Health Research Council (NHRC) for the care and use of animals in health research in Nepal.

Animal Groups and Treatment Regimen

Rats were randomly divided into three groups:
Group A - Long term (16th week)
The long term group was again divided into two sub-groups
A1= Experimental and A2= Control
Group B- Mid-term (8th week)
The mid-term group was again divided into two sub-groups
B1= Experimental and B2= Control
Group C- Short term (2nd week)

The short term group was again divided into two sub-groups
C1= Experimental and C2= Control

Experimental Procedure

All rats were weighed at the time of euthanasia. Animals were anesthetized with ether soaked in cotton and their kidneys were fixed by in vivo perfusion technique as mentioned below. Rats were kept on the dissecting tray with their ventral surface facing upward and all four limbs pinned. The abdomen was opened to expose the abdominal aorta and inferior vena cava. A 18 guage needle was inserted on the abdominal aorta and tied with thread to keep it in constant position. The needle was attached to clean flask tube, connected with two bottles containing bouin's fluid and physiological saline separately. Then the chest was opened and the right atrium was nicked by a scissor or knife (scalpel) to permit the drainage of blood. Thereafter, the physiological saline was perfused to flush out the blood. The fixative bouin's fluid was then transfused with the help of three ways stopcock. Approximately 200 ml of each fluid was perfused. Perfusion was stopped when clear fixative drops started oozing out from the snout of the animal. After completion of perfusion, the kidneys were isolated with the help of scalpel and forceps and weight was measured and post fixed for 24 hours by the same fixative. After 18 hour fixation in bouin's fluid, the tissue was processed and histological slides were prepared from vertical sections from the polar and the equatorial regions of each kidney. Micrometer was used for quantitative measurement of parameter; diameter of renal corposucles and glomerulus were observed qualitatively in histological slides. Diameter (D) of each renal corpuscles and glomerulus was measured.

Quantitative Measurement

Ocular and stage micrometers were used for quantitative measurements of different parameters like diameter of renal corpuscles, glomerulus.

Statistical Analysis

After completion of the experiment, data was entered in the microsoft excel software program. Statistical analysis was performed using the Statistical Package for Social Sciences (SPSS) 16 version. Depending upon the nature of the data collected, statistical tool independent-sample t- test and paired sample t-test were used to determine the significance of histomorphological changes, body and kidney weight and size of cells between experimental and controls. Statistical significance was set at 5% level of significance.

RESULTS

In this study, 60 wistar albino rats were taken. They were divided into 2 groups, control and experimental. Control and experimental groups both were again divided into 3 sub-groups each having equal number of male and female rats. The different data of the result showed that there was high effect of the drug in short term, mid-term and long term groups of rats.

Group	Sub-group	Sample Size	Duration of sacrifice	Treatment Regimen
Group A (Long term)	A1 (Experimental)	5 males + 5 females	16th week	10mg/Kg doxorubicin (intraperitonially)
A2 (Control)		5 males + 5 females		10mg/Kg 0.9 % normal saline (intraperitonially)
Group B (Mid-term)	B1 (Experimental)	5 males + 5 females	8th week	10mg/Kg doxorubicin (intraperitonially)
B2 (Control)		5 males + 5 females		10mg/Kg 0.9 % normal saline (intraperitonially)
Group C (Short term)	C1 (Experimental)	5 males + 5 females	2nd week	10mg/Kg doxorubicin (intraperitonially)
C2 (Control)		5 males + 5 females		10mg/Kg 0.9 % normal saline (intraperitonially)

It was observed that mean difference between the initial and the final weight of rats in experimental and control groups was highly significant (P<0.001) in short term, mid-term and long term groups of rats. The mean difference of the weight of right and left kidney in experimental and control groups was not statistically significant (P>0.05) in both short term and long term group of rats whereas the mean difference of the weight of right and left kidney in experimental and control groups of rats was highly significant (P<0.001) in mid-term group of rats.

In this study we observed that the mean difference between the diameter of renal corpuscles in experimental and control group was not statistically significant (P>0.05) in both short term and long term group of rats whereas the mean difference between the diameter of renal corpuscles of experimental and control group was statistically significant (P<0.05) in mid-term group of rats. And in case of glomerulus the mean difference between the diameter in experimental and control group was statistically significant (P<0.05) in both short term and long term group of rats whereas the mean difference between the diameter of glomerulus of experimental and control group was not statistically significant (P>0.05) in mid-term group of rats (Table I).

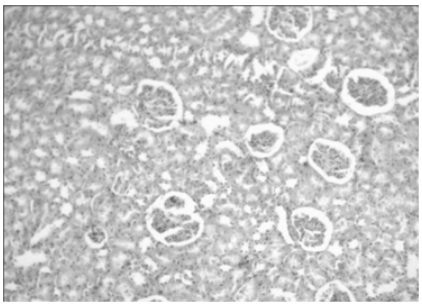

Figure 1 A

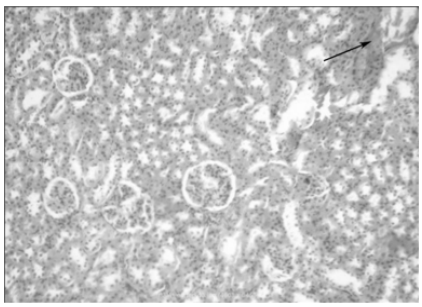

Figure 1 B

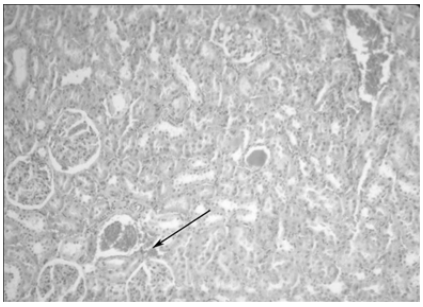

Figure 1 C

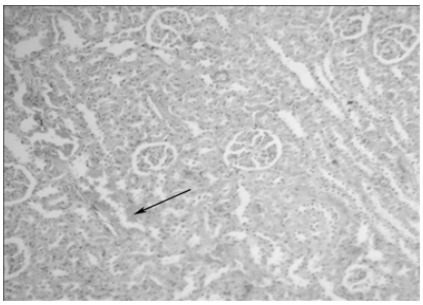

Figure 1 D

Figure 1: A, B, C and **D** show the diameter of renal corpuscles and glomerulus of control (all control groups), short term experimental group, mid-term experimental group and long term experimental group respectively.

Parameters	Group C1	Group C2	Group B1	Group B2	Group A1	Group A2
Initial Body weight (gm)	156.5±7.09	159.0±7.37	159.5±5.98	162.0±10.05	170.0±12.47	160.5±7.24
Final Body Weight (gm)	148.0±7.52	165±9.12	147.0±5.37	181.5±15.46	158.0±8.88	178.5±16.5
Kidney Weight (gm)						
Right	0.69±0.08	0.70±0.09	0.67±0.06	0.82±0.09	0.79±0.90	0.81±0.05
Left	0.65±0.08	0.66±0.09	0.63±0.06	0.80±0.10	0.76±0.07	0.77±0.05
Diameter of Renal Corpuscles (µm)	120.0±15.81	112.0±11.11	113.5±10.029	125.5±10.92	131.5±12.48	121.0±13.9
Diameter of Glomerulus (µm)	100.5±14.23	87.0±11.11	97.5±7.91	89.5±10.92	108.5±12.03	93.5±15.28

Table I : Changes in morphometric parameters in albino rats

DISCUSSION

Anticancer therapy usually demolishes the physiological homeostasis and affects multiple organs during treatment process. Effective anticancer therapy with anthracycline is limited because of its toxicity to various organs including kidneys[10]. The toxicity has been attributed to radical formation and oxidant injury. Nephrotoxic action of doxorubicin is also considered to be via drug induced free radical generation. The formation of free radical as well as an increase in response to doxorubicin treatment has already been documented. The disturbance in oxidant- antioxidant systems results in tissue injury that is demonstrated with protein oxidation in tissues and protein oxidation in renal tissue is recognized as one of the possible biochemical mechanisms of doxorubicin induced nephrotoxicity[11].

The study was designed with the rationale to find out the effect of the doxorubicin in the kidneys. In this study, albino rats were taken as the animal model. 60 rats were taken as the sample size. The rats of long term group of both control and experimental were sacrificed together after 16th week of intervention. Similarly the rats of mid-term and the short term group of both control and experimental were sacrificed together after 8th week and 2nd week of intervention respectively. The experimental groups were given single dose of 10mg/kg body weight of doxorubicin intraperitoneally and control groups were given normal saline of equal volume of the drug. The kidney section of control group showed normal histological feature of the kidney similar to those observed by other researcher. The reduction in animal body weight in experimental group may be attributed to the cytotoxic effect of doxorubicin since it cause myelosupression, anemia, loss of appetite and poor feeding, or it may inhibit protein synthesis.

In the present study the experimental group of rats demonstrated the general weakness, loss of appetite and reduction in body weight. The weight loss might be due to the loss of appetite causing mobilization and utilization of fat and change in metabolic rates. However, the final weight of rats of control groups demonstrated increase in body weight. This result is similar from the study conducted by Boonsanit D et al. which shows that doxorubicin affects the growth of rats with significant reduction in daily food intake and body weight[12].

The results in the present study showed the increase in diameter of renal corpuscles and glomerulus in the doxorubicin injected rats as compared to control group of rats. Similar result was observed in the study done by Rashid S et al. which showed that normal renal architecture was observed in control group whereas renal lesions, inflammation, glomerular congestion and interstitial hemorrhage were observed in doxorubicin treated groups[13].

CONCLUSION

In summary, present study demonstrated decreased in the body weight and weight of kidneys in all experimental groups of rats as well as deteriorative effect of doxorubicin was observed on both glomerulus and renal corpuscles of albino rats. The histomorphological adverse changes occur in kidneys of all the experimental groups of rats without gender variation due to administration of doxorubicin.

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Nerve Conduction Study in Bell's Palsy

Shah SK[1], Kothari RP[2], Bassi SD[3]

ABSTRACT

Background: Nerve conduction study (NCS) is an important electrophysiological tool that can be used for the measurement of the latency and amplitude of the facial nerve. The NCS helps in predicting the prognosis of patients with Bell's palsy. Evaluation of NCS of patients with Bell's palsy may have contribution in counselling and management of the patient. **Objective:** The study was aimed to study the state of nerve damage in patients with Bell's palsy. **Methods:** The latency and amplitude of facial nerve stimulating bilateral Orbicularis Oculi and Orbicularis Oris muscles were assessed and noted in 24 patients of Bell's palsy. **Results:** 15(62.5%) of the patients had significant axonal injury affecting one side and only 1(4.16%) patient had demyelinating injury. The total of 8(33.33%) patients had insignificant axonal injury of the facial nerve in comparision with the normal side. **Conclusions :** Nerve conduction study shows predominant axonal type of facial nerve injury in patients with Bell's palsy and hence provides valuable information regarding the prognosis and the state of nerve damage in patients with Bell's palsy.

***Key words**: Nerve Conduction Study, Bell's Palsy*

INTRODUCTION

Electronic equipment has become the important tool as investigation in current era. Nerve Conduction Study of the peripheral nerve also have served this purpose. It has been used since decades as a part of investigation of Facial Palsy. The state of neural damage or function can be assessed in facial palsy using Nerve conduction study. Bell's Palsy, named after Sir Charles Bell, is an idiopathic lower motor neuron inflammation of the facial nerve. The incidence of Bell's Palsy is 25 in 100000 people[1]. It is more common in third decades[2]. The study aims to know the motor nerve conduction test of facial nerve in Bell's palsy and compare it with that of previous studies; in context at mid-western region of Nepal.

SUBJECTS AND METHODS

This is the retrospective study done from August 2016 to May 2017 at Neurophysiology Lab of Nepalgunj Medical College and Teaching Hospital, Kohalpur. The total of 24 patients diagnosed with Bell's palsy underwent motor nerve conduction study of facial nerve. The patients with facial paralysis caused by stroke, trauma or other causes were not included in the study. The patients with duration of Bell's palsy of one month or less underwent motor nerve conduction study of bilateral facial nerve. RMS EMG/NCV/EP machine was used for this purpose. Bilateral Orbicularis Oculi and Orbicularis Oris muscles were tested from ipsilateral anterior tragus and recorded using supramaximal stimulation. The latency and the compound motor action potential were noted. The latency below 4.1 ms and the amplitude difference between two sides less than 50% were considered normal[4].

RESULTS

The age range was 4 to 74 years of patients with 15(62.5%) female and 9(37.5%) male. The mean age of the patient was 37.13±17.51. The maximum number of cases were seen in 31-40 years of age. Our study showed axonal loss in 15(62.5%) and only one (4.16%) patient had demyelinating injury among the patients. The rest of the patients had decreased amplitude in the affected side compared to the normal side suggesting mild or insignificant axonal loss. Among the 24 patients, only four had complete facial paralysis, i.e. decreased amplitude on upper and lower part of the face.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-10	2	8.3	8.3	8.3
	11-20	2	8.3	8.3	16.7
	21-30	2	8.3	8.3	25.0
	31-40	13	54.2	54.2	79.2
	51-60	2	8.3	8.3	87.5
	>60	3	12.5	12.5	100.0
	Total	24	100.0	100.0	

Table I: Distribution of Patients according to age group

DISCUSSION

Electrodiagnostic study is an important test that contribute the understanding of state of the neural function. In our study, the peak incidence was on 30-40 years of age group which is in agreement with the study done by C. Prescott, Pietersen (1982) and Adour et al. (1978).[2,3,7] The preponderance of female over

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male was also similar to that by C. Prescott. However, in our small sized study left sided weakness predominated which was not in line of agreement with that of C.Prescott, Pieterson and Adour et al[2,3,7]. The predominant axonal type of injury seen in Bells palsy among our patients corresponds with the study of Yasukawa et al, Wang et al[5,6].

CONCLUSION

Bell's palsy affects patients with axonal loss on the affected side with incomplete facial weakness being the common type of involvement. Nerve conduction study of facial nerve is an important tool to assess the functional state of nerve. Assessing the facial nerve excitability also helps in predicting the prognosis in Bell's Palsy.

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Optic Neuritis in Farwestern and Midwestern Region of Nepal: A Hospital Based Study

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ABSTRACT

Background: optic neuritis is a common cause of visual loss. Its demographic and clinical picture is different in the eastern and western countries. The treatment outcomes are also different in report from different place. Its data is lacking in the Midwestern and Far western Nepal. **Objective**: To report its clinical features, demographic pattern and response to treatment in the patients of this region. **Materials and methods**: The hospital based data of patients of Nepalgunj medical college were analyzed retrospectively with respect from September 2016 to June 2017. **Results:** Sixteen patients (20 eyes) were found to have optic neuritis (papillits in 13 and retrobulbar optic neuritis in 7 eyes). The male to female ratio was 1:1.29. The mean age of the patients was 27.63 ±12.48 years (95% CI=21.88 – 34.00). The most common modes of presentation was decrease in vision and color vision defect. One patient had multiple sclerosis at the presentation revealed by MRI with plaque in occipital cortex. Visual outcome was encouraging in all cases with pulse steroid therapy (p=0.002). **Conclusion:** Pulse methylprednisolone therapy is found to have better prognostic results. In demographic pattern younger population is found more affected in our study than other reports.

***Key Words**: Optic neuritis, relative afferent pupillary defect, methylprednisolone*

INTRODUCTION

Optic neuritis is a common cause of sudden visual loss with or without pain. It commonly affects young adults with male to female ratio of 1:1.3[1]. Optic neuritis is divided into two types: typical and atypical. Typical optic neuritis is caused by either multiple sclerosis (MS) or idiopathic cause. Atypical optic neuritis is caused by inflammatory disease other than multiple sclerosis[2]. Typical optic neuritis is usually unilateral in adults but in case of children presents bilaterally. Racial and geographical difference in its occurrence is known. People of white race has better treatment outcome than that of black race[3].

Recognition of this condition is important due to its association with multiple sclerosis. Proper initial therapy with corticosteroids or interferon has shown to halt or delay the onset of multiple sclerosis and causes speedy visual recovery. Moreover, there are reports that the existing evidenced based guidelines are not used by many neurologists and ophthalmologists because of their unawareness of the efficacy of the recommended treatment schedule[4,5].

There are very few studies available on this subject from the eastern part of the world, particularly from Japan, Nepal, India, China and Singapore, which shows different demographic characteristics than those described in optic neuritis treatment trial (ONTT) or in literature from the western world[1,3,4,6-8]. There is lack of data on optic neuritis from Midwestern and Farwestern region of Nepal. We undertook this study to find out the demographic pattern, clinical characteristics and treatment outcome of optic neuritis presenting to the Department of Ophthalmology at the Nepalgunj Medical College, Nepalgunj, Nepal.

METHODOLOGY

The patients were hospitalized and treated with the diagnosis of optic neuritis from September 2016 to June 2017 at NGMC were followed up. These data were collected retrospectively and analyzed using SPSS software. Optic neuritis was diagnosed by the presence of acute decrease in visual acuity with defective color vision, painful eye movement and relative afferent pupillary defect (RAPD). The patients having the above features with swelling of optic nerve only on ophthalmoscopy were diagnosed as having papillits and those not having optic nerve swelling were diagnosed as having retrobulbar optic neuritis. The patients with the diagnosis of ischemic, toxic or hereditary optic neuropathy were excluded from the study. The patients with inflammatory retinal or uveal signs were also excluded. The patients having visual acuity of better than 6/12 were not admitted at our institute and thus were excluded from the study.

Systemic history was obtained for multiple sclerosis and other systemic diseases. History was obtained for a previous episode of similar ocular ailment. Demographic features (age, gender, and race, season of presentation) and ocular complaints were noted in all cases. Ocular complaints enquired were ocular pain, headache and painful extra ocular movements.

Ocular examination included recording of best corrected visual acuity (using retinoscopy and Snellen's chart), color vision test

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(with Ishihara's pseudo isochromatic color vision chart), ocular movement were evaluated, swinging torch light test was done to record relative afferent pupillary defect (RAPD) and fundus evaluation under mydriasis with both direct and indirect ophthalmoscopy.

The patients with the diagnosis of optic neuritis had undergone neurological examination by an internist. Magnetic resonance imaging (MRI) was performed for all cases to confirm optic neuritis and rule out other diseases. Erythrocyte sedimentation rate (ESR), total and differential leucocytes counts and venereal disease research laboratory (VDRL) test for syphilis were also obtained before therapy. Perimetry was obtained using Automated Perimeter in eyes with visual acuity of at least 6/60 during the initial presentation.

The patients were treated with pulse methylprednisolone therapy: intravenous methylprednisolone 1gm/day for 3 days diluted in 5% dextrose solution followed by an 11 days course of oral prednisolone. The patients who presented late, with profound loss of vision without any evidence of systemic precipitating factors were also treated with pulse steroids and were included in this study.

RESULTS

Between September 2016 and June 2017, we admitted 16 patients with the diagnosis of optic neuritis fulfilling the inclusion criteria. The age of the patients was ranged from 6 to 55 years and there was no significant gender difference (M:F= 1:1.29). Most of the patients belonged to the Terai region of Midwestern and Far western region. Most of our patients were of Chhetri tribe (62.5%) and maximum cases were presented on summer season (43.75%) (Table I).

Of the 16 patients, 4 (25%) had bilateral involvement. One patient had a history of recurrent attacks (disc pallor was noted in the previously affected eye). Most of the patients (62.5%) presented to the hospital after 1 week of onset of symptoms. The most common symptom was decrease in vision which was found in all patients. Other common symptoms were headache, eye pain and deviation of eye (Table II).

In the affected eyes visual acuity ranged from 6/18 to no light perception. Visual acuity of less than 6/60 was recorded in 11 eyes (55 %), of which 4 eyes (20 %) were with visual acuity of no perception on light. Relative afferent pupillary defect (RAPD) was detected in all unilateral cases and two bilateral cases with asymmetrical visual acuity. While in two cases with bilateral disease there was no RAPD but had sluggishly reacting pupil. One child had exotropia detected on involved eye with visual acuity of no perception of light. 60% of cases had disc edema in the affected eye.

On investigating color vision by Ishihara's chart 80% eyes were total color blind and rest (20%) were with red green deficiency. On MRI head and orbit perineural contrast enhancement on T1 images was seen in 10 eyes and in one case there was bilateral occipital lobe plaque confirming diagnosis of multiple sclerosis. 16 patients (20 eyes) received high dose intraveinous pulse steroid therapy for 3 days followed by oral steroid for next 11 day and then tapered. Following the treatment, there was improvement of symptoms in almost all eyes even in the eyes with no perception of light. The visual improvement was evident within 24 hour of first dose of intraveinous methylprednisolone.

Age group	**Number**	**Percentage**	**Mean**	**SD**	**95% CI**
Child (0- 14 year)	3	18.9	27.63	12.45	21.88-34.00
Adult (15- 60 year)	13	81.1			
Old (>60)	0	0			
Sex		**Number**		**Percentage**	
Male		7		43.7	
Female		9		56.3	
Ratio (M: F) = 1:1.29					
Address		**Number**		**Percentage**	
Midwestern		7		43.7	
Farwestern		8		50.0	
Indian		1		6.3	
Geographical region		**No.**			
Hill		4		25%	
Terai		12		75%	
Race		**Number**		**Percentage**	
Chhetri		10		62.50	
Brahmin		1		6.25	
Dalit		4		25.0	
Magar		1		6.25	

Table I: Demographic characteristic

Duration of illness before presentation	Number	Percentage	
Before 1 week	6	37.5	
1 week to 1 month	6	37.5	
After 1 month	4	25.0	
Laterality of disease		**Number**	**Percentage**
Unilateral	Right eye	6	75.0
	Left eye	6	
Bilateral	Both eye	4	25.0
Symptoms	**Number**	**Eyes**	**Percentage**
Eye pain	7	8	43.8 patient/40% of eyes
Headache	4		25% patients
Deviation of eye	1	1	7.5% patients
Visual symptoms	16	20	100% of eye

Table II: Presentation characteristic of patients

Visual acuity	Presentation	Discharge	Last follow up
>/= 6/18,	3	10	15
6/24-6/60,	6	9	5
6/60,-1/60,	4	1	0
HM-PL	3	0	0
No PL	4	0	0

Table III: Visual acuity on presentation, discharge and 1 month follow up

All of the patients returned for follow-up visit at 1 month. Visual outcome was recorded better at one month follow up (Mean Log MAR VA of 0.41) as compare to initial presentation (Mean Log MAR VA of 1.37) significantly (p=0.002) (Table III). Colour vision was also recorded better on follow up visits in all eyes. One patient had multiple sclerosis with plaque in both occipital lobe at presentation. These plaques were resolved after pulse steroid therapy. Neurological examination was within normal limits in all other cases. There were no patients with sinusitis.

DISCUSSION

Evaluation of optic neuritis requires a brilliant clinical detail, appropriate laboratory workup and imaging that provides correct etiological diagnosis. Thereafter treatment gives good outcomes and future trick for natural course[1,2].

There is only one published study on demography of optic neuritis from Nepal and it was done on eastern region[6]. The demographic characteristic like racial and cultural characteristics of eastern region are quite different from that of Midwestern and Farwestern region of Nepal.

In many aspects, this report is different from the reports of optic neuritis from other parts of the world. The mean age of our patients was younger to that reported in Optic Neuritis Treatment Trial (ONTT), study from oriental countries as well as from eastern Nepal[4,6-9]. Females are reported to be involved more frequently in our study as seen in the ONTT by Beck et al.,[9] whereas study from eastern world and eastern Nepal showed slight male preponderance[4, 6-8].

We found a high prevalence of the disease in patients belonging to the Terai region in contrast to the study by Das et al., [6] who found more in hilly region of Nepal. This might be because of many cultural and geographical barriers are prevalent in the hilly part of this region.

We observed there is significantly high occurrence of disease in Chhetri. Such racial variation was already been showed by various studies including ONTT[9]. In our study most of the patient presented during summer season. Seasonal variation shown by this study might be by chance and need further study of longer duration. It has been reported that retro-bulbar optic neuritis is more common (65%) in adults by ONTT,[10] whereas we found more frequent occurrence of papillits in younger adults (60%) as seen in the another study from eastern Nepal[6] and Wang et al[7] from Singapore(65%) but Wakakura et al showed both retrobulbar neuritis (50%)and papilitis (50%)occurred equally[4].

There was a high occurrence of bilateral optic neuritis in our study (25%), which is lesser to that of study from eastern Nepal by Das et al[6] (47.2%) but Wang et al[7] (19%), showed lesser bilaterality. Most of our patients (62.5%) presented after 1 week of onset of symptoms. Again, 25% of patients only present after one month of onset of symptom similar finding was shown by Das et al[6] from eastern Nepal reflecting neglect and poor health status of Nepalese population. The presenting complaint in all the patients was visual impairment. Few

patients also complained of eye pain and headache. Uhthoff's symptoms were not observed in any of our patients as seen in study by Das et al[6].

Visual acuity in most of our patients was poor at the time of presentation. Fifty-five percent of the eyes had visual acuity of <6/60 at the time of presentation. There was high prevalence (20%) of patients presenting with no light perception which is similar to finding of Das et al (22.2%) although higher than that of any report published on optic neuritis. The ONTT study[10] reported only 3% of patients presenting with no light perception. The reason may be that the patients in our part of the world generally seek ophthalmic consultation only when they are disabled due to poor visual acuity as well as unawareness about this disease.

Almost all of our eyes responded well to pulse methylprednisolone therapy, which is in accordance with the ONTT study report and the studies published from Japan, Singapore, China, India and Nepal[3,4,6-10]. Our study showed initial good outcome of the pulse steroid therapy in the Nepalese population of optic neuritis. The patients having initial vision of no light perception did well with pulse steroid therapy although final visual outcome was poorer than others as expected. However, in other patient final recovery of visual acuity was not related to the pretreatment visual acuity. Colour vision was improved in all cases. Few of the patient developed side effect in the form of weight gain due to steroid therapy. This showed delay reporting of the patient reduces the visual recovery.

Conversion rate to multiple sclerosis is not studied due to the short follow-up period. But one child was diagnosed to have multiple sclerosis on MRI at presentation. Longer and proper follow-up is required to find out the incidence of multiple sclerosis in these patients. Since this is a hospital-based study, there may be higher actual magnitude of the problem in the community. Longer prospective study will further elaborate about this entity in this remote part of Nepal.

CONCLUSION

The demographic and clinical characteristics of optic neuritis in Midwestern and Farwestern Nepal have some similarity with those reported from eastern Nepal, China, Japan and Singapore but different from those reported from the western world. Response to pulse methylprednisolone therapy is rapid and good in these patients. Even eyes with no perception of light respond to the pulse steroid therapy. Thus we recommend early diagnosis and administration of pulse steroid therapy for typical optic neuritis to have good visual prognosis.

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Urinary Tract Infection, Incidence, Uropathogens and Antibiotic Sensitivity in Females

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ABSTRACT

Introduction: Urinary tract infection in female population is one of the most common clinical infectious pathologies found worldwide due to anatomical location of urethral opening in relation to males. Continuous assessment of uropathogens and their sensitiveness to chemotherapeutic agent help us to manage these. The aim of this study to determine the presence of uropathpgens and their sensitkng from UTI. **Method:** It is a hospital based cross sectional study conducted at NGMC Teaching Hospital Kohalpur from July 2016 to June 2017. The urine samples were collected using the mid-stream clean catch method from 948 clinically suspected UTI female patients and the irantibiotic sensitiveness was determined using the standard procedures. **Result:** Overall culture positive was found in 262 patients (27.6%) among 948 urine samples. Among them e. coli contributed to cases 179(68.3%) followed by klebsiella 38(14.5%), enterobacter 21(8%), fungal 10(3.9%).Maximum no. of uropathogens were sensitive to chloramphenicol 224(93.4%) followed by nitrofurantin 232(88.7%), amikacin 246(94%), tobramycin 241(92.8%) and gentamycin 229(85.5%). Most of the organism were found to be resistant with ampicillin 255(97.5%) followed by cefpodoxime 242(92.4%), vancomycin 235(90%) and amoxicillin 234(89.6). **Conclusion:** and recommendation – Chloramphenicol, Nitrofurantin, Amikacin, Gentamicin and Tobramycinare the drugs of choice for the empirical therapytill the culture and sensitivity report is available. Continuous assessment is required for the early diagnosis and management of UTI.The culture and the sensitiveness of uropathogen are to be done and the treatment should be modified accordingly.

***Key words**: Antibiotic, UTI, uropathogen, sensitivity, resistant*

INTRODUCTION

Urinary tract infection (UTI) is one of the most common clinical entity encounters with community practice. It accounts for the high rate of morbidity and financial burden worldwide. It is estimated that 150 million people are infected with UTI per annum worldwide. This makes global economy burden of more than 6 billion US dollars in a year[1]. UTI describes with presence of bacteriurea with clinical symptom, like dysuria, frequency, urgency, suprapubic pain, renal angle pain or flanks pain and sometimes with fever, nausea and vomiting. UTI can be classified as lower and upper, according to anatomical site of presence of infection.

Anatomical classification of UTI divides into upper and lower, when kidney and ureter were involved with pathological process, known as upper UTI, if pathology involving urinary bladder and urethra known as lowers UTI. However, we need to remember that if lower urinary tract is involved it does not mean upper tract may be free or vice versa. Most of the cases of lower UTI involvement is known as a cystitis, presented with symptom likedysuria, frequency, urgency, suprapubic pain with bacteriurea[2,3]. Depending on choice of treatment, UTI is classified in to complicated and non-complicated[4].

Incidence of UTI is more common in females compared to male due to short urethra in females and structurally found less effective in preventing the bacterial entry due to the proximity of the genital tract and urethra, adherence of urothelial mucosa to the mucopolysaccharide lining, pregnancy and sexual activity.

Trienekens TAM et al, reported an overall incidence of 50/1000/ year[6]. In uncomplicated cases mostly treated with empirical antibiotic without knowing uropathogen and its sensitiveness, it's also contributes to make microflora resistant to mostly used antibiotics[7]. Overall estimated that in one third of women treated for UTI at least one time by the age of 26 years, its incidence increases to approximately 60% during a woman's lifetime, signifies burden of disease in female population[8,9].

Clinicians agree regarding local in vitro resistance rates are not always known, even known changing pattern regarding sensitiveness strain of microorganism and changing of uropathogen over a time is anticipated, thinking of this continuous assessment of uropathogen identification is necessary to manage a infective morbidities for local population. We are living in low income country where cost makes value of purposeless use of antibiotic, a major burden cost wise even leads resistant to microflora and required newer

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and newer antimicrobial agent to manage these patients, makes burden to Pharma Company to introduce newer antibiotic. Thinking of this given study can helps health professional to carry out choice for antibiotic selection in empirical therapy to manage uncomplicated UTI cases and further helps to make guidelines to manage UTI related cases.

MATERIAL AND METHOD

The present study was carried out in the department of Gyn/obsNepalgunj Medical College Teaching Hospital, Kohalpur. It is a cross sectional study consisting of 948 patients admitted during July 2016 to July 2017.Mid-stream urine sample collected who came with complain of like dysuria, frequency, urgency, suprapubic pain, renal angle pain or flanks pain with occasional fever, nausea and vomiting and not treated with antibiotic for at least two weeks prior to inclusion in the study, group were included excluded in study. Patients who were already getting treatments for UTI, diagnosed cases of immunosuppressive, diabetics and who refused to give urine samples, were excluded from the study.

AIMS AND OBJECTIVE

To determine the

- Overall presence of uropathogen causing UTI.
- Type of organism causing UTI.
- Antibiotic sensitiveness with common using antibiotic for identified uropathogen.
- Antibiotic resistantwith common using antibiotic for identified uropathogen.

Samples were collected in sterile container and processed in microbiology lab.as standered procedures by using biochemical tests including catalase, coagulase, oxidase, indole, methyl red, citrate, urease, triple sugar, iron agar and motility.

RESULT

In present study 628(76.8%) cases of clinically suspected UTI fall in the age group of 10-50 years. this may be noted that 20 years and above are from the reproductive age group.h

Mean age 32+-15.7 yrs of age and minimum age is 15 and maximum age 85 yrs (Table I).

Age (Years)	Frequency	Percentage
10- 20 Yrs	75	7.9
20- 30	345	36.4
30- 40	196	20.7
40- 50	112	11.8
>= 50 Yrs	220	23.2
Total	948	100

Table I: Age distribution of study participants

Total case selected for study purpose was 973, among them 25(2.6%) cases were excluded due to refusal in participation. Out of 948 samples 686(72.4%) samples were negative for growth and 262(27.6%) samples grew bacteria such samples were further investigated for culture and sensitivity. Out of 262 samples most common bacteria was E. coli 179 cases (68.3%) which was followed by klebsiella 38 cases (14.5%), enterobacter 21 cases (8%), fungal 10 cases (3.9%), acinetobacter 6 cases (2.3%)pseudomonas 4 cases (1.5%) staph in 1 case(0.4%) (Table II).

Uropathogens	Frequency	Percentage
E.coli	179	68.3
Klebsiella	38	14.5
Enterobacte	21	8.0
Fungal	8	3.1
Acinetobacter	6	2.3
Pseudomonas	4	1.5
Proteus	3	1.1
Candida	2	0.8
Staph	1	0.4
Total	262	100

Table II: Incidence of bacterial uropathogens UTI suspected female patients

Grown organism were tested for sensitiveness. Maximum no. of uropathogen were sensitive with chloramphenicol © 224(93.4%) in 241 samples followed bynitrofurantin (Nit)232 (88.7%), amikacin (AK) 246(94%) , tobramycin (tob) 241(92.8%) and gentamycin (gen) 229(87.5%) samples. Most of the organism were resistant with ampicillin 255(97.5%) followed bycefpodoxime (CPD) 242(92.4%), vancomycin 235(90%) and amoxicillin 234(89.6) samples tested with antibiotic respectively.

DISCUSSION

In our study the urine culture were done on all patients who were never catheterised. In our study E Coli was found to be responsible in 68.3% of the cases. In the study conducted by Muhammad et al[10], reported incidence of E. coli as uropathogen in 67% cases (his patients were also not catheterised before the urine culture was sent). In our study klebsiella was the 2nd most commonest offender. In Muhammad series pseudomonas was the second most common uropathogen causing UTI. The difference in the spectrum of uropathogens may be because of the geographical changes. In our series as wellas in Mohammad seroes Gentamycin was found to most efficient antiboitic. However, our cases were resistant to cotrimoxazole/trimethoprim in contrast to his series where cotrimoxazole was found to be second drug of choice.

Chih-C C et al[11] also reported E.coli responsible for 54.5% cases

of UTI and klebsiella was the 2nd most offender constituting about 13.1% cases. He reported Amikacin and Gentamycin as the drug of choice. The sensitivity of uropathogen in the present series also confirms that Gentamycin was most effective.

Kahlmeter et al[13] et al reported in multicountry study that e.coli as causative organism contributes 77% in present study 68.3% is comparable and reported most of the pathogen resistant with ampicillin comparable with present study[13].

David et al[14] found in his series that most of the uropathogens were E.coli (77.5%) and Nitrofurantoin was the drug of choice. In a study carried out by Acharya et al in 2009 reported this in his series only 24.94% were positive for culture. In our cases urine culture was positive in 27.6% of the cases who came with the symptoms of UTI.

Study conducted by Joshi et al again reported most common organism E.coli as the commonest uropathogen (66.7%). In his series the overall culture was positive in around 25.24%.

CONCLUSION

1. The female patients admitted to the hospital with the symptoms of UTI (i.e. dysuria, frequency, urgency, suprapubic pain, renal angle pain or flanks pain with occassional fever, nausea and vomiting), surprisingly show presence of bacteria only in 25-30% of the cases (in the present series 27.6%).

2. E. coli is the most commonest uropathogen causing UTI 68.3% cases. Second commonest offender was klebsela in our series

3. Gentimycin was found to be most effective antibiotic against the organisms. However, in our series Cotrimoxazole was found to be ineffective due to the growth of the resistant strains.

LIMITATION OF THE STUDY

Cost of culture is an economic burden and therefore poor patients are empirically treated with antibiotic prior to culture in our part of the world. The facilities of the urine culture must be made available to all patients. However, in absence of culture facilities if UTI is suspected the patients are recommended to receive Gentimycin on the basis of our study. Cotrimoxazole appears to be a poor choice if used emperically.

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Degloving Injury: Different Ways of Management

Nakarmi KK[1], Shrestha SP[2]

ABSTRACT

Degloving injury involves shearing of the skin from the underlying tissue due to differential gliding in response to the tangential force applied to the surface of the body leading to disruption of all the blood vessels connected to skin. The flap of degloved skin has precarious blood supply making it almost impossible for the flap to survive. We describe two cases of degloving of thigh managed differently in different settings.

***Keywords**: Degloving; excision; split skin graft*

INTRODUCTION

Degloving injuries occur when there is sufficient tangential force to a body surface to disrupt the structures connecting skin and subcutaneous tissues to the superficial fascia. There may also be associated injuries to the underlying soft tissues, bone, nerves and vessels. It involves the young males, and most are related to road traffic accident constituting upto 4% of all the trauma related admissions. Treatment guidelines are not clear[1]. The injury may be so severe that the limb is non-viable and requires amputation. It has been classified into three group based on whether only skin, underlying soft tissue or bone is involved in the injury process[2].

Different modalities of treatment are described. It includes excision and secondary skin grafting with split or full thickness skin grafts. Immediate split skin grafting by graft derived from the degloved skin flap or other parts of the body is also done if patient is in stable condition. Other methods include treatment with cryopreserved split-thickness skin grafts harvested from degloved flap, artificial dermal replacement and vacuum-assisted closure[3]. Dermal regeneration template (Integra) has been used in association with a sensate neurovascular fasciocutaneous pedicled flap salvaged from the non-viable lower leg to reconstruct the defect[4]. Aggressive debridement aided by fluorescein vital dye staining followed by primary or delayed wound closure guided by local and systemic conditions is advocated by some[5].

Early plastic surgery evaluation and management of these patients have been associated with lesser number of surgeries and shorter hospital stay[6]. Clinical evaluation aided by use of fluorescein dye to assess the flap viability will guide whether skin can be harvested from the flap which can be stored for later use if general condition does not allow immediate grafting7. Use of the degloved flap after defatting along with negative pressure wound therapy has also been described8.

CASES

Case 1

Eighteen year old girl was run over by a car. She had degloving of whole circumference of the upper half of right thigh. She was initially managed in a private hospital outside Kathmandu. The wound was irrigated and flap was sutured in place before sending the patient to Kirtipur Hospital. When she came to us, the skin flap was already black and necrosed (Figure 1). It was excised completely. Wound was dressed daily for few days. Split skin graft was applied to cover the wound afterwards. She got discharged from the hospital in three weeks time after full recovery.

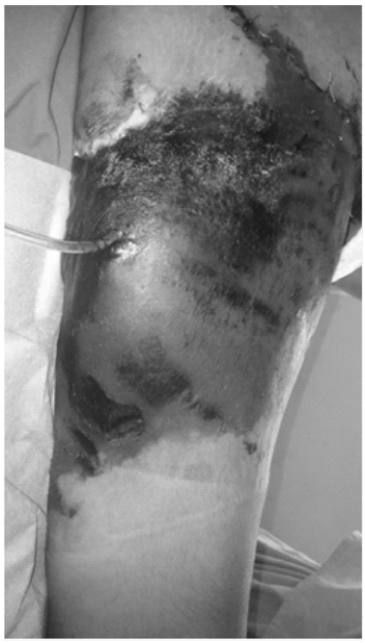

Figure 1: Necrosed skin several days after degloving

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Case 2:
Twenty nine year old man fell off the scooter he was riding. He landed on his right thigh and ripped off most of the thigh skin (Figure 2). He presented to Madhyapur Hospital immediately after the accident. He did not have any other injury except diastasis of the symphysis pubis. He was taken to operation theater within few hours. His wound was thoroughly washed. Split skin graft was harvested from the degloved skin before excising it and applied to the defect in the same setting. Pubic diastasis was fixed after two weeks. He fully recovered and went home in one month's time (Figure 3).

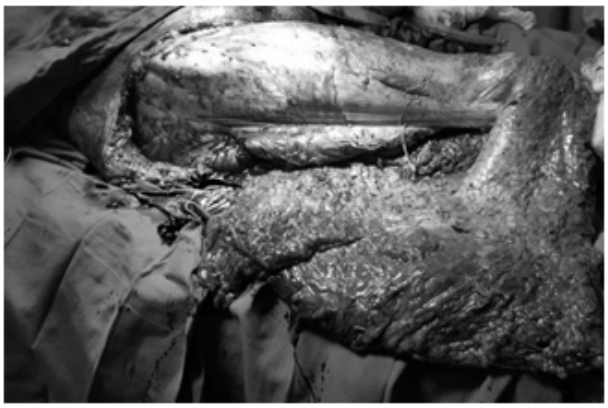

Figure 2: Degloved flap turned inside out

Figure 3: Grafted area after two weeks

DISCUSSION

There is no clear guideline for the treatment of degloving injury. (1) Management depends on the local as well as general conditions of the patient. Immediate reconstruction can be considered if the patient is in stable condition. Otherwise skin graft can be harvested from the flap and stored for later use when the patient becomes stable.(7) The first case in our series needed skin harvesting from the other thigh because the flap had already necrosed. However, it was possible to use the skin graft from the flap in the second case because of the early presentation which obviated the need of harvesting graft from other part of the body. However, associated bony injury led to the delay in recovery.

CONCLUSION

Degloving injury can present at different times. Management should be tailored depending on the extent and type of injury, time of presentation and associated injuries.

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