Editorial

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Journal of KIST Medical College

Plagiarism in Scientific Writing:Whom to Blame?

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Honesty and integrity are the virtues of the good researchers. Yet , questions of Plagiarism, Fabrication and Falsification sporadically emerge from such a highly scholarly people. Pressure of academic promotion ,and acquring research funds are two main reasons that researchers risk their own morality while publishing their literary works.[1]

The World Association of Medical Editors (WAME) defines plagiarism as "the use of others' published and unpublished ideas or words (or other intellectual property) without attribution or permission, and presenting them as new and original rather than derived from an existing source".[2]Plagiarim is considered as serious scientific misconduct, but the burning question is "whom to blame?" Solution is not simply incorporating the plagiarism checking software.

There are ethical codes of Good Scientific Practice (GSP), however, most academic institutions lack monitoring mechanism of on-going research and assessing the quality and trustfulness of research reporting. So lack of institutional policies and responsibilities are often the main reasons fostering the culture of plagiarism knowingly or unknowingly. Interestingly, many of us are unaware of plagiarism in our own papers until we check it with plagiarism checking softwares. According to WAME, when six consecutive words are copied or 7 to 11 words are overlapping set of 30 letters ,constitutes plagiarism in strict sense.[3]

Thus dealing with manuscript's plagiarism check is a subject of individual opinion.Some forms of plagiarism always exist when we directly quote or paraphrase in mosaic form because these are the similarities of words. What percentage is considered as a major plagiarism to bring into notification?These are just rule of thumb however , researchers should be aware of the guidelines set by the Committee on Publication Ethics(COPE). The flowcharts introduced by COPE is handy dealing with issues of scientific misconduct , however when there are so many researches on the similare topics, should we label it as plagiarism? Can zero tolerance in plagiarism achievable ? Should researchers check plagiarism before submission of the article or is it responsibility of editors?

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Original Article

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Journal of KIST Medical College

Use of Oral Paracetamol as Premedication to Reduce Propofol Induced Pain During Induction of General Anesthesia

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ABSTRACT

Introduction: Propofol is the most frequently used intravenous anesthestic agent for induction of anesthesia in spite of pain on injection. Various pharmacological and non-pharmacological methods have been used to alleviate propofol induced pain. Paracetamol(PCM) is the most common analgesic used, which is inexpensive, easily available and with minimal side-effects. This study was done to observe the degree of pain reduction induced by injection of propofol with use of oral paracetamol preoperatively

Methods: It is a descriptive, cross-sectional study conducted at operation theater of Kist Medical College, Lalitpur, Nepal. The sample size of 80 individuals was calculated using Cochrane Formula, which was divided into two groups equally. One group received oral PCM preoperatively, while other did not receive. This study was conducted from July 2021 to December 2021. Patients from 18-60 years of age and within American Soceity of Anesthesiologists(ASA) grade I-II undergoing elective surgery, who did not have any contraindication to paracetamol were included in the study.

Results: Out of 40 patients who received PCM 57.5% had mild pain, 20 % had moderate pain, 2.5% had severe pain whereas 20 % of them had no pain. Among those who did not receive PCM, 2.5% had mild pain, 52.5% had moderate pain and 45% had severe pain. The average pain score on Numerical Rating Scale(NRS) score was 2.32 among oral PCM received group and 6.32 among those who did not receive oral PCM.

Conclusion: It was found that premedication with oral paracetamol is helpful to alleviate pain induced by propofol injection during induction of general anesthesia.

Keywords: General Anesthesia; Pain; Paracetamol; Propofol.

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INTRODUCTION

Propofol is the most frequently used intravenous anesthestic agent for induction of anesthesia despite of pain on injection as its most common adverse effect.[1] Pain from propofol injections may be generated by a kinin cascade effect.[2] Anothermechanism of pain suggested was the stimulation of the nociceptive receptors at the free nerve endings located between the intima and the media layers of the venous wall.[3] Due to its irritating pain effects during injection, there has been negative experience even after good anesthetic effect of propofol.[4]

Various pharmacological and non-pharmacological methods have been used to alleviate propofol induced pain.[5] Among them lidocaine pretreatment and veinous occlusion or injection in antecubital vein are most commonly preferred.[6] Nevertheless, there are various international studies which showed that paracetamol also reduced the propofol induced pain.[7-9] This study was conducted with an aim to determine the reduction of propofol induced pain by oral PCM.

METHODS

This study is a descriptive, cross-sectional conducted by department of Anesthesiology, in the operating room of KIST Medical College and Teaching Hospital. The ethical clearance was obtained from Institutional Review Committee (Ref. No.: 2078/79/17). The study was conducted from July 2021 to December 2021 (6 months duration). The total sample size was 80, which was calculated by using Cochrane formula.

$N=Z^2pq/e^2$

Where, Z=1.96 for CI 95%

e= error with 10% tolerable value

p= population proportion

q= 1-p

Here, p=70.41

Hence, N=80

The samples were selected using non probability convenience sampling method. Those subjects aged between 18 to 60 years of age, who gave consent and belonging to ASA I and II and undergoing elective surgical procedures under general anesthesia were included in the study. Patients with history of chronic pain, renal failure, chronic lung disease, deranged liver function tests, allergy to PCM and with reduced consciousness level (Glasgow Coma Score<15) were excluded from the study.

Patients for the study were grouped on the basis of those who were administered 1 gram of PCM 2hours prior to surgery and those that were not given any analgesics preoperatively. Each group had 40 patients. Patients were counseled regarding the pain induced by propofol during induction of general anesthesia and requested to grade the severity of such pain. The pain was assessed after infusion of 25% of the dose of propofol (600mg/min) using Numerical Rating Scale (NRS) for pain.[10] The severity of pain was assessed after 10 seconds of receiving the 25% of calculated dose. The NRS score 0 indicates no pain, score1-3 indicates mild pain, score 4-6 indicates moderate pain and score 7-10 indicates severe pain. The NRS score was compared in both groups receiving paracetamol and not receiving paracetamol. The patients were followed up till post-operative period for any adverse effects related with PCM.

The collected data were entered in Microsoft Excel. Statistical analysis was performed using SPSS version 23. The result was expressed as frequencies, percentages, mean and standard deviation. Data are represented as tables and bar diagrams.

RESULTS

Out of 40 patients who received PCM 23(57.5%) had mild pain, 8(20%) had moderate pain, 1(2).5% had severe pain whereas 8(20) % of them had no pain. Among those who did not receive PCM, 1(2.5%) had mild pain, 21(52.5%) had moderate pain and 18(45%) had severe pain. The average pain score on NRS score was 2.32 among PCM received group and 6.32 among those who did not receive PCM. The severity and incidence of pain during propofol injection in group that received oral PCM and that did not receive oral PCM is shown in Figure 2.

The heart rate and mean arterial pressure, 1 min after propofol injection in PCM received group was 83.75±13.67 beats per minute and 88.3±11.91 mm of Hg and in PCM not received group was 94.1±13.76 beats per minute and 92.2±13.67mm of Hg. In the recovery room, there

were no problems such as rashes or tissue edema in any of the groups.The demographic characteristics of the patient are shown in Table 1.

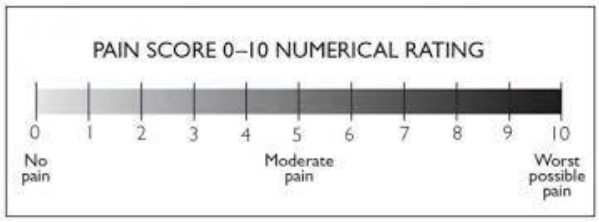

Figure 1. Numerical Rating Score for Pain

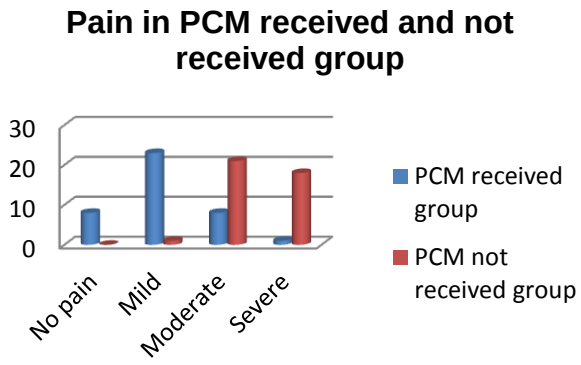

Figure 2. Severity and incidence of pain during propofol injection

Table 1. Socio-demographic characteristics of patient

	PCM received group	PCM not received group
Age in years	42.5±11.65	38.45±14.42
Gender		
Male	17	17
Female	23	23
ASA I	23	26
ASA II	17	14
Weight	65.5±9.64	60.40±9.28

DISCUSSION

In this study, we found that the oral PCM is also efficacious in decreasing the intensity of pain induced by propofol during induction of anesthesia, when used as premedication. Other studies showed the incidence of pain to be around 70.41% when oral PCM premedication was used, compared with that of saline (99.1%) which was showed results almost similar to our study, where the incidence of pain among oral PCM received group was 80% and that too, most had mild pain and very few had severe pain.[9]

In a double-blinded randomized controlled trial with 150 patients, Canbay et al. found that the incidence of propofol injection pain was 64% in the control group and 22% in the intravenous paracetamol pretreatment group.[11] In another study done by Khouadja et al, the incidence of propofol injection pain was found to be 36% in those receiving intravenous paracetamol compared with 85% in placebo groups.[3] The overall incidence of pain during propofol injection in our study was higher than in prior studies.[3, 11, 12] These studies used intravenous PCM and not oral PCM as in our study. In comparison to the intravenous form, the oral form of paracetamol has different pharmacokinetics and pharmacodynamics. This is why, in terms of the incidence and severity of propofol injection pain, our findings (using oral paracetamol) differed from those of previous studies (using intravenous paracetamol). Moreover the intravenous PCM infused has earlier and higher plasma levels compared with oral route.[13, 14] Other reasons might be the use of venous occlusion techniques in prior studies. As venous occlusion technique helps in the effective analgesic action of PCM in reducing propofol induced pain.[12]

Our differing results on the degree of propofol injection pain may be due to different methods of measuring pain severity. We used a Numerical Rating Score ranging from 0 to 10 (11 points) to measure our patients' pain. All the patients in our study quantified the degree of pain after injection of propofol, while in other studies, the pain score was reported by the observer depending upon patient's pain behaviors in a 4 point scale. 0 = none (negative response to questioning), 1 = mild pain (pain reported only in response to questioning with no behavioral signs), 2 = moderate pain (pain reported in response to questioning and accompanied by a behavioral sign or pain reported spontaneously without

questioning), and 3 = severe pain (strong vocal response or response accompanied by facial grimacing, arm withdrawals or tears). The NRS is a pain measurement system that is reliable, valid, change-sensitive, and simple to use.[15]

Oral paracetamol is generally available, relatively simple and convenient to use and cost-effective, the findings of this study are clinically valuable and applicable to daily practice. The results of this study can be therapeutically used in general because the protocol is simple to follow and early administration of oral paracetamol is pharmacologically rational. There were no complications related to paracetamol in our study.

CONCLUSION

Use of oral PCM preoperatively reduces the intensity of propofol induced pain during injection.

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Original Article

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Effect of Melasma on Quality of Life in Patient with Melasma Using DLQI (Dermatology Life Quality Index): A Cross Sectional Study

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ABSTRACT

Introduction: Melasma is an acquired pigmentary disorder that has a negative impact on various domains of patient's quality of life. Measurement of quality of life can help in enhancing patients care and outcomes. The study was done to assess DLQI (Dermatology Life Quality Index) in Melasma patients and its correlation with clinical severity.

Methods:A cross-sectional hospital based study was conducted and fifty clinically diagnosed cases of Melasma were included after informed consent. Clinical and epidemiological data was obtained as per structured proforma. Severity of Melasma was measured as per MASI (Melasma Area and Severity Index) score. Dermatology Life Quality Index was used to assess the quality of life. Statistical analyses were performed as per standard statistical protocols.

Results: The mean age of the patients included in our study was 31.14 (±7.12) years. A female preponderance (n=43; 86%) was observed in our study. A family history of Melasma was obtained from sixteen patients (29.63%). Centrofacial type of Melasma was the most frequently encountered pattern in our study subjects. The average MASI and DLQI score of our patients was 4.44 (± 1.91) and 5.24 (±4.97), respectively. No significant correlation was observed in between MASI and DLQI scores (p=.228).

Conclusion: The present study showed that Melasma causes a moderate reduction in quality of life.

Keywords: Melasma ;Quality of Life ;DLQI (Dermatology Life Quality Index)

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INTRODUCTION

Melasma is an acquired pigmentary disorder. It is characterized clinically by symmetric reticulated hypermelanosis in three common facial patterns: centrofacial, malar and mandibular. Forehead, cheeks, nose, chin, upper lip and neck are the common sites of predilection. Ultraviolet exposure, genetic factors, pregnancy, hormonal therapies and certain drugs are considered contributory factors to the development of disease.[1,2]

The chronic and relapsing nature of the disease has a negative impact on various domains of patient's quality of life. Furthermore, anxiety, depression, low self-esteem and poor body image are frequently associated with the disease.[3] Hence, measurement of quality of life can help in enhancing patients care and outcomes. The Dermatology Life Quality Index (DLQI) is a validated questionnaire technique which m7easures the detrimental effect of skin disease on quality of life of patients.[4] Whereas, Melasma Area and Severity Index (MASI) score has been developed as a reliable and valid means of measuring Melasma severity.[5]

Owing to paucity of local data assessing the impact of Melasma on quality of life of patients, the current hospital based cross-sectional study was carried out. We conducted a study to assess the Dermatology Life Quality Index (DLQI) in the affected patients and its correlation with clinical severity of Melasma.

METHODS

After obtaining approval from Institutional Review Committee (Reference No. 078/079/62, March, 2022), a hospital based cross sectional study was conducted for a period of three months, from March 2022 to June 2022. Fifty cases of Melasma, visiting the department of Dermatology (KIST Medical College and Teaching Hospital, Lalitpur) were included in our study. Patients under the age of 18 years, pregnant women, patients having systemic causes of pigmentation, patients on anti-convulsant or phototoxic drugs, and patients suffering from other facial dermatosis were excluded. Informed consent was obtained from all patients.

The diagnosis of Melasma was made clinically. All relevant epidemiological and clinical data was obtained using a structured proforma. The severity of Melasma was assessed using Melasma Area and Severity Index (MASI) score. The index ranges from 0 to 48, with higher scores indicating greater severity of the disease. Subjective assessment of area of involvement, darkness and homogeneity is made for forehead, right malar region, left malar region and chin.[5]

The patients were then asked to fill the printed validated DLQI in Nepali. In 1994, DLQI was introduced as the first dermatology-specific quality of life questionnaire. The questionnaire comprises of ten questions, grouped under six headings. Questions regarding patients' perception of the impact of skin diseases on different aspects of their health-related quality of life over the last week are scored. Scores 0-1 indicates no effect at all on patient's life, 2-5 indicates small effect on patient's life, 6-10 indicates moderate effect on patient's life, 11-20 indicates very large effect on patient's life and score of 21-30 indicates extremely large effect on patient's life.[4] The obtained data was analyzed using IBM SPSS

(version 24), as per standard statistical protocol. P value <0.05 was considered significant.

RESULTS

The mean age of the patients included in our study was 31.14 (±7.12) years. Majority (n=27;54%) of our patients were 21-30 years of age. A female preponderance (n=43; 86%) was observed in our study. Men only comprised 14% of the study population. A vast majority (n=35; 70%) of our patients were married. The patients included in our study mainly hailed from urban areas (n=46; 92%). Majority (n=29;58%) of our patients were housewives.

A family history of Melasma in first degree relatives was obtained from sixteen patients (29.63%). Past or current use of oral contraceptive pills was demonstrated in 18 patients (36%). The average exposure of our patients to sunlight was 10.50 (± 9.85) hours/week. The mean duration of disease in our study population was 2.13 (± 1.32) years. Centrofacial type of Melasma was the most frequently encountered pattern in our study subjects .(**Table 1**).

Table 1. Clinical types of Melasma

Pattern	Frequency (n)	Percentage (%)
Centrofacial	31	62
Malar	15	30
Mandibular	04	08
Total	50	100

The MASI score of our patients ranged from 1 to 8. Average MASI score of our patients was 4.44 (± 1.91). The DLQI scores ranged from 1 to 21, with mean scores of 5.24 (±4.97). Further details regarding DLQI scores are provided in **Table 2**.

Table 2. DLQI (Dermatology Life Quality Index) scores

Score Range (Effect on Quality of Life)	Frequency (n)	Percentage (%)
0-1 (No effect)	03	06
2-5 (Small effect)	35	70
6-10 (Moderate effect)	04	08
11-20 (Very Large effect)	07	14
21-30 (Extremely Large effect)	01	02
Total	50	100

However, no significant correlation was observed in between MASI and DLQI scores (p=.228) (**Table 3**).

Table 3. Correlation between MASI [a] and DLQI [b] scores

	Mean	Pearson Correlation	P-value
MASI[a]	4.44 (± 1.91)	.174	.228
DLQI[b]	5.24 (±4.97)		

[a] MASI: Melasma Area and Severity Index

[b] DLQI: Dermatology Life Quality Index

DISCUSSION

Melasma is an acquired condition of symmetric hyperpigmentation, typically occurring in 2nd to 3rd decade of life.[6] Accordingly, the average age of patients included in our study was 31.14 (±7.12) years and majority (54%) of them belonged from 20-30 years of age.

Hormonal influences play a significant role in the pathogenesis of Melasma. This is corroborated by pregnancy, oral contraceptive use and other hormonal therapies acting as important causative factors.[7] An immunohistochemical study on Melasma patients, compared the affected skin with unaffected neighboring skin. A significantly increased expression of the progesterone receptor in the epidermis of affected skin was found. Our study demonstrated a female preponderance (86%) of the disease. Also, 36% of patients reported past or current use of oral contraceptive pills. Other studies, too, have reported similar observations.[8]

Exposure to ultraviolet light, genetic risk factors and hormonal milieu are the three important risk factors to the development of disease. The average exposure of our patients to sunlight was 10.50 (± 9.85) hours/week. Ultraviolet light induces reactive oxygen species (ROS) by activating inducible nitric oxide. The generated ROS, in turn promotes melanogenesis. In recent times, the role of visible light in inducing pigmentation has also been appreciated.[9]

A family history of Melasma was obtained from approximately one-third of our patients (29.63%). Family history is considered to be an important risk factor for developing Melasma. This lends strength to the hypothesis of a genetic predisposition to the condition. Genes responsible are believed to be involved in pigmentary, inflammatory, hormonal, and possibly vascular responses. Interestingly, patients with darker skin types have higher incidence of a positive family history.[7,8] Several clinical studies have identified centrofacial Melasma as the most frequently encountered type. Similarly, centrofacial Melasma, was the predominant form of disease observed in our study subjects (62%).

Melasma is a chronic, recurrent skin disorder that may result in deteriorations in patients' quality of life in different populations.[10] The average MASI and DLQI score of our patients was 4.44 (± 1.91) and 5.24 (±4.97), respectively. The mean DLQI score of 5.24 (±4.97) obtained in our study demonstrates a moderate impact on quality of life of Melasma patients.[4] Our observations are consistent with another local study which observed a mean DLQI of 5.64 ± 5.41.[11]

No significant correlation was observed in between MASI and DLQI scores (p=.228). Studies differ with regards to the association of MASI with DLQI. Some studies have found a significant association (p=0.011).[12] Whereas, a study conducted in Nepal, found no significant correlation (p=0.317).[13] Local socio-demographic and cultural factors may account for varied observations.

CONCLUSION

The present study showed that Melasma causes a moderate reduction in quality of life. Further comprehensive studies are required to better

understand the effect of this frequent skin disorder on quality of life.

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Evaluation of Epistaxis sites and Its Management in a Tertiary Care Centre

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ABSTRACT

Introduction: Epistaxis is defined as bleeding from inside the nose or nasal cavity and it is one of the most common emergencies in Otorhinolaryngology. The study aimed at evaluating the epistaxis sites and its different management.

Methods: This was a descriptive cross- sectional study conducted on 109 epistaxis patients. Patients presenting in Otorhinolaryngology outpatient department or emergency with epistaxis without definite cause on initial assessment were selected. Study was conducted from 17th February 2021 to 16th February 2022. Data regarding age, sex, side, site of epistaxis and mode of management were noted. Data were entered and analyzed using the Statistical Package for the Social Sciences version 20.0 and the descriptive statistical analysis was done.

Results: The age of the patients was between 17 to 81 years with mean age of 51.16 ± 16.98 years. According to the bleeding site, 61 patients (56.0%) had bleeding from anterior part of septum, 24(22%) had bleeding from posterior part of septum and nine (8.3%) had bleeding from lateral nasal wall, while in 15(13.7%) cases exact site could not be identified. 55 patients (50.5%) were managed with silver nitrate chemical cautery or bipolar electrocautery, 22 patients (20.2%) had endoscopic cauterization, 11(10.1%) had sphenopalatine artery (SPA) cauterization, five patients (4.6%) had anterior nasal packing and only one patient (0.9%) had posterior nasal packing . Successful control of posterior epistaxis was seen in 29 (87.87%) patients with cauterization.

Conclusion: Nasal septum was the main site of bleeding. The septum should be examined closely in cases of idiopathic bleeding. Anterior epistaxis can be managed with chemical cautery or bipolar electrocautery. If the bleeding source is not identified by anterior rhinoscopy, a nasal endoscopy is necessary to identify the site of epistaxis, which is safe and less invasive procedure. Endoscopic electrocautery is the procedure of choice for posterior epistaxis. If this fails, there is still option of nasal packing.

Keywords: Epistaxis; Management of Epistaxsis;Sites of Epistaxis.

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INTRODUCTION

Epistaxis is defined as bleeding from inside the nose or nasal cavity and it is one of the most common emergencies in Otorhinolaryngology. Its prevalence is 12% in the general population.[1] Approximately 60% of the population is affected by epistaxis at some point of their life time, of which 6% require treatment.[2] Clinically epistaxis is classified as either anterior or posterior based on plane of piriform aperture.[3]

There is debate regarding the origin of bleeding sites and its managements in epistaxis. Common sites include anterior septum, posterior septum, roof of nasal cavity and lateral nasal wall. There is no definitive protocol for the management of epistaxis but various protocols have been proposed in the literature.[4]Nasal endoscopy has important role in both identifying the site and providing direct mode of treatment.[5]

The different managements of epistaxis are chemical cautery, anterior nasal packing, posterior nasal packing, endoscopic bipolar cauterization or ligation of sphenopalatine artery branches and embolization.[6] Nasal packing leads to pain and sometime serious side effects such as hypoxia, septicaemia, cardiac arrhythmia and even myocardial ischemia.[7] Similarly endoscopic cauterization leads to nasal crusting, paresthesia and dryness. So this study aims at evaluating the epistaxis sites and its different management.

METHODS

This was a descriptive cross- sectional study conducted in the Department of Otorhinolaryngology, Lumbini Medical College Teaching Hospital after the approval from Institutional Review Committee (IRC-LMC 05-J/020). The study was conducted from 17th February 2021 to 16th February 2022. Patients were received from emergency room (ER), outpatient department (OPD) or as a referral from other departments during the study period. On arrival to ER, patients were assessed for Airway, Breathing and Circulation (ABC) and IV fluids were given to those patients requiring resuscitation. A written informed consent was taken from all patients included in the study. All patients underwent routine investigations such as complete blood count, random blood sugar, serum electrolytes, urea, creatinine, urine routine examination and blood grouping. Coagulation profile such as prothrombin time, activated plasma thromboplastin time, bleeding and clotting time were also performed. Additional investigations were ordered based on history and clinical examination about the possible etiology and comorbidity. Ear, Nose Throat examination was done using headlight illumination to find the site of bleeding. Nose was packed with cotton soaked with 2% xylocaine and 0.5% oxymetazoline for ten minutes before examination of nasal cavities. If the bleeding point was found on the initial examination, it was treated under direct vision using silver nitrate or cautery. If the bleeding point was not visualized on anterior rhinoscopy then patients were taken to the operation theater room for rigid nasal endoscopy. It was done with zero degree rigid endoscope under local anesthesia. General anaesthesia was reserved for uncooperative patients. Nose was packed with 10 ml of 4% xylocaine for 10 minute followed by 3 ml of 2 % xylocaine with 1:2 lakh adrenaline injected to pterygopalatine fossa through greater palatine foramen to anesthetize the posterior part of nasal cavity. Additional 3 ml of 2 % xylocaine with 1 : 2 lakh adrenaline was submucosally injected into the lateral wall of the posterior middle meatus, inferior to the horizontal basal lamella of the middle turbinate and inferior meatus. Nasal mucosa was searched for bleeding points. If suspicious areas were seen, they were lightly swiped with cotton to provoke bleeding. Freer's elevator was used to push the middle and inferior turbinate medially to see meatus and laterally to see upper posterior part of septum and posterior nasal cavity. The bleeding point was controlled with bipolar electro cautery under endoscopic vision. Identified bleeding site was recorded in relation to the nearby normal anatomical landmarks. Spur causing obstruction in visualization of nasal cavity was corrected at same time. If sphenopalatine artery cauterization (ESPA) was needed then mucoperiosteal flap was elevated. The flap was further elevated posterosuperiorly until sphenopalatine foramen was seen, either antero inferiorly or posterosuperiorly to the posterior aspect of the lateral attachment of the middle turbinate. Nasal packing was not done in these patients. If patient developed bleeding from the same side after chemical cautery, anterior nasal packing was done. If epistaxis persisted posteriorly, posterior and anterior nasal packing was done. Patients under general anesthesia or septoplasty with nasal pack were admitted for 72 hours with injectable antibiotics.

Inclusion criteria:

- Age ≥ 17 years
- Idiopathic epistaxis

Exclusion criteria:

- Age <17 years
- Maxillofacial trauma
- Suspicious of Nose and PNS malignancy
- Patients who are not willing for study

The sample size was calculated using the following formula:

$$n \geq \frac{z^2_{1-\frac{\alpha}{2}} X\, p(1-P)}{d^2}$$

Where, Z= 1.96

Alpha (α) =type 1 error rate

P= Proportion of patients that require medical treatment=6% [2]

d= Marginal error rate=5%

The minimum required sample size was 87. However, a sample size of 109 was taken for the study. Data regarding the age, sex, side, site of epistaxis and mode of management were noted. Data were entered and analyzed using the Statistical Package for the Social Sciences (SPSS) version 20.0 and the descriptive statistical analysis was done.

RESULTS

During the study period, total of 109 patients were included in the study. The age of the patients ranged between 17 to 81 years (mean 51.16 ± 16.98 years). 63 of patients (57.8%) were male. The male to female ratio was 1.36:1. (Table 1)

The nasal cavity more involved was right side 58 (53.2%) compared to left side 46(42.2%). Bilateral involvement was seen in five patients (4.6%) (Table 2). According to the bleeding site, 61 patients (56.0%) had bleeding from anterior part of septum, 24 (22%) had bleeding from posterior part of septum and nine (8.3%) had bleeding from lateral nasal wall. In 15 cases (13.7%) exact site could not be identified (Table 3). 55 patients (50.5%) were managed with silver nitrate

Table1. Gender distribution of study subjects

Gender	Number	Percentage (%)
Male	63	57.8
Females	46	42.2
Total	109	100
Age(Mean) ± SD	51.16±16.98	

Table 2. Distribution of study subjects based on side of nose involved in epistaxis

Side of nose	Frequency	Percentage
Right	58	53.2
Left	46	42.2
Bilateral	5	4.6
Total	109	100

Table 3. Site of epistaxis

Site	Frequency	Percentage
Anterior septum	61	56.0
Posterior septum	24	22.0
Lateral nasal wall	9	8.3
Not visualized	15	13.7
Total	109	100

Table 4. Modality of treatment

Modality	Number	Percentage
Chemical cauterization	55	50.5
Endoscopic cauterization	22	20.2
SPA cauterization	11	10.1
Anterior nasal packing	5	4.6
Posterior nasal packing	1	0.9
No bleeder was identified	15	13.7
Total	109	100

chemical cautery, 22 patients (20.2%) had endoscopic cauterization, 11 patients (10.1%) had SPA cauterization, five patients (4.6%) had anterior nasal packing and only one patient (0.9%) had posterior nasal packing . Successful control of posterior epistaxis was seen in 29 patients with cauterization (87.87%) (Table 4)

DISCUSSION

In the present study, according to the bleeding site, 61 patients (56.0%) had bleeding from anterior part of septum, 24 (22%) had bleeding from posterior part of septum and nine (8.3%) had bleeding from lateral nasal wall. In 15 cases (13.7%) exact site could not be identified. Epistaxis was more commonly seen affecting males than females, with male to female ratio of 1.36:1. Studies in many countries showed male predominance.[8-9] Age of the patients in our study was between 17 to 81 years (mean 51.16 ± 16.98 years). In old age, there is loss of elastic and contractile property of the arteries, so they have more chances of nosebleed than young patients. The epistaxis is more from right side (53.2%) of nasal cavity than left side, which is similar to study done by Bhatta R.[10]

Majority of patients have epistaxis from Little's area but there is debate on the relative importance of posterior sites. Numerous studies using various methods and examination techniques have produced diverse findings. In our present study, medial wall of nasal cavity was the main site of epistaxis. This finding correlates with study done by El-Simily where 60% of bleeding points were from septum.[11] In a study of 50 patients with adult primary posterior epistaxis, McGarry[12] identified 70% of bleed from the septum but there are other studies showing lateral wall of nasal cavity as common area of epistaxis. Lateral wall of nasal cavity was identified as a bleeding location in 8.3% of patients in our study. In a study done by Thornton MA et al[5], Rosnagle et al[13] lateral site was involved more in epistaxis compared to septum. Our finding supports that most of posterior epistaxis like anterior, is predominantly septal in origin.

Managing epistaxis requires a stepwise approach, starting initially with first aid and resuscitation and then identification of bleeding point. Different methods have been used to control epistaxis.

If the bleeding point is visible on anterior rhinoscopy the bleeding site may be sealed either with chemical cautery using silver nitrate or with bipolar electrocautery. Chemical cauterization is an important treatment method for slight nosebleed with anterior localization, which is easily identifiable on anterior rhinoscopy but when there is more bleeding then bipolar electrocautery is needed. The most commonly used chemical agent is silver nitrate. There are also reported cases of chemical cauterization with trichloroacetic acid or chromic acid. The most frequent complication that can occur after chemical cauterization is mucosal crusting and mild pain.

In present study, 50.5% of patients had chemical cauterization for anterior epistaxis, 20.2% of patients had endoscopic cauterization, 10.1% had SPA cauterization, five patients (4.6%) had anterior nasal packing and only one had (0.9%) posterior nasal packing. In our study, by identifying the site and selective electro cauterization of bleeding area we tried to minimize nasal packing thus reducing discomfort related to nasal packing. Out of five patients, two patients had active bleeding while doing anterior rhinoscopy so they underwent packing in outpatient department. Three patients had rebleeding after endoscopic cauterization but they refused further surgical treatment and had anterior nasal packing. One patient who underwent SPA cauterization for posterior lateral wall bleeding had rebleeding and had posterior along with anterior nasal packing. During this period, no patient required other vessel ligation for posterior epistaxis.

Sphenopalatine artery is the main blood vessel supplying the nasal cavity so endoscopic sphenopalatine artery cauterization (SPA cauterization) has emerged as treatment option compared to conventional nasal packing method. The nasal pack stops bleeding by blindly exerting pressure on any bleeding point and is associated with more discomfort and complication. There are no contraindication for SPA cauterization except nasal crusting, paresthesia and dryness which are mild, transient and self-limiting.[14-15] In various study, success rate of endoscopic cauterization is more compared to nasal packing which has failure rate of 30 to 40%.[16] In our study bleeding point was identified in 86.3% of cases. In a study done by Thornton MA et al[5] and Chiu TW et al[17] bleeding points were successfully identified in 81% and 94% respectively. So in the recent year,

the preference has shifted to endoscopic identification of epistaxis site and direct bleeding point cauterization as first line of treatment for posterior epistaxis.

In our study, 87.87% had successful control of posterior epistaxis with cauterization. Ahmed and Woolford[2] reported 89% success rate with endoscopic electrocautery in patients with epistaxis thus avoiding the requirement for hospital admission. In a study done by Kumar S[18] success rate of 92% to 100% has been achieved with endoscopic SPA ligation. You Zou et al.[19] showed that endoscopic electro cauterization is more efficient compared to conventional nasal packing for the management of posterior epistaxis. So nasal packing can be avoided by doing early nasal endoscopy which can identify site of bleeding. Endoscopic cauterization of sphenopalatine branches represented a safe and effective procedure that can solve the nasal bleeding in most of the patients without any complications thus reducing discomfort and stay in hospital. Thus, we conclude that identification of epistaxis sites have important relation with modality of its managements.

LIMITATION

Long term follow up of the patients was not done to look for rebleed.

CONCLUSION

We observed that nasal septum was the main site of bleeding in anterior and posterior epistaxis. If the bleeding source was not identified by anterior rhinoscopy, a nasal endoscopy was necessary to identify the site of epistaxis, which is a safe and less invasive procedure. Endoscopic electrocautery was procedure of choice for posterior epistaxis. If this fails, there is still the option of nasal packing.

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Functional Outcome of Anatomic Single Bundle Anterior Cruciate Ligament Reconstruction Using Quadruple Hamstring Autograft

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ABSTRACT

Introduction: Arthroscopic Anterior Cruciate Ligament(ACL) reconstruction using quadruple hamstring autograft is an established and widely practiced surgery for ACL injured knee.The goal of ACL reconstruction is to enable the patient to return to preinjury status. The purpose of this study was to evaluate the functional outcome of anatomic single bundle anterior cruciate ligament reconstruction using quadruple hamstring autograft.

Methods: This was a prospective analytical study of 30 patients with ACL injury who underwent arthroscopic ACL reconstruction using hamstring autograft in National Trauma Center, NAMS from January 2020 to June 2020. Functional outcome using Tegner Lysholm score and the complications were assessed.

Results:Mean age of patient was 27 ± 42 years. Most common mode of injury was fall injury. Mean graft diameter was 7.6 ± 0.45 mm. Tegner Lysholm score improved from pre operative score 60.76 ± 1.23 to postoperative score 91 ± 2.43. 12 patients (40%) had excellent outcome and 18 patients (60%) had good functional outcome. No major complications were seen.

Conclusion: Arthroscopic anatomic anterior cruciate ligament reconstruction using quadrupled hamstring autograft is an effective method for ACL injury and gives excellent to good functional outcome .

Keywords: Anterior Cruciate Ligament; Quadrupled hamstring autograft; graft diameter;Tegner Lysholm Score.

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INTRODUCTION

Anterior Cruciate Ligament (ACL) injury is one of the most common injury of knee among high level athletes and is also common in young and active individual. Its prevalence is estimated to be 1 in 3000 in United States (more than 120,000 cases annually).[1]

ACL reconstruction is an established and widely practiced surgical procedure with proven efficacy and a low morbidity profile.[2] It helps to prevent instability and premature osteoarthritis. The goal of ACL reconstruction is to enable patient to return to pre injury status.

Arthroscopic techniques have been advanced and refined to assist in the reconstruction of the anterior and posterior cruciate ligaments. The arthroscopically aided approach has the advantages of smaller skin and capsular incisions, improved viewing of the intercondylar notch for placement of tunnel and attachment sites, less postoperative pain, fewer adhesions, earlier motion and easier rehabilitation.[3] Arthroscopically assisted ACL reconstruction using a hamstring or patella bone tendon bone autograft is the standard surgical treatment particularly for those who are unable to perform jumping and cutting manoeuvres in sports because of resulting knee instablitity.[4] Transportal arthroscopic approach for femoral tunnel preparation and placement of graft is widely used. Adoption of this approach has been shown to improve femoral tunnel placement in terms of visualization, long horizontal tunnel placement and fewer chances for posterior blow out.

A wide variety of fixation solutions to attach the hamstring tendons have been proposed. Most commonly used devices for femoral fixation are interference screws, transfix screws and cortical suspension devices. Devices for tibial fixation can be intratunnel and extratunnel. Cortical suspension devices have been widely used in ACL reconstruction for femoral side . Various studies have shown that cortical suspension devices have the necessary biomechanical properties with regard to ultimate failure strength, displacement and stiffness for initial fixation of soft tissue in the femoral tunnel for ACL reconstruction.[5] Endobutton is the first generation suspensory fixation with fixed length loop.The length of the loop is fixed but it is stiffer and slippage free which seem to have created a more favourable biomechanical environment.

The purpose of this study was to evaluate the functional outcome of arthroscopic ACL reconstruction with quadrupled hamstring tendon autograft using endobutton and bioabsorbable interference screw. To appreciate functional outcome, Tegner Lysholm score[6] was used in this study.

METHODS

It was a prospective observational study conducted at National Trauma Center, Bir Hospital, Kathmandu from January 2020 to June 2020, after approval from Institutional Review Board of NAMS.

All patients of age>16 years with symptomatic ACL injury confirmed by MRI were included in the study after taking informed consent. Patients with multiligament injuries and comorbidities were excluded from the study.

Detailed history and examination findings were noted. After spinal anaesthesia, limb was assessed for Lachman and Pivot shift test. Diagnostic arthroscopy was performed through Standard portals and arthroscopic findings were noted. Then graft was harvested from the ipsilateral limb and prepared on ACL graft master. Femoral insertion of ACL was identified posterior to the median ridge and cleared with radiofrequency probe. Accessory anteromedial portal was made and beathpin was inserted under guidance of femoral offset aimer hooked at posterior end of lateral femoral condyle with knee flexed at 120 degree. Beathpin was overdrilled with 4 mm cannulated drill bit and depth measured and femoral tunnel was drilled with endofemoral drill bit equal to the size of quadrupled hamstring graft keeping at least 5 mm of outer cortex intact.

Then the knee was kept at 90 degree flexion and tibial tunnel made with the help of ACL tibial elbow aimer placed just anterior to the posterior border of anterior horn of lateral meniscus. The graft was looped in appropriate size endobutton and inserted through tibial tunnel. Fixation was done in femoral tunnel by endobutton , graft tensionin was done and graft fixed in tibia by bioscrew with knee flexed at 15 degrees of flexion.

Standard ACLR rehabilitation protocol was followed for postoperative rehabilitation. Stitch removal done at 2 weeks. Patient was followed up

at 6 weeks, 3 months and 6 months. Functional assessment was performed by Tegner Lysolm Score at 6 months. Outcome is graded as Excellent if total score is between 95-100, Good if 84-94, Fair if 65-83 and Poor if <64.[6]

Statistical analysis was performed using statistical package for the social sciences (SPSS)version 11.5 software package.

RESULTS

31 patients underwent ACL reconstruction during this study period. 1 patient was lost to follow up. Out of 30 patients, 8 (26.7%) were female and 22 (73.3%) were male. Right knee was involved in 20 patients(66.67%) and left in 10 (33.33%) . Age of patients ranged from 20 years to 42 years with mean age of 27 ± 4.2 years.Mode of injury was Fall injury in 15 patients (50%) , Road traffic accident in 8 patients (26.67%) and sports injury in 7 patients (23.3%).

11 patients (36.67%) had associated meniscal injury out of which 7 had medial meniscus injury and 4 had lateral meniscus injury. 3 patients (10%) had associated chondral lesion. Size of hamstring autograft ranged from 7 to 8.5 mm with mean size of 7.6 ± 0.45 mm.

28 patients (93.3%) attained full range of motion at 6 weeks. 2 patients with irregular follow up and non compliant to physiotherapy required 3 months to attain full range of motion.None of the patients developed infection. 3 cases had postoperative effusion. Mean preoperative Tegner Lysolm score was 60.76 ± 1.23 and postoperative score at 6 months was 91 ± 2.43 with p value 0.001. 12 patients (40%) had excellent outcome and 18 (60%) had good outcome.

Table showing Pre operative and postoperative Tegner Lysholm Score grading

Score grading	Preoperative Score		Postoperative score	
	Number	Percentage	Number	Percentage
Poor (<65)	24	80%	0	0%
Fair (65-83)	6	20%	0	0%
Good (84-90)	0	0%	18	60%
Excellent (>90)	0	0%	12	40%
Total	30	100%	30	100%

DISCUSSION

The primary goal of ACL reconstruction is to restore the stability of the knee. Successful clinical outcomes following anterior cruciate ligament reconstruction with a semitendinosus graft has been reported by many authors.[7] The choice of fixation in ACL reconstruction is still evolving and the current fixation device which has been widely used were the Endobutton and the bio composite interference screws which has helped to render an improved rehabilitation program post operatively.[8]

All patients in our study underwent arthroscopy assisted ACL reconstruction with single bundle quadrupled semitendinosus tendon autograft from ipsilateral limb using endobutton and bioabsorbable interference screw. Mean age of patients in our study was 27 ± 42 which was comparable with the study of Mishra et al [9] (30.53 ± 7.24). The commonest mode of injury in our patients was Fall injury (50%) followed by RTA.

The mean size of graft in our study was 7.6 ± 0.45mm which was similar to the study by Pokharel et al[10] (7 ± 0.5mm) and Chodavarapu et al[11] (7.9mm). In study by Mishra et al[9], the mean size was 8.2 ± 0.39mm. Treme et al proposed that

graft length is related to the height and BMI of the patient while the diameter is related to the thickness of the thigh. He further opined that a graft diameter of <7mm will have a higher risk of failure.[12]

Thapa et al[13] in their study reported outcome that the mean Tegner Lysholm score improved from 47.7 to 91.5 at a 6 months follow up. Suranigi et al[14] reported improvement of score from 60.2 ± 6.02 to 91.72 ± 3.17. H.E. Bourke et al [15] reported the outcome of isolated anterior cruciate ligament ruptures treated with anatomical endoscopic reconstruction using hamstring tendon autograft at a mean of 15 years. A total of 152 patients underwent subjective assessment at 15 years. The mean Lysholm knee score of 15 years was 93. In our study, 28 out of 30 patients strictly followed the rehabilitation protocol. Lysholm score was recorded at 6 months follow up postoperatively when the mean Lysholm score improved from preoperative score of 60.76 ± 1.23 to 91 ± 2.43. The improvement of the score was statistically significant. (p=0.0001).

Mishra et al[9] reported superficial infection in 9 cases, joint effusion in 6 cases, and giving way in 9 cases out of 120 cases. Chodavarapu et al[11] reported superficial infection in 1 case and stiffness in 2 cases. Pokharel et al[10] reported stiffness in 2 cases. Suranigi et al[14] reported graft rerupture in 1 case, cyclops lesion in 1 case and superficial infection in 1 case. Leo Chan et al[16] reported that the technique of ACL reconstruction using quadrupled fold semitendinosus tendon autograft for ACL reconstruction using the Endobutton for femoral fixation has been used for over ten years with no known instance of fixation failure. Ian et al concluded that in ACL reconstruction using hamstring graft, the postoperative ROM following rehabilitation protocol was almost equal to the pre injury status at the end of follow up.[17]

In our study, 3 cases had swelling in the knee joint in post operative period and were monitored regularly and settled gradually over 6 weeks. 2 patients couldn't achieve full ROM at 6 weeks due to poor compliance with physiotherapy and regained full ROM at 3 months. 1 patient complained of slight sense of giving way during exertional activity. There was no case of infection.

CONCLUSION

Anatomic single bundle ACL reconstruction with quadrupled hamstring autograft fixed with endobutton on femur and bioscrew at tibia is very good method of ACL reconstruction with predictable outcome. There has been an encouraging result with these initial findings of ACL reconstruction in terms of knee stability, range of motion and functional improvement of operated knee.There were no major complications in our study. Thus anterior cruciate ligament reconstruction using quadrupled semitendinosus autograft offer an excellent to good functional outcome.

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Original Article

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Journal of KIST Medical College

Emergency Surgery Score Predicts Morbidity and Mortality in Emergency General Surgery

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ABSTRACT

Introduction: Emergency surgery (ES) accounts for a substantial number of cases performed by surgeons worldwide. ES is regarded as an independent risk factor for postoperative morbidity and mortality. There are complex scoring systems such as the American Society of Anesthesiologists (ASA) classification, the Physiological and Operative Severity Score for enumeration of Mortality and morbidity (POSSUM), Portsmouth-POSSUM (P-POSSUM) and the Surgical Risk Scale (SRS). scores do not take into consideration high-risk patients undergoing ES and the inherent high risk of ES. Emergency surgery score (ESS) has been derived and validated to predict postoperative morbidity and mortality in ES. We conducted a study to validate the ESS score in patients who underwent emergency general surgery

Methods: Patients who had undergone emergency surgery during the study period were included in the study. ESS score was calculated for included patients. ROC curve was plotted to find the correlation of ESS with 30-day mortality and the occurrence of at least one complication.

Results: Sixty patients were included in the study. ESS predicted mortality and morbidity with area under curve of ROC 1.0 and 0.684 respectively.

Conclusion: ESS predicts postoperative morbidity and mortality in patients undergoing emergency surgery.

Keywords: Emergency surgery; Emergency surgery score; Postoperative morbidity; Postoperative mortality

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INTRODUCTION

Emergency surgery (ES) accounts for a substantial number of cases performed by surgeons worldwide. The number of ES performed has been increasing.[1] ES is associated with a higher risk of postoperative complications and deaths. ES is regarded as an independent risk factor for postoperative morbidity and mortality.[2,3] Predicting the risk of emergency surgery has the advantages of proper counselling to patient's families about the possible outcome of the ES and identifying patients at higher risk requiring more attention in the postoperative period.[4] Various risk assessment scores are available for predicting the outcome of surgery such as the American Society of Anesthesiologists (ASA) classification, and the Physiological and Operative Severity Score for enumeration of Mortality and morbidity (POSSUM), Portsmouth-POSSUM (P-POSSUM) and the Surgical Risk Scale (SRS).[5,6] But these tools have certain limitations such as these are complex scoring systems, some require intraoperative variables as well as physiologic characteristics. These scores do not take into consideration high-risk patients undergoing ES and inherently high risk of ES.[2,4]

Emergency surgery acuity score which is now popularly known as emergency surgery score(ESS) has been derived and validated which takes into consideration of both patient comorbidities and acuity of disease at presentation.[4] The same score has been validated to predict postoperative complications as well.[7] This score has also been validated in other retrospective studies for the prediction of postoperative morbidity and mortality.[8,9] (8) Recently Kafarani et al have validated this score in a multicentre prospective study.[10]

The ESS includes demographic, co-morbidities and laboratory values to calculate the score. (Table 1).

We conducted a study to validate ESAS scores in patients who underwent emergency general surgery at KIST Medical College Teaching Hospital.

Table 1. Emergency surgery score (ESS)

Variable	Points
Demographics	
Age >60 years	2
White race	1
Transfer from an outside emergency department	1
Transfer from an acute care hospital inpatient facility	1
Comorbidities	
Ascites	1
BMI <20 kg/m^2	1
Disseminated cancer	3
Dyspnea	1
Functional dependence	1
History of COPD	1
Hypertension	1
Steroid use	1
Ventilator requirement within 48hr preoperatively	3
Weight loss >10% in the preceding 6 months	1
Laboratory values	
Albumin <3.0 U/L	1
Alkaline phosphatase >125 U/L	1
Blood urea nitrogen >40mg/dl	1
Creatinine >1.mg/dl	2
International normalized ration >1.5	1
Platelets <150 x 103/ҶL	1
SGOT >40U/L	1
Sodium >145 mg/dl	1
WBC x 10^3/ҶL	
<4.5	1
>15 and ≤ 25	1
>25	2
Maximum score	**29**

BMI: Body mass index; COPD: Chronic Obstructive Pulmonary Disease; SGOT: serum glutamic-oxaloacetic transaminase; WBC: white blood cell.

METHODS

This is a retrospective cross-sectional study. Patients who underwent emergency general surgery at KIST Medical College and Teaching Hospital during the study period from Baishak 2076 to Chaitra 2078 were included in the study. The operation theatre register was screened to identify the patients' names and inpatient numbers of the patient who had undergone ES. Medical records of these patients were retrieved from the medical record department and were studied.

Variable of ESS and outcomes were recorded in proforma. ESS was calculated for each patient, based on the variables and points allocated for each variable as in Table 1. Patients with incomplete records and missing data were excluded from the study, although a recent study has found that ESS performs well in predicting outcomes in emergency general patients even when one or more data elements are missing.[8]

The primary outcome of our study is 30-day mortality and the occurrence of at least one complication. Secondary outcomes are hospital length of stay and postoperative intensive care admission.

Categorical variables were expressed as absolute or relative frequencies and continuous variables were expressed as mean±SD. A t-test will be used to analyze continuous variables, chi-square test or Fischer exact test will be used on categorical variables whichever is appropriate. The correlation between ESS and each outcome of interest was evaluated using the area under the receiver operating characteristic (ROC) curve. a p-value of < 0.05 will be considered statistically significant. SPSS version 20 will be used for the analysis of data.

Table 3. Frequency of Laboratory values

Laboratory values	N= 60(%)
WBC	
<4.5 x 10^9/L	5(8.3%)
15-25 x 10^9/L	15(25%)
>25 x 10^9/L	1(1.7%)
4.5-15 x 10^9/L	39(65%)
Platelets <150 x 10^9/L	0(0%)
INR >1.5	1(1.7%)
Albumin <30gm/L	7(11.7%)
BUN >14.28mmol/L	1(1.7%)
Creatinine >106 mcmol/L	3(5.0%)
SGOT >40 units/L	4(6.7%)
ALP >125 units/L	4(6.7%)
Sodium >145 mmol/L	0(0%)
Lactate >2.9 mmol/L	0(0%)

RESULTS

On screening operation theatre records, 103 emergency operations cases were identified in the study period. Among them, 43 cases had missing data in records or missing medical records and were excluded from the study. Sixty cases were included in the study.

The ESS score data of included patients which includes demographics and comorbidities, frequency of laboratory values and 30-day mortality is shown in table 2, table 3, and table 4 respectively.

Table 2. Frequency of Demographics and comorbidities

Variables	N = 60(%)
Demographics	
Age >60 years	5(8.3%)
Gender	
Male	40(66.7%)
Female	20(33.3%)
Comorbidities	
BMI<20	1(1.7%)
Hypertension	3(5.0%)
Disseminated cancer	1(1.7%)
Steroid use	4(6.7%)
Ventilator requirement within 48 hours preoperatively	4(6.7%)

The morbidity and mortality rate in each ESS score is shown in figure 1 and 2. There were 2 mortalities in the study population which occurred in patients with ESS 9 and 10. (Table 4 and Figure 2). The incidence of primary outcomes and secondary outcomes are shown in Table 4. The most common emergency operation performed during the study period was acute appendicitis. (Table 5). The ROC curves concerning morbidity, mortality and ICU admission are shown in Figures 3.

Area under curve of ROC curve for morbidity, mortality and requirement of ICU admission was 1.0, 0.684 and 0.802 respectively.

Table 4. Primary and secondary outcomes

Primary outcomes	
30-day mortality	2(3.3%)
Occurrence of at least 1 complication	12(20%)
Secondary outcomes	
Hospital length of stay	4.4833±0.306
Post-operative ICU admission	1.3±0.3065

Table 5.Diagnosis of patients

Diagnosis	**Frequency (%)**
Acute appendicitis	42 (70%)
Peritonitis	
Appendicular perforation	5(8.3%)
DU Perforation	6(10%)
Distal ileum perforation	1(1.6%)
Blunt abdominal trauma	3(5%)
Acute intestinal obstruction	2(3.33%)
Obstructed hernia	1(1.6%)

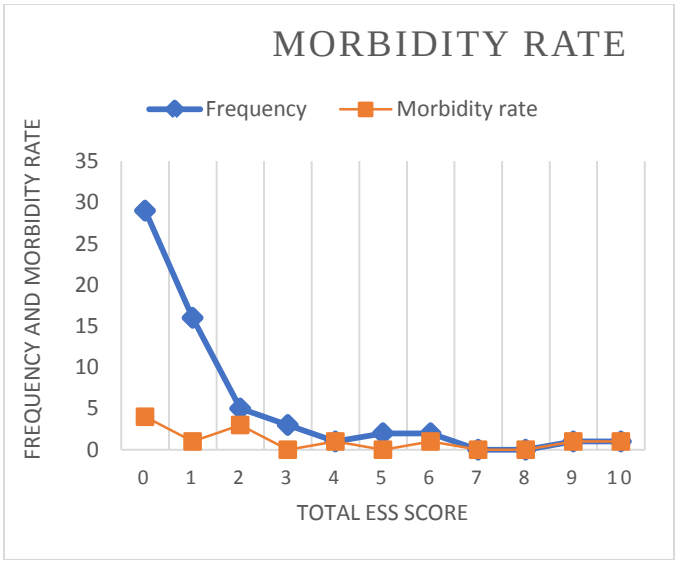
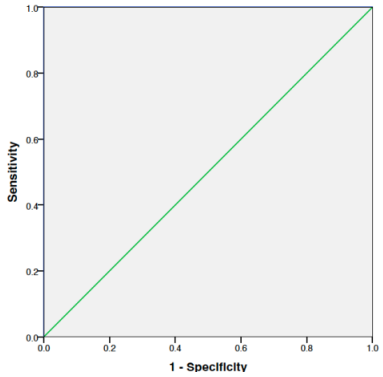
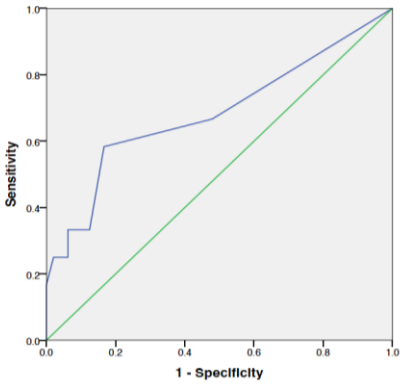


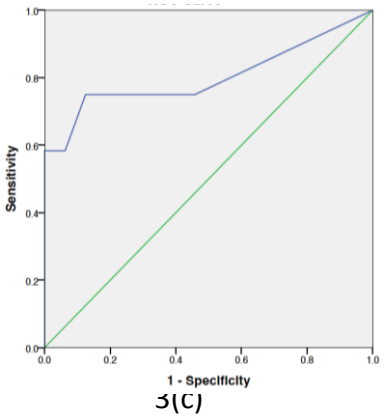
Figure 1. Morbidity rate at each ESS score



3(a)



3(b)



3(c)

Figure 3. Receiver operator (ROC) curves using ESS score concerning morbidity (a), mortality (b) and ICU admission (c)

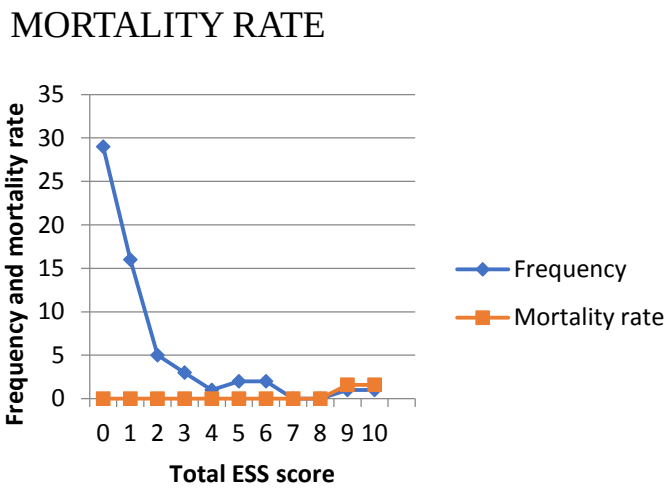


Figure 2. Motality rate at each ESS score

DISCUSSION

Our study found that ESS predicts predict postoperative morbidity and mortality in patients undergoing an emergency operation. The morbidity and mortality increase with the increase in ESS score.

Though there are other surgical risk calculators like NSQIP risk calculator, the Portsmouth-Physiology and Operative Severity Score for the enUmeration of Mortality (P-POSSUM), Surgical Risk Scale (SRS), and Surgical Outcome Risk Tool (SORT), which are meant of elective surgeries. [5,6,11,12] Emergency surgery itself has an inherent risk of higher complications and mortality.[3] Numerous studies have shown that ES is an independent predictor of poor postoperative outcomes.[1,2,13] So, the general risk predictors may not accurately predict the risk of emergency surgery. Similarly, there are risk or severity calculators for trauma which are organ-specific and do not take into consideration the physiological derangement due to the disease or injury.

Kaafarani et developed and validated the novel physiological emergency acuity score now known as the emergency surgery score (ESS).[10] It is based on 22 independent predictors of mortality in emergency surgery patients, including 3 demographic variables, 10 comorbidities, and 9 preoperative laboratory variables. The score ranges from 0 to 29 and can be calculated from information obtained from a patient's history and routine laboratory tests. They also prospectively validated this score in patients who underwent laparotomy for small bowel obstruction, mesenteric ischemia, complicated diverticulitis, and hollow viscus organ perforation. Emergency Surgery Score gradually and accurately predicted 30-day mortality; 3.5%, 50.0%, and 85.7% of patients with ESS of 3, 12, and 17 died after surgery, respectively, with a c-statistic of 0.84. Similarly, ESS gradually and accurately predicted complications; 21.0%, 57.1%, and 88.9% of patients with ESS of 1, 6, and 13 developed postoperative complications, with a c-statistic of 0.74. Emergency Surgery Score also accurately predicted which patients required intensive care unit admission (c-statistic, 0.80). Our study had AUC for morbidity and mortality of 1.0 and 0.684 respectively.

Another study from the same group ESS in emergency laparotomies. The ESS correlated with mortality (c-statistic = 0.84); scores of 1, 11, and 22 correlated with mortalities of 0.4%, 39%, and 100%, respectively. The ESS also correlated well with morbidity (c-statistic = 0.74); scores of 0, 7, and 11 correlated with complication rates of 13%, 58%, and 79%, respectively. The morbidity rates plateaued for scores higher than 11.[14]

Another study that evaluated ESS in elderly patients (>65 years) undergoing emergency general surgery. ESS accurately predicted mortality (AUC 0.81) in this population. Further analysis was done, which showed that even for

octogenarians and nonagenarians, ESS predicted mortality moderately well (AUC 0.77 and 0.69, respectively). [9]

ESS has also been used to predict postoperative ICU admission. A study found that an increase in ESS scores gradually predicted ICU need, with 1%, 40% and 98% of patients with ESS of 2, 9 and 16 requiring critical care, respectively. Only 6.2% of patients with ESS ≤7 had an ICU need, while 97.2% of patients with ESS ≥15 had an ICU need.[15] The c-statistic of the predictive model was 0.90. This is similar to our study. In our study, AUC for postoperative ICU admission was 0.802.

Predicting postoperative morbidity and mortality has certain advantages. ESS uses variables that are available preoperatively. So, it can be used at the bedside or preoperative counselling of the patient and their relatives regarding the possibility of postoperative complications and mortality in an objective manner. Having an objective score can also be used as a standard of the quality of service the surgeons and the hospital is providing. As ESS emphasizes the acuity of the disease and the physiological derangement, the morbidity and mortality could be measured or compared according to the acuity of disease and physiological derangement and compared with the similar risk patient at other surgeons or hospitals.

This score can also be used to stratify or triage the patient who are at more risk of postoperative morbidity and mortality so we could be more vigilant in their postoperative period and proactively manage any potential complication. This tool can also be used to rationalize the use of critical care beds which scare at most institutes the patients with higher scores and at higher risk of postoperative complications. If the critical care beds at not available at the index institute, it can be used to identify which patient needs to be transferred to the centre with a critical care facility.

Our study has certain limitations. This is a single-centre study with a limited number of cases, so the findings may not be generalized. We had to exclude a significant number of cases due to missing data and the unavailability of the records. A prospective study would be recommended to overcome this limitation.

CONCLUSION

Emergency surgery score predicts the morbidity and mortality in patients undergoing emergency surgery

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Original Article

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Journal of KIST Medical College

Clinico-Pathological Study of Hoarseness among Adult Patients

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ABSTRACT

Introduction: Hoarseness is a non-specific, subjective term, used to describe change in normal quality of voice. It is often described as harsh, grating, breathy, strained, rough or lower pitched voice. Proper knowledge and clinico-pathological profile is necessary to treat the underlying pathology.

Methods: This is a prospective study, carried out in 109 patients presented to Department of ENT-HNS, KIST Medical College, Imadol, Lalitpur with hoarseness of voice for more than two weeks over a period of 1 year from June 11 2020 to June 10 2021. All patients with history of voice changes and age greater than 14 years were thoroughly evaluated and Flexible Fibreoptic Nasopharyngolaryngoscopy done.

Result: A hundred and nine patients between age group of 15 to 88 years were studied. Among them the age group of 35-44 years was mainly suffered from hoarseness. The number of male and females were 47 (43.1%) and 62 (56.9%) respectively with male to female ratio 0.75:1. Most common duration of hoarseness (50.5%) was between 2 to 4 weeks. Non –vocal / Non –Professionals (Level IV) voice users (67.9%) were affected mostly in this group which included laborers, housewives and clerks.Foreign body sensation in throat(76) and laryngopharyngeal Reflux (62), which were the most common predisposing factors , followed by voice abuse (58). In present study Flexible Fibreoptic Nasopharyngolaryngoscopic diagnosed pathological changes in vocal cord were Laryngitis (acute and chronic) 40.3% followed by Laryngopharyngeal reflux disease 28.4% and vocal nodule 12.8%.

Conclusion: Voice is an important means for communication. Any delay in evaluation and identification of organic causes of change in voice can worsen the prognosis. Patients with hoarseness for more than two weeks duration must be evaluated.

Keywords: Hoarseness;Laryngitis;Laryngopharyngeal reflux disease;Vocal nodules

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INTRODUCTION

Hoarseness is one of the commonest symptoms with which patient presents in ENT OPD. Voice disorders are among the most common speech and language disorders affecting approximately 3-25% of adult population and approximately 6% of children. It indicates diseases ranging from totally benign condition to the most malignant condition.[1,2]Hoarseness is a coarse; scratchy sound most often associated with abnormalities of the vibratory margins of the vocal folds, which may be seen in condition like laryngitis, vocal fold hemorrhage, mucosal disruption, mass lesions and carcinoma.[3] People may present with either transient, intermittent hoarseness which is more common and associated with infectious processes affecting the upper respiratory tract or persistent, unremitting, progressive hoarseness which may have a serious disease underlying. People who use their voice more often either professionally or in daily life for examples teachers, salesman, mothers of young children,politicians, leaders, preachers, voice-over users, present with hoarseness more commonly than the general population.[1] Delay in presentation as well as investigation and treatment will affect the outcome. Change in quality of voice of an individual may not only impair their social and professional communication but also affects one's quality of life. Presence of voice disorders with more than two weeks should be considered as a warning sign of serious underlying disease, so that an early evaluation will help in diagnosis as well as prevent in morbidity and mortality.[4]

METHODS

A cross sectional, hospital- based, Prospective study was conducted in department of ENT-HNS at KIST Medical College and Teaching Hospital, Imadol, Lalitpur during period of 1 year from June 11 2020 to June 10 2021. Permission was obtained from Institutional Review Committee (IRC). Patients who presented with hoarseness of voice for more than two weeks and age greater than 14 years were included in the study. Patients with age less than 14 years, with mental Illness, who refused to participate in the study, were excluded. A detailed history, clinical examination and required investigation were done. During detailed history, special attention was given to occupation of the patient. The patients were divided into four groups based on level of vocal usage described by Koufman and Isaacson (1991).[5] Level I – Elite vocal performers e.g. singers, actors etc., Level II Professional voice users e.g. lecturers, politicians, public speakers, telephone operators, businessman etc., Level III – Non vocal professionals e.g. teachers, doctors, lawyers etc. Level IV- Non vocal /Non Professional e.g. farmers, laborers, homemakers etc. A proper informed consent was taken. All the patients were further evaluated with Flexible Fibreoptic Nasopharyngolaryngoscopy.PentaxFNL15P3,aflexiblefibreoptic nasopharyngolaryngoscope along with camera, light source and color video monitor was used. The procedure was done with patient in sitting position with head slightly extended. Both the nasal cavities and throat (Posterior pharyngeal wall) were sprayed with 15% lidocaine topical spray, 10 minutes before doing the procedure. The lubricated scope with 2% Lidocaine Hydrochloride jelly was then passed intranasally and then was serially observed up to larynx and hypo pharynx for any pathology. Then the data was entered into preformed standard proforma. The data obtained were compiled in Microsoft Excel 2010 and analyzed using Statistical Package for Social Science (SPSS) version 26.

RESULTS

There were total of 109 patients included in the study. Among these patients 47 (43.1%) were males and 62 (56.9%) were females with male to female ratio 0.75:1. Age range was from 15 to 88 years and most common age group belonged to 35-44years (29, 26.6%) followed by 45-54 years (24, 22%). (Table 1)

Table 1.Age distribution of study population

Age group (Years)	Frequency (n)	Percentage (%)
15-24	16	14.7
25-34	22	20.2
35-44	29	26.6
45-54	24	22.0
55-64	8	7.3
65-74	5	4.6
74-84	4	3.7
>85	1	0.9

All the patients had history of hoarseness of voice with maximum number of patients (55, 50.5%) having duration of disease between 2 weeks to 1 month. Out of total patients 56.9% had intermittent hoarseness.(Figure 1)

Patients having hoarseness of voice belong to various occupations. Largest group of patients 74, 67.9% were from Koufmann and Isaacson categorization Level IV non vocal / nonprofessional (laborer, housewives, and students)(Figure 2)

Foreign body sensation throat, Laryngopharyngeal reflux (LPR) / Gastro esophageal Reflux (GER), voice abuse were common predisposing factors 76, 62 and 58 cases of hoarseness respectively. Most of the patients had more than one and few had more than two or three predisposing factors at the time of examination.(Figure 3)

Flexible Fibreoptic nasopharyngolaryngoscopy (NPL) 4.6% showed normal study. Laryngitis (acute 12.8% and chronic 27.5%) and Laryngopharyngeal reflux was most common, seen in 40.3% and 28.4% of cases respectively. All other pathology and its frequency seen in NPL were compiled in Table 2. Apart from pathologies, among cases that underwent NPL 25.7% of cases had adduction gap.

Table 2. Flexible Fibreoptic Nasopharyngolaryngoscopic findings (pathologies)

NPL findings (Pathology)	Frequency (n)	Percentage (%)
LPRD	31	28.4
Chronic Laryngitis	30	27.5
Acute Laryngitis	14	12.8
Vocal cord nodule	12	11.0
Vocal cord polyp	5	4.6
Normal	5	4.6
Laryngeal Ulcer	4	3.7
Functional Aphonia	3	2.8
Laryngeal neoplasm	2	1.8
Leukoplasia	1	0.9
Vocal cord palsy	1	0.9
Reinke's edema	1	0.9

DISCUSSION

There are various studies in the past which have studies in clinico-pathological profile of hoarseness of voice. In our study, age of patients with hoarseness of voice ranged from 15 to 88 years. Majority of patients i.e. 29 cases (26.6%) were in age group 35-44 years. Baitha Shambhu et al[6] mentioned age group ranged from 21 to 50 years in their study and most of them presented in 4th decade of life.(Mean 40.4 years, 28.18% each). Our observation is supported the study done by Vengala RR et al[7] and Bikash Lal Shrestha et al,[8] who reported the incidence in age group 31-40 years to be 36.98% and 56.4% respectively. However, in most of the studies commonest age group ranged from 20- 45 years of age. A person of younger age belongs to the productive groups who are mostly involved in vocal abuse and are concerned with change in their voice. This could probably be the reason of our patient's belonged to younger age group.

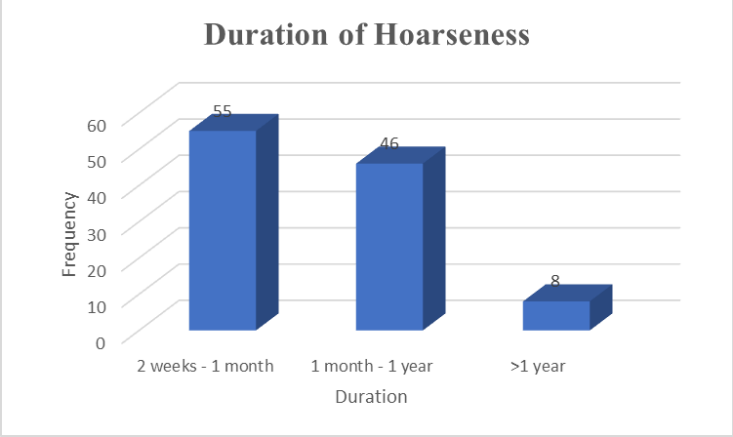

Figure 1 .Distribution of patients according to duration of Hoarseness of voice

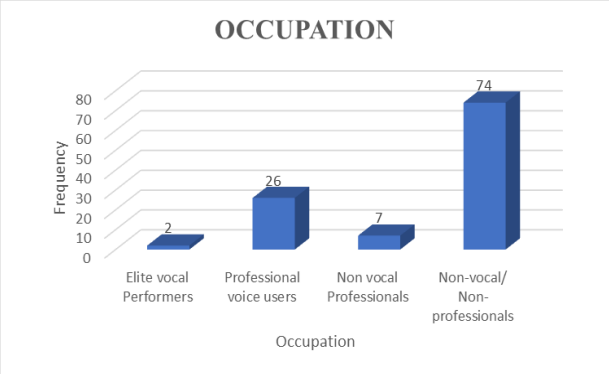

Figure 2. Distribution of Occupation in total 109 cases of hoarseness

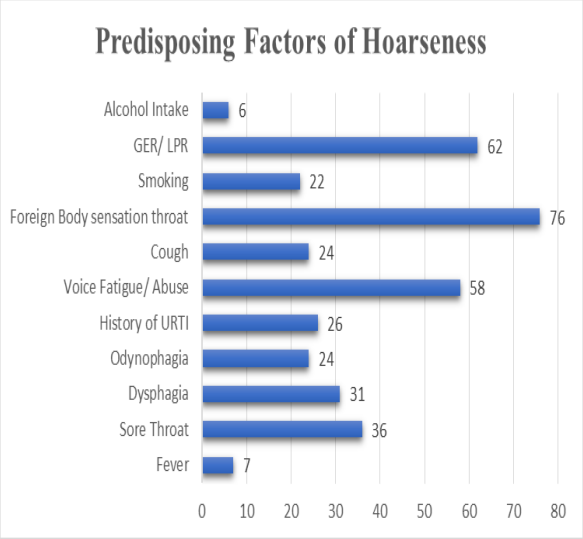

Figure 3. showing prevalence of Predisposing Factor

30Present study showed female preponderance with male: female ratio of 0.75: 1. Our finding is similar with that of Roy et al (1:1.67)[9].This result is in contrast to many other studies done by Baitha et al[6], Mehta et al[10], Parikh et al[11], and Deshmukh et al[12] which reported hoarseness to be more common in male. However, it has been hypothesized that women's have more chances of having hoarseness of voice as compared to men due to shorter vocal folds anatomically, produce voice at a higher fundamental frequency. As a consequence, there is less tissue mass to dampen a large amount of vibratory force. It is also postulated that women's have lower amount of hyaluronic acid in superficial layer of lamina propria of vocal fold. Hyaluronic acid is most concentrated in area of high shock absorption and plays important role in wound repair.[13] These lead to less protective tissue dampening and potentially reduced wound healing response. Hence, women's are more vulnerable to voice disorders.

Most of the patients came with complain for duration of 2-4 weeks (50.5%), followed by 1 month to 1 year (42.2%) and then greater than 1 year (7.3%). In a similar prospective done by Soni et al[14] majority of patients presented with complains for duration of 3 months (45%) followed by 3-6 months (28%), 6-12 months (23%) and 4% were having complaints for more than one year respectively. In a study done by Pal et al[4] stated that most of patients presented with duration of 3 months (57.86%) followed by 3-6 months (24.29%). According to Hansa Banjara et al[15] most presenting complaints (61.35%) were seen within duration of 3 months followed by (25.1%) within 3-6 months and (10.76%) within 6-12 months. Batra et al[16] found that 59% of patients presented within 5 months of appearance of symptoms. In another study by H Kumar et al[17] 54% patients were having duration of hoarseness between one month to one year.

Koufmann and Isaacson evolved a classification system for professionals based on level of voice use and risk.[5] In our study most of the patient's presenting with voice changes were Level IV non-vocal nonprofessionals (67.9%) which included laborers ,farmers, homemakers and clerks followed by Level II Professional voice users (23.8%) like clergymen, lecturers, politician, public speakers. Similar result was seen in study done by Hansa Banjara et al[15] (86.26%) level IV voice users. Study carried out in Kerela, India by Baneesh et al[18] had shown, most patients presenting with voice changes were labourers (32%) and housewives (21%). A survey done in the year 2009-2011 by Pal et al[4] showed that more of cases were labourers followed by housewives. In study by Ghosh et al[19] majority patients (29%) were housewives. Voice changes in majority of housewives could be explained by increased use of voice to their children. Another important point is that professional voice users will seek for medical help only if he or she is aware of its importance among other things.

In our study, commonest predisposing factor for hoarseness was foreign body sensation throat (76), Laryngopharyngeal reflux disease (62) and

voice abuse (58). In contrary to our study most of the studies showed smoking, alcohol and voice abuse more commoner cause for hoaseness of voice.[4,15,20,21] Similar study done by Saileshwar Goshwami et al[22] showed misuse of voice (31.1%) and upper respiratory tract infection (11.1%)to be as predisposing factor for hoarseness. Main predisposing factors for pathologies vocal cord were Upper Respiratory tract infection (50.5%), voice abuse 33.6% and Laryngopharyngeal reflux (29.4%) in study by Waheed et al.[23]

Of all organic causes of hoarseness, in this study Laryngitis (40.3%) including acute (12.8%) and chronic (27.5%) was found to be the most common cause. This was followed by Laryngopharyngeal reflux disease (28.4%) and vocal cord nodule (11%). Likewise in study done by Salah Uddin Ahmmed et al[24] and Azhar Hameed et al[25] also found laryngitis 36.15% and 19% respectively. In contrast to our study, Rameshkumar E et al[2] and Ramesh P et al[26] found vocal cord nodule, vocal cord polyp and cancer larynx as major cause of hoarseness. Another study by Agrawal A et al[27] showed Carcinoma Larynx (30.7%) as the most common pathological cause of hoarseness. However, increased frequency of Laryngitis and Laryngopharyngeal reflux disease could be due to voice abuse, sedentary habits, intake of junk foods, stress etc.

CONCLUSION

Voice disorders are encountered more frequently nowadays with being multifactorial in etiology. Patient presenting with hoarseness for more than two weeks duration should be evaluated carefully and thoroughly to rule out malignancy. Many laryngeal diseases can be easily diagnosed through observation of larynx through flexible fiber optic nasopharyngolaryngoscopy. The causes of hoarseness are diverse ranging from inflammatory to benign and malignant lesions. Though Laryngopharyngeal reflux disease is one of common cause of hoarseness, yet it is often unrecognized and undertreated.

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Original Article

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Clinico-demographic Profile and Outcome of COVID-19 Patients with Kidney Disease: A Single Center Study

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ABSTRACT

Introduction: A severe acute respiratory syndrome (SARS-CoV-2), causing COVID-19 disease has shown to have multi-organ involvement. Information on kidney disease in patients with COVID-19 and effect of prior kidney disease on COVID-19 is limited worldwide and in Nepal. Therefore, this study was done to provide information on clinico-demographic profile and outcome of kidney disease patients with COVID-19 .

Methods: This study was a descriptive cross-sectional study done in the department of Nephrology, College of Medical Sciences Teaching Hospital (COMSTH) from January 2021 to July 2021 after ethical approval from the Institutional Review Committee.Convenient sampling was done and all the kidney disease patients above 18 years irrespective of their gender and kidney diagnosis were included in the study. Clinico-demographic profile and outcome of kidney diseases with COVID-19 were analyzed using statistical package for the social sciences version 20 and were represented as mean, standard deviation, number, percentage and ratio.

Results: Out of 54 patients, 38 (70.4%) were males and 16 (29.6%) were females. The mean age of the patient was 61.5±14.9 years. Acute kidney injury was the most common presentation accounting for 20 (37.0%) cases. Proteinuria was present among 36 (66.7%) patients and microscopic hematuria was present among 11 (20.4%) patients. Mortality occurred in 14 (26%) patients.

Conclusion: Acute kidney injury was the most common presentation among the spectrum of kidney diseases in patients with COVID-19 .

Keywords: acute kidney injury; chronic kidney disease; COVID-19.

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INTRODUCTION

Diffuse alveolar damage and acute respiratory failure were the main features of COVID-19 during its emergence. Over the time, involvement of other organs have been observed. COVID-19 can affect kidneys and kidney patients are also prone to develop COVID-19. Kidney transplant patients due to immunosuppression and patients undergoing in-center maintenance hemodialysis due to inability to self-isolate, are more prone to develop COVID-19. Patients with kidney disease also have other comorbidities, including hypertension, diabetes mellitus, and cardiovascular diseases, that are risk factors for poor outcomes in COVID-19.[1]

Information on kidney disease in patients with COVID-19 and effect of prior kidney disease on COVID-19 is limited worldwide and in Nepal.Therefore, this study aims to provide information on clinico-demographic profile and outcome of COVID-19 patients with kidney involvement.

METHODS

This study was a descriptive cross-sectional study done in the department of Nephrology in College of Medical Sciences Teaching Hospital from January 2021 to July 2021 after ethical approval from the Institutional Review Committee (reference number COMSTH-IRC/2021-06). Convenient sampling was done. All the consecutive patients above 18 years with COVID-19 and kidney involvement admitted in the department of Nephrology, irrespective of their gender and kidney diagnosis, were included in the study.

COVID-19 status was confirmed by RT-PCR (Reverse Transcription-Polymerase Chain Reaction) in those patients with clinical manifestations like fever and/ or respiratory symptoms; decreased appetite; loss of smell and taste; fatigue or with imaging features of COVID-19 infection. Kidney disease in the form of Acute Kidney Injury (AKI), Chronic Kidney Disease (CKD) either on conservative management or kidney replacement therapy were included in the study. Patient was defined as suspected AKI if oliguria (<200ml/6hours) and any AKI related clinical signs and symptoms were present. Signs and symptoms included: 1. listlessness, confusion, fatigue, anorexia, nausea, vomiting, weight gain, or edema.[2] 2. Anuria (urine output less than 100 mL per day), 3. Uremic encephalopathy (manifested by a decline in mental status, asterixis, or other neurologic symptoms). For those with suspected AKI, Serum creatinine was measured on the day of admission. Serum creatinine was repeated after 48 hours. If it fulfilled the modified KDIGO criteria[3] (as mentioned below), the patient was categorized as confirmed AKI. If it failed to fulfill the criteria, serial monitoring of creatinine was done on the 3rd, 5th and 7th day of admission. Serial monitoring was done until it fulfilled the criteria by day 7. Once the criteria was met, serum creatinine was not further repeated. AKI was confirmed if they meet at least one of the following modified KDIGO(Kidney Disease Improving Global Outcome) criteria;[3] 1. Increase or decrease in serum creatinine >0.3mg/dl from reference, 2. Increase or decrease in serum creatinine >50% from reference, 3. Urine output <400ml/day for adults or approximately <0.5ml/kg/hr over 24hrs. Staging of AKI was done according to KDIGO criteria using serum creatinine value.[4]

Among the patients with known CKD not on any form of kidney replacement therapy, acute on chronic CKD was defined if the patient fulfilled the above mentioned AKI criteria with reference to their last known baseline creatinine value.
CKD was defined as abnormalities of kidney structure or function, present for 3 months, with implications for health. GFR was estimated from the Modification of Diet in Kidney Disease (MDRD) Study equation.[5]
General information of patients including age, gender, serial serum creatinine, and urine routine/ microscopic findings were collected. Information regarding dialysis dependency during hospital stay were collected.

Outcome of the study were assessed in terms of 1. Death, 2. Left against medical advice, 3. Kidney recovery, 4. Dialysis dependency.

Death was defined as expiry of a patient during the study period. Left against medical advice was defined as a patient who terminated the treatment in the hospital and left. Kidney recovery was defined as; 1. Partial recovery: creatinine failed to return to normal range or previous baseline value during the course of study, 2. Complete recovery: creatinine returned to normal range or previous baseline value during the course of study. Dialysis dependency was defined as a patient requiring dialysis who was not on dialysis prior to admission. The data collected were then entered in the Microsoft excel sheet 2013 and were

transferred to statistical package for social sciences version 20 (Chicago, IL, USA) for analysis. The data were analyzed using mean, standard deviation, number, percentage and ratio

RESULTS

Total of 54 patients with COVID-19 and kidney disease were enrolled in the study. Out of them, 38 (70.4%) were males and 16 (29.6%) were females. The mean age of the patient was 61.5±14.9 years. The minimum age was 35 years and maximum age was 90 years.

Most patients included in the study were between 61-80 years of age (44.40%).

Table 1. Age distribution of patients.

Age (in years)	Number		Total	Percentage
	Male	Female		
18-40	2	2	4	7.40
41-60	15	5	20	37.03
61-80	15	9	24	44.40
>80	5	1	6	11.11

Acute Kidney Injury (AKI) was the most common presentation accounting for 20 (37.0%) cases followed by Acute on Chronic kidney disease 18(33.3%). Mortality occurred in 14(26%) cases. COVID-19 with AKI was the most common cause for mortality.

Table 2. Spectrum of kidney disease and outcome.

Kidney Disease	Number (percentage)	Mortality	Discharge
AKI	20 (37%)	6	14
CKD5d	12 (22.2%)	2	10
Acute on CKD	18 (33.3%)	4	14
Kidney transplant recipient	4 (7.4%)	2	2
Total	54 (100%)	14 (26%)	40 (74%)
CKD5d= Chronic kidney disease on maintenance hemodialysis			

Table 3. Recovery of AKI according to stage.

Stage of AKI	Partial Recovery	Complete Recovery	Total
1	7 (35%)	4 (20%)	11(55%)
2	2 (10%)	1 (5%)	3 (15%)

Table 4. Urine routine examination.

Functional abnormalities	Cases
Proteinuria	36 (66.7%)
Microscopic hematuria	11 (20.4%)

Table 5. Dialysis during hospital stay.

Kidney Disease	Received	Not Received	Refused
AKI	None	None	None
Acute on CKD	5	12	1
CKD5d	11	1	None
Kidney Transplant Recipient	None	4	None

DISCUSSION

There is mounting evidence supporting that patients with kidney disease are particularly vulnerable to COVID-19. Reports have confirmed that SARS-CoV-2 can invade cells via angiotensin-converting enzyme (ACE2) receptors[6, 7] which are highly expressed in the human kidney.

In our study, majority of the patients were male 38(70.4%) with male to female ratio of 2.3:1. Similar observation of male preponderance (92%) was seen in one of the studies from Nepal done by Dhakal et al.[8] Early experience from China in a study by Huang et al confirmed male predominance (58%).[9]

This scenario of male predominance reflects the social influence of our society, where male population have easy accessibility to healthcare facilities. It also raises a question that may be males are inherently predisposed to develop kidney diseases. This area of research needs multicentric genetic studies.

In terms of age distribution, majority of the patients were between 61-80 years of age (44.40%). The mean age of the patient was

61.5±14.9 years. Our study was similar to the study done by Cheng et al which also showed median age of 63 years.[9] Increase in life expectancy and multiple comorbidities in elderly population may be the cause of increased

However, in contrast to our study, a study done in Nepal by Dhakal et al showed average age of 30.5 years.[8]

AKI occurs frequently among patients with COVID-19 disease. COVID-19 with respiratory failure and concomitant kidney involvement is associated with a poor prognosis.[10]

In our study, acute kidney injury was the most common presentation accounting for 20 (37.0%) cases. Our study was similar to the study done by Ronco et al where more than 50 % patients had AKI.[11]

In our study, 33.3% patients had acute worsening of the pre-existing chronic kidney disease that is similar to a study done by Russo et al which also showed significant percentage of COVID-19 patients with acute worsening of pre-existing chronic kidney disease (45%).[12]

These findings of increased AKI and acute on chronic kidney disease in COVID-19 patients suggest that the kidney could be a primary target of SARS-COV-2 independent of the involvement of lungs.

Proteinuria was the most common functional abnormality, 33 (66.7%), followed by microscopic hematuria 11 (20.4%) in our study. A study by Ouahmi et al. reported significant proteinuria in 60% of patients.[13] Previous studies showed that 43.9% of patients with COVID-19 had proteinuria on admission.[14] Hematuria and proteinuria are associated with poor prognosis.[15]

In our study, none of the patients with acute kidney injury required dialysis. However, 5 out of 18 patients with previously diagnosed CKD who were on conservative management required dialysis.
Mortality occurred in 26% patients in our study. Among those who expired, maximum had AKI (42%). Cheng and colleagues also showed that AKI during hospitalization in COVID-19 patients lead to higher in-hospital mortality.[14] Russo et al in their study also showed increased risk of death by 60% (HR 1.60 [95% IC 1.21–2.49] p = 0.002) among patients with acute kidney injury. Among those who survived AKI, 25% had complete recovery and 45% had partial recovery.

It is unknown whether kidney patients would represent a distinct group of patients who share some characteristics that could predispose them to have higher infectivity. Chronic systemic inflammation may also contribute to higher morbidity and mortality in CKD patients.[16]

CONCLUSION

This study has helped us understand the fact that the kidneys may also be affected as commonly as lungs by COVID 19 and adds on to the mortality of patients. Hence, timely identification of kidney disease in COVID-19 patients or vice versa could help decrease the mortality.

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Original Article

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Journal of KIST Medical College

Variations in the branches of Abdominal Aorta- A cadaveric study

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ABSTRACT

Introduction: Variations in abdominal aorta and its branches, which occur due to embryological developmental changes, are frequently observed. Knowledge of these variations and their relation to surrounding structures is important in regards to various intra-abdominal procedures. The study aims to assess the variations present in branching pattern of abdominal aorta.

Methods: This cross sectional descriptive study was carried out in the Department of Anatomy, Kathmandu Medical College and Teaching Hospital, Duwakot on all the cadavers received during previous two years. Carefully dissected abdominal aorta was observed for the origin of its branches, and branching pattern and variations found were recorded in prepared table form.

Results: In this study, twenty adult cadavers available in the department for study purpose were dissected. Out of twenty, twelve cadavers were of males and eight were of females. Two (10%) of them showed variation in the origins of inferior mesenteric and the gonadal arteries. No variations were observed in relation to other branches of the aorta.

Conclusion: The variation of branches of abdominal aorta do occur sporadically thus knowledge of the anatomy may be helpful in diagnostic and surgical procedure. .

Keywords: abdominal aorta; cadavers; variations of anatomy

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INTRODUCTION

The abdominal aorta begins at the median, aortic hiatus of the diaphragm, anterior to twelfth thoracic vertebra's inferior border and the thoracolumbar intervertebral symphysis, descending anterior to the vertebrae to end at the fourth lumbar, a little left to midline, by dividing into two common iliac arteries. The branches of abdominal aorta may be grouped as ventral, dorsal, lateral and terminal.[1] The coeliac trunk is the first anterior branch of abdominal aorta and it arises from the abdominal aorta immediately below the aortic hiatus at the level of T12-L1 vertebrae. Superior mesenteric artery originates 1 cm below the coeliac trunk, at the level of the L1-L2 intervertebral disc. The inferior mesenteric artery arises from the anterior or anterolateral aspect of the abdominal aorta at the level of the L3 and 3-4 cm above aortic bifurcation.

The usual pattern of the coeliac trunk is constituted by the left gastric artery, splenic artery and common hepatic artery and is represented the 86% of cases in a total summary of eight studies.[2] The inferior phrenic arteries usually arise from the aorta, just above the level of the coeliac trunk. The renal arteries arise from the lateral wall of the abdominal aorta at the level of L1 or L2 vertebra, 1.5 cm below the superior mesenteric artery.[3] Usually the right renal artery is situated slightly lower than the left. Gonadal artery (testicular in males and ovarian in females) is the paired branch of abdominal aorta that supplies the male or female reproduction glands and it can exhibit a wide range of origin variations. Usually they arise inferior to the renal artery. The artery may be found duplicated, tripled or quadrupled.[1]

Variations in abdominal aorta and its branches are frequently observed and they occur due to embryological developmental changes. The arteries showing frequent variations include coeliac trunk, renal artery and gonadal artery.

The study was done to know the variation in the branches of abdominal aorta in cadavers because it is important in regard to intra-abdominal surgeries, renal transplantation, renal trauma surgery, radiological imaging and surgical treatment of aortic aneurysms. Ligation or damage of the corresponding branches without knowing the possible variations in laparotomy, nephrectomy, renal transplantation, arterial reconstruction and laparoscopy or in other surgical applications may cause unpredictable complications, such as segmental or total visceral ischemia and failure.[4]

METHODS

This was a descriptive cross-sectional study that was carried out in a medical college from May 2021 to July 2021. The study included all the cadavers received during previous two years at Department of Anatomy, Kathmandu Medical College and Teaching Hospital. Ethical clearance from the Institutional Review Committee (Reference No. 0502202104) was obtained.

In the present study, twenty adult cadavers available in the department for the study purpose were taken as sample. Gross dissection was performed and the abdominal aorta was exposed, and documented for the origin of its branches, and branching pattern and variations if present. The observed data were recorded in the prepared table form. The data were then computed and analyzed using Excel 2013 to tabulate the results.

RESULTS

In this study, twenty adult cadavers available in the department for study purpose were dissected. Out of twenty, twelve cadavers were of males and eight were of females. The branching pattern of the abdominal aorta in eighteen cadavers were normal in their origin, as described in the standard textbooks; and two (10%) of them showed variation in the origins of inferior mesenteric and the gonadal arteries (Figure 1,Table 1).

The origin of the coeliac artery was seen to be within normal levels, with 80% arising at the level of T12 vertebra while rest were at the level intervertebral disc between T12 and L1. The Superior mesenteric artery, 63.15% were seen to arise at the level of intervertebral disc between L1 and L2 and the rest at the level of L2. In one of the cadavers, it was observed to be at the level of lower border of L2 where the inferior mesenteric artery also arose. The inferior mesenteric artery arose at the level of L3 vertebra. In one cadaver, the inferior mesenteric artery originated from the superior mesenteric artery. The branches of the superior mesenteric were in normal pattern except for the inferior mesenteric given off as second branch. The other variation noted was that of

gonadal artery. The gonadal (testicular) artery was seen to arise from the left renal artery. On the right, the pattern was normal. No variations were observed in relation to other branches of the aorta.

Figure 1. Incidence of variations in branching pattern of abdominal aorta

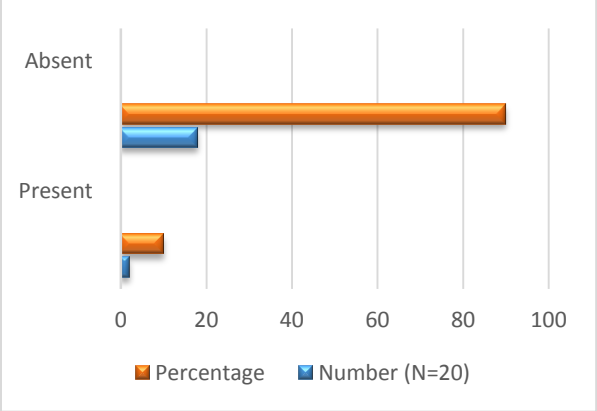

Table 1. Types of variations present in the origin of branches of abdominal aorta

Variations	Number (%)
Inferior mesenteric artery arising from superior mesenteric artery	1 (5%)
Gonadal artery arising from renal artery	1(5%)

DISCUSSION

Variations in abdominal aorta and its one or other branches are frequently observed which have been looked upon with great interest in diagnostic and surgical aspects. The occurrence of these variations has been attributed to embryological developmental changes. Visceral branches of abdominal aorta develop from omphalo-mesenteric arteries [vitelline arteries] and their ventral anastomosis. The regression pattern of these arteries results in variations. [5] In this study, the variation observed in the branching pattern of abdominal aorta was in two cases.

The origin of the coeliac artery was seen to be within normal levels, with 80% arising at the level of T12 vertebra while rest were at the level intervertebral disc between T12 and L1. The findings are similar to the studies by Arudchelvam J and Butia K et al [5,6] where the origin at T12 level were reported to be 68.3% and 100% respectively. Other studies have reported variations in relation to coeliac trunk which included the inferior phrenic arteries given off from the trunk[7] and the common coeliaco –mesenteric trunk or coeliaco-mesenteric- phrenic trunk[8,9]. However one of the study has also reported absence of coeliac trunk.[10] The superior mesenteric artery in our study showed a regular origin and branching pattern, however, in one case, gave a second branch which was inferior mesenteric artery. Similar origin of IMA has been reported by Yoo SJ et al in a case study.[11] The frequency of IMA arising from SMA has rarely been reported by other researchers, hence Lippert and Pabst[12] mentioned its frequency A to be less than 0.1%. Variations in gonadal artery chiefly testicular artery have also been frequently observed. The gonadal artery (testicular) artery was observed to arise from the left renal artery in this study. In a case study by Naik et al, left gonadal artery has been reported to arise from left accessory renal artery.[13,14] whereas another study has reported the duplication of gonadal artery of which the second arose from the left renal artery.[10] The higher frequency of this variation on the left side can be explained by the fact that during development, the left kidney ascends generally higher than on the right.[15]

Our study agrees with finding of Bhutia K et al where site of bifurcation of aorta was at the level of lower border of the body of the fourth lumbar vertebra.[6] The renal arteries were arising at right angles from the aorta slightly below the superior mesenteric artery[6]. The median sacral artery was seen arising from the back of the aorta almost towards the level of aortic bifurcation. There was no significant variations observed in the branching of other branches of aorta including the lumbar arteries.

CONCLUSION

Different forms of variations of branching pattern of the abdominal aorta can be present. Knowledge of such variations can play a

significant role in diagnostic and surgical procedures.

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Original Article

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Pyuria and Bacteriuria Correlation among Suspected Urinary Tract Infection in a Tertiary Care Centre in Lalitpur

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ABSTRACT

Introduction: Urinary tract infection (UTI) is the most common bacterial infection. Pyuria and bacteriuria are two most important indicators of urinary tract infection. Presumptive diagnosis of UTI is made by microscopic examination of urine and is confirmed by urine culture. The aim of this study was to determine the relationship between pyuria and bacteriuria in patients with suspected UTI at KIST Medical College and Teaching Hospital.

Methods: A cross sectional study was carried out from January 2020 to January 2021 at KIST Medical College and Teaching Hospital. Thirteen hundred and twenty urine samples from patients with suspected UTI were included in this study. Processes for microscopic examination as well as process for culture and identification were performed with the use of standard bacteriological techniques.

Results: Of the 1320 urine specimen examined 202 (15.3%) samples showed growth of pathogens. Pyuria was seen in 537(40.68%) out of 1320 urine sample. Out of 537 urine samples with pyuria, 181 (33.7%) urine samples showed significant bacterial growth. As number of pus cells in urine increased, the chance of getting culture positive results were also high. Out of 783(59.32%) urine samples without pyuria, 21(2.7%) urine samples showed significant bacterial growth. It was found that there is significant correlation between pus cells and culture as $p = 0.000$ (< 0.05).

Conclusion: Pyuria and significant bacteriuria may not always correlate in the suspected case of UTI. However, as the number of pus cells in the urine increases, the chance of getting culture positive result is high.

Keywords: Bacteriuria, Pyuria, Urinary tract infection

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INTRODUCTION

Urinary tract infection is caused by microbial invasion of the genitourinary tract that extends from the renal cortex of the kidney to the urethral meatus.[1] It is the most important cause of mortality and morbidity in the world.[2] The prevalence of bacteriuria is more in female population with at least 10-20% of females experiencing a symptomatic UTI episode some time during their lifetime.[3] UTI is the most common bacterial infection causing illness in females mostly in the developing countries like Nepal due to illiteracy, unhygienic conditions and lack of proper toilet facilities. They are always vulnerable to infections by various organisms.[4] According to the annual report published by Department of Health Services, Nepal 3,16,711 suffered from Urinary tract infection in the year 2015/2016.[5]

The presence of pyuria and bacteriuria are two most important indicators of urinary tract infections.[6] Bacteriuria is defined as the presence of $>10^5$ colonies of a single pathogen per milliliter of urine.[7] A more current definition is the presence of as few as 10^3 CFU/ml in symptomatic patients or when a specimen is obtained by sterile catheterization.[8] Stamm has defined pyuria as the presence of at least eight thousand leukocytes per ml of uncentrifuged urine, which corresponds to five leukocytes per highpower field in a centrifuged sediment.[9]

Urinary tract infections can be community acquired or hospital acquired. Escherichia coli is the most common organism responsible for UTI in both community acquired and hospital acquired. Klebsiella and Proteus are other responsible pathogens responsible in community acquired infection and in hospital acquired are Pseudomonas, Proteus, and Enterobacter.[10]

Presumptive diagnosis of Urinary tract infection is made by microscopic examination of urine and is confirmed by urine culture. Bacteriuria and pyuria being the features of urinary tract infection need to be correlated

METHODS

This is a prospective cross sectional study and conducted at Kist medical college and teaching hospital. Ethical clearance was obtained from KISTMCTH Institutional Review Committee with IRC NO – 2076/77/18.Total 1320 Urine specimens of suspected UTI patients (both outpatient and inpatient) visited from January 2020 to January 2021 were taken as study population and census method was used to collect data using proforma as data collection tool. Both of validity and reliability of tool were ensured verifying with two content experts. Inclusion Criteria included all patients with suspected UTI above 18 years. Exclusion Criteria included patients under antibiotics and patients with stricture or neoplasms. Standard laboratory procedure and technique was followed for sample collection i.e. clean catch mid-stream urine samples were collected in sterile universal container. Specimens were cultured as per the standard operating procedure manual with a 0.01ml calibrated loop on Cysteine Lactose Electrolyte Deficient Medium (CLED) and incubated at 35-37^0 C aerobically for 18- 24 hours. The isolates were further identified by colony

morphology and biochemical test also antibiotic sensitivity test was performed as per standard laboratory procedure. For microscopic analysis, centrifuged sediment of urine sample was examined for white blood cells per high powered field (HPF). In the study, criteria for pyuria (≥5 pus cells/HPF) was made according to Stamm, Wright.[11] Then data was first entered in MS excel and later data analysis was done in SPSS vs. 21. Data were summarized in frequency distribution table presenting both in number and percentages. Chi-squared test was used to test the statistical association considering p< 0.05 as statistical significant.

RESULTS

During this study 1320 urine samples were collected in which 860 (65.2%) were female and 460 (34.8%) were male.(Table 1) Out of 1320 urine samples examined, 202 were positive for bacterial culture. Out of which 57 were male and 145 were female.(Table 2) Out of 1320 urine samples 537 urine specimen showed with pyuria(>5 WBCs /HPF). 537(40.68%) urine specimen with pyuria 181 (33.7 %) samples showed significant bacterial growth. Out of 783(59.32%) urine samples without pyuria, 21(2.7%) urine samples showed significant bacterial growth. It was found that there is significant correlation between pus cells and culture as p = 0.000 which is < 0.05(Figure 1)

Out of 202 isolates 151 isolates were Escherichia coli followed by Klebsiella pneumoniae (15) , Enterococcus species(10), Candida albicans(8), Pseudomonas aeruginosa(4),Acinetobacter species (3), Non albicans candida (3), Citrobacter species (3),Klebsiella oxytoca (2), Staphylococcus aureus (2) and Enterobacter (1). Mixed growth which showed more than 3 organisms were seen in 109 urine samples.

DISCUSSION

The study showed the relationship between pyuria and bacteriuria from patients with suspected UTI in Microbiology Department of KIST Medical College and Teaching Hospital. In the present study 1320 urine samples were examined and 202 (15.3%) were positive for bacterial culture. Pyuria (>5 WBCs /HPF) was detected in 537 (40.68%) out of 1320 urine samples. However, only 181(33.7%) specimens were culture positive in specimen with pyuria. Culture positive was more in female(130) than in male(51).Culture positive is high in female may be due to high number of samples from female patient. In addition females are more prone to UTI because of shorter urethra than male. In a similar study conducted by Kattel et al. 53.9% urine samples showed significant bacterial growth with significant pyuria.[9] Another study also concluded that pyuria alone has inadequate diagnostic accuracy for predicting bacteriuria.[12] This suggest that pyuria alone cannot be used for detecting bacterial pathogen in patients with significant bacteruria. Pyuria with sterile bacterial culture can occur in patients with prior antibiotic use, renal tuberculosis, corticosteroid administration, analgesic nephropathy, renal calculi or in gonococcal urethritis, C. trachomatis infections and leptospirosis.[13]

It was found that out of 783(59.32%) urine specimen without pyuria 21 showed significant bacteriuria. According to Stenqvist K et al, significant bacteriuria may sometimes occur in the

absence of symptoms and pyuria in patients who subsequently develop symptoms of UTI e.g. in pregnancy. The detection of such asymptomatic bacteriuria is of value for there is good evidence of its association with the development of pyelonephritThis study showed pyuria without bacteriuria and bacteriuria without pyuriacertain number of patients could be due to inclusion of all kinds of patients mentioned above. However in our study as the number of pus cells increased per HPF, the chance of getting culture positive were also high. Similar result was shown by Anushreeet al.[15]

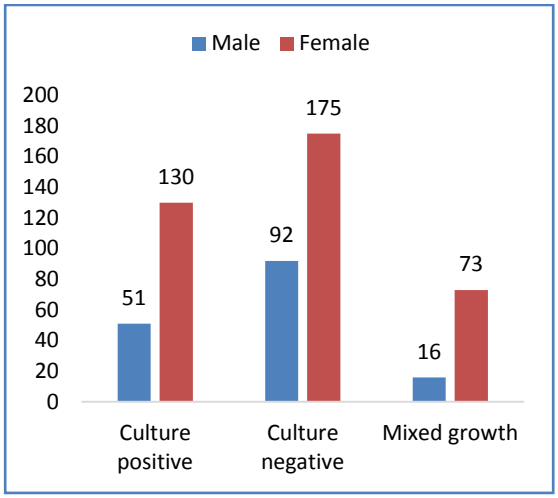

Figure showing Pattern of pyuria(>5 WBCs /HPF) of urine sediment against the number of samples showing significant bacteriuria (n=537)

Table 1. Pyuria and Bacteruria in male and female patients

No. of pus cells	No. of samples	Female			Male		
		Culture positive	Culture negative	Mixed growth	Culture positive	Culture negative	Mixed growth
1-5	783	15	449	18	6	293	2
6-10	236	18	121	13	10	71	3
11-20	59	8	23	17	4	4	3
Plenty	228	96	30	43	32	17	10
Packed	14	8	1	0	5	0	0
Total	1320	145	624	91	57	385	18

Table 2. Distribution of pyuria and bacteriuria

No. of pus cells	No. of samples	Culture positive	Culture negative	Mixed growth
1-5	783	21 (2.7%)	742	20
6-10	236	28 (11.9%)	192	16
11-20	59	12 (20.3%)	27	20
Plenty	228	128 (56.1%)	47	53
Packed	14	13 (92.9%)	1	0
Total	1320	202	1009	109

CONCLUSION

Pyuria and significant bacteriuria may not always correlate in the suspected case of UTI. Although pyuria and significant bacteriuria may not always correlate in suspected cases of UTI; however as the number of pus cells in the urine increases, the chance of getting culture positive result is also high. Microscopic examination prior to culture is also important for correlating pyuria and bacteruria. Pyuria with sterile culture should be tested for other fastidious organisms like leptospira and Chlamydia causing urinary tract infections. Hence, the gold standard method for the diagnosis of UTI is urine culture.

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Original Article

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Comparison of the Effectiveness of Three Different Desensitizing Toothpastes in Reducing Dentin Hypersensitivity

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ABSTRACT

Introduction: Dentin hypersensitivity has been defined as a short, sharp pain arising from exposed dentin as a result of various stimuli such as heat, cold, chemical, or osmotic, that cannot be ascribed to any other pathology. This study aimed to compare the effectiveness of three desensitizing toothpastes in the treatment of dentin hypersensitivity.

Methods: A total of 90 individuals were considered for this study and randomly divided into three groups, Group 1: treated with desensitizing paste containing potassium salt, Group 2: treated with herbal desensitizing toothpaste, and Group 3: treated with desensitizing paste containing 5% Novamin. Using air stimulus, the sensitivity scores were recorded on visual analog scale (VAS), at baseline, immediately after paste application, then at 2 weeks and compared by using one-way ANOVA test and *post hoc* Tukey's test were used, and $P \leq 0.05$ was considered statistically significant.

Results: There was a significant change in the VAS scores in Group 2 and Group 3 when compared to Group 1. There was a significant difference in the mean change in VAS score from base line to after 2 weeks between Groups 1, 2, and 3.

Conclusion: Desensitizing toothpaste containing 5% Novamin was found to be the most effective followed by natural herbal toothpaste in the reduction of dentin hypersensitivity after a single application up to a period of 2 weeks as compared to potassium salt containing toothpaste.

Keywords: Dentin Hypersensitivity, Herbal, Novamin, Potassium Salt, Visual Analogue Scale

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INTRODUCTION

A short, sharp pain that is caused by exposed dentin in reaction to stimuli that are often thermal, evaporative, tactile, osmotic, or chemical is known as dentinal hypersensitivity and cannot be attributed to any other type of dental pathology or defect.[1]

The incidence is slightly higher in females than in males, ranging from 4% to 74%.It can affect people of any age, but most commonly those between the ages of 20 and 50, with a peak between 30 and 40. Canines and premolars are the teeth most commonly affected. The buccal aspect of the cervical region is the most often afflicted place.[2]

The degree of pain can be quantified either according to categorical scale (i.e., slight, moderate, or severe pain) or using the Visual Analog Scale using air spray method or tactile method on the hypersensitive areas of the tooth.[3]

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Though a wide array of treatment modalities are available for the management of dentinal hypersensitivity, desensitizing dentifrices are the most widely used and accepted.[4]

The majority of desensitizing toothpastes contain potassium salt which is believed to work by penetrating the length of the dentin tubule and depolarizing the nerve, interrupting the neural response to pain stimuli.[3]

There has been growing interest among people regarding herbs. Herbal desensitizing toothpaste claimed to give adequate relief of pain due to dentin hypersensitivity.[3]

Novamin is a bioactive glass, when incorporated into a dentifrice particles are deposited onto the dentin surface to mechanically occlude the dentinal tubules.[3]

Novamin is considered as one of the most potential candidates for fulfilling the reduction in pain induced by dentin hypersensitivity. Nevertheless, many herbal toothpastes are alarmingly spread in the market for its reduction of dentin hypersensitivity efficacy. The goal of this study was to examine the effectiveness of desensitizing pastes based on potassium salt, herbal desensitizing paste, and 5 % Novamin in reducing dentin hypersensitivity.

METHODS

This cross-sectional comparison study was done on patients who had complained of hypersensitivity and visited the KIST Medical College Department of Conservative Dentistry and Endodontics in Imadol, Lalitpur. We conducted this study after obtaining ethical approval from KIST Institutional Review Committee (KIST-IRC reference no. 076/077/54). The total duration of study was from July 2020 to January 2022. The participant's consent was taken and filled up in the form before examination.

Participants with the age group of 18-70 years, who had a history of tooth hypersensitivity to thermal, sweet, mechanical or sour stimuli on at least one tooth, defects <1 mm loss of dentin in depth which did not require restorative treatment, patients willing for follow up visits and sign an informed consent form, who had baseline scores of VAS ≥4 were included.

Patients who were currently taking antidepressants, sedatives, or analgesics, who had a history of allergies to any test product, who had received treatment for dentin hypersensitivity on that particular tooth, who had used any desensitizing paste within the previous three months, and who had extensive or flawed restorations, suspected pulpitis, or cracked enamel with the tooth of interest were all excluded from the study.

Baseline examination was carried out using air blast sensitivity assessment. A blast of air from a 3-way dental syringe was directed on affected area of the tooth for 1 second from a distance of one centimeter. Adjacent proximal teeth were shielded from the air blast through the placement of two fingers. The degree of hypersensitivity was reported according to Visual Analog Scale (VAS).Score were given on a 10 cm sensitivity VAS, which had ratings from 0 to 1 no pain, 2-3 for mild pain, 4-6 for moderate, and 7-10 for severe pain.

The participants were allotted by purposive sampling techniques, 30 patients in each group. Sample size calculation for comparison among groups in quantitative data for pain VAS score was calculated as follows:

Sample Size: $2\ SD^2\ (Z_{\alpha/2}+Z_{\beta})^2 / d^2$

SD = Standard deviation of previous study on VAS pain score [6] = 0.78

Level of significance = 5%

$Z_{\alpha/2} = Z_{0.05/2} = Z_{0.025} = 1.96$ (from Z table at 5% error)

$Z_{\beta} = Z_{20}$ (at Power of study = 80%)=0.842 (from Z table)

d= Effect size=difference between mean value of VAS Pain Score[6] = 0.6

Therefore, Sample size = $2\ SD^2\ (Z_{\alpha/2}+Z_{\beta})^2 / d^2 = 2x\ (0.78)^2\ (1.96+0.842)^2 / (0.6)^2 = 26.5$

Hence minimum sample in each group was assigned to be 27. However, the total 30 patients will be enrolled in the study which comprises of three different groups as follows:

Group I: Desensitizing paste containing potassium salt

Group II: Herbal desensitizing paste

Group III: Desensitizing paste containing 5% Novamin

After that each subject topically self-applied a pea sized amount of assigned toothpaste on his hypersensitive teeth using a fingertip by massaging each tooth for 60 seconds. Post application immediate score of air-blast dentin hypersensitivity examination was performed and recorded following the same methodology employed at the baseline examinations. Instructions for the home application of desensitizing paste were given to the patient, which included twice brushing with the desensitizing paste for 2 minutes. Patients were asked to report after 2 weeks. Air-blast dentin hypersensitivity examination was performed and recorded following the same methodology. Software SPSS version 20 was used to analyze the data by applying descriptive statistics and Chi-squared test for categorical data. The intercomparison among groups for quantitative data was analyzed by ANOVA test and *post hoc* Tukey's test. P-value <0.05 is considered statistically significant.

Table 1.Comparison of visual analog scale (VAS) scores at baseline, immediate post treatment and 2 weeks

Variables	VAS score at baseline			
	Mean	**SD**	**F**	**P**
Group 1	6.30	1.81	3.02	0.054
Group 2	5.85	1.72		
Group 3	7.15	2.01		
	VAS score at immediate post treatment			
Group 1	4.85	2.29	0.43	0.65
Group 2	4.52	2.11		
Group 3	5.11	2.60		
	VAS score at 2 weeks			
Group 1	2.78	1.76	1.66	0.19
Group 2	1.81	1.92		
Group 3	2.04	2.36		

Table 2. Comparison of change in visual analog scale (VAS) scores from baseline to 2 weeks

Change in VAS score	Groups	Mean	SD	F	P
From baseline to immediately after treatment	Group 1	1.44	1.15	2.32	0.10
	Group 2	1.33	1.20		
	Group 3	2.04	1.48		
From baseline to after 2 weeks	Group 1	3.52	1.57	5.17	**0.008***
	Group 2	4.04	1.93		
	Group 3	5.11	2.02		

Table 3. Mean of change in the visual analog scale (VAS) scores from baseline to 2 weeks

Change in VAS score	Groups		Mean difference	P
From baseline to immediately after treatment	Group 1	Group 2	0.11	1.00
	Group 1	Group 3	-0.59	0.286
	Group 2	Group 3	-0.70	0.145
From baseline to after 2 weeks	Group 1	Group 2	-0.51	0.92
	Group 1	Group 3	-0.15	**0.007***
	Group 2	Group 3	-1.07	0.11

Table 4. Comparison of time interval within Group 1

VAS Score	Group 1			
	Mean	SD	F	P
At baseline	6.30	1.81	78.34	**<0.001***
Immediate	4.85	2.29		
After 2weeks	2.77	1.76		

Table 5. Mean of time interval within Group 1

Time interval	Duration	Mean differences	P
Baseline	Immediately	1.44	**<0.0001***
Baseline	After 2 weeks	3.51	**<0.0001***
Immediately	After 2 weeks	2.07	**<0.0001***

Table 6. Comparison of time interval within Group 2

VAS Score	Group 2			
	Mean	SD	F	P
At baseline	5.85	1.72	71.86	**<0.0001***
Immediate	4.52	2.11		
After 2weeks	1.81	1.92		

Table 7. Mean of time interval within Group 2

Time interval	Duration	Mean differences	P
Baseline	Immediately	1.33	**<0.0001***
Baseline	After 2 weeks	4.03	**<0.0001***
Immediately	After 2 weeks	2.70	**<0.0001***

Table 8. Comparison of time interval within Group 3

VAS Score	Group 3			
	Mean	SD	F	P
At baseline	7.15	2.31	85.58	**<0.0001***
Immediate	5.11	2.60		
After 2weeks	2.04	2.36		

Table 9. Mean of time interval within Group 3

Time interval	Duration	Mean differences	P
Baseline	Immediately	2.03	**<0.0001***
Baseline	After 2 weeks	5.11	**<0.0001***
Immediately	After 2 weeks	3.07	**<0.0001***

RESULTS

The mean VAS score at baseline, immediately and after 2 weeks was compared among Groups 1, 2, and 3 using the one-way ANOVA test. There was no significant difference in the mean VAS score at baseline, immediately and after 2 weeks among Groups 1, 2, and 3. (Table 1)

The mean change in VAS score from baseline to immediately after treatment, and from baseline to after 2 weeks was compared between Groups 1, 2, and 3 using the one-way ANOVA test. There was a significant difference in the mean change in VAS score from baseline to after 2 weeks between Groups 1, 2, and 3. (Table 2)

Intergroup comparison of mean change in VAS score from baseline to immediately after treatment, and from baseline to after 2 weeks was done using the post hoc Tukey's test. The mean change in VAS score from baseline to after 2 weeks was significantly differ in between Group 1 and Group 3. (Table 3)

The mean VAS score was compared between the different time intervals using the repeated-measures ANOVA test. There was a significant difference in mean VAS score between different time intervals. (Table 4)The inter-interval comparison of the mean VAS score between baseline, immediately and after 2 weeks was done using the post hoc Bonferroni test. The mean VAS score decreased significantly from baseline to immediately post treatment to after 2 weeks (Table 5)

The mean VAS score was compared between the different time intervals using the repeated-measures ANOVA test. There was a significant difference in mean VAS score between different time intervals. (Table 6) The inter-interval comparison of the mean VAS score between baseline, immediately, and after 2 weeks was done using the post hoc Bonferroni test. The mean VAS score decreased significantly from baseline to immediately post treatment to after 2 weeks.(Table7)The mean VAS score was compared between the different time intervals using the repeated-measures ANOVA test. There was a significant difference in mean VAS score between different time intervals. (Table 8)

The inter-interval comparison of the mean VAS score between baseline, immediately, and after 2 weeks was done using the post hoc Bonferroni test. The mean VAS score decreased significantly from baseline to immediately post treatment to after 2 weeks. (Table 9)

DISCUSSION

Since dental pain is a very subjective sensation brought on by dentin hypersensitivity, it requires careful evaluation and ongoing monitoring to achieve effective pain control.[5] The ideal substance for treating dentin hypersensitivity must not irritate the pulp, be painless when applied, simple to use, quick to take effect, long-lasting, and consistent.[6] Desensitizing pastes have been used widely in the past for treating dentin hypersensitivity because of their low cost and ease for the use for the home application.[3] In this study, the efficacy of three different desensitizing dentifrices formulations has been compared.

The herbal paste contains naturally occurring potassium nitrate (Suryakshara), which appears to aid in the desensitization of the dental nerves. Other natural ingredients, such as spinach (Palakya), also contain natural oxalates, which aid in the formation of phytocomplexes and occlude the exposed dentinal tubules, and also the presence of clove (Lavanga) controls pain due to the obtundant action of eugenol.[7]

Novamin is a biocompatible bioactive glass. It has been used for treating dentin hypersensitivity and occludes the open tubules by depositing hydroxycarbonate apatite, a mineral that is chemically and structurally similar to the mineral present in dentin and enamel.[1]
The desensitizing efficacy of dentifrices containing potassium nitrate is thought to be provided by potassium ion, via chemical interference with the transmission of the pain signal in the pulpal nerve fibres.[8]

In comparison to a dentifrice containing 5 % potassium nitrate, Salien et al,[8] Satyapal et al,[9] and Pradeep et al[10] found that a dentifrice with 5 % Novamin provided more quick relief from dentin hypersensitivity in the range of 2 weeks to 6 weeks. This might be caused by Novamin's ability to occlude tubules. Similar to the above mentioned studies there was a significant reduction of hypersensitivity by Novamin than potassium nitrate in our study.

Orchardson et al[11] and Sharma et al[12] have demonstrated that dentifrices containing potassium significantly reduced sensitivity. After the first four days of using potassium nitrate dentifrice, Cuesta et al[13] reported that the responsiveness to evaporative stimulation had rapidly decreased. Acharya et al[14] stated that Novamin and potassium nitrate based dentifrices are equally effective in reducing dentin hypersensitivity over a period of time. On contrary to their study, our study has shown the efficacy of using Novamin for dentin hypersensitivity superior to potassium nitrate.

A study by Joshi, Gautam, and Joshi[15] found that potassium nitrate and Novamin both reduced dentin hypersensitivity to the same extent. Although the verbal evaluation scores for the potassium nitrate dentifrice were superior to Novamin from the beginning through the third week. From the beginning through six weeks, both dentifrices responses to tactile, air, and cold stimuli were highly significant. However, in the present study, Novamin based dentifrice is superior from the beginning to 2 weeks period of time.

According to a study by Bansal and Mahajan[5], there was a noticeable difference in the VAS scores between toothpastes containing 5 % Novamin than those containing 8 % arginine and herbal desensitizing agents which is in agreement with our study. In Kar and co-worker's study[3], herbal desensitizing paste was more effective in reducing dentin hypersensitivity than potassium nitrate-containing toothpaste which was similar to our study.

In Reddy et al[1] study, it was concluded that Biomin, Novamin, Herbal toothpaste and 5% potassium nitrate toothpaste all were effective in relieving dentin hypersensitivity which was similar to our study. Following four days of twice-daily brushing in vitro, a comparative investigation by Parkinson and Willson[16] in 2011 found that calcium sodium phosphosilicate (Novamin) imparted considerable amount of dentinal occlusion with permanent occlusive deposits.

According to West et al[17] in 2011, Novamin was more effective than 8% arginine at occluding patent dentinal tubules under acid challenges. These studies bolster our study in the superiority of Novamin to reduce dentin hypersensitivity.

Other treatment options for dentin hypersensitivity such as laser therapy and iontophoresis are also used. However, they have many disadvantages such as more expensive, more complex, and questionable long-term effectiveness.[3] The further study can be elaborated on these aspects of using therapy for the dentin hypersensitivity to see the effectiveness of the dentifrices which is the limitation in the present study.

CONCLUSION

Desensitizing toothpaste containing 5% Novamin was found to be the most effective followed by natural herbal toothpaste in the reduction of dentin hypersensitivity after a single application up to a period of 2 weeks as compared to potassium salt containing toothpaste.

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Original Article

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Journal of KIST Medical College

Clinical Profile of Hemoptysis in a Tertiary Care Hospital in Nepal

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ABSTRACT

Introduction: Hemoptysis is a frequent, frightening and alarming symptom in clinical practice. It may range from streaks of blood in sputum to massive life-threatening hemoptysis. Bronchiectasis and active tuberculosis are still the main causes of hemoptysis in developing countries.

Methods: This was a cross sectional observational study done in Civil Service Hospital from January 2019 to August 2021. All adult patients above 18 years with hemoptysis were enrolled in the study. Detailed history, examinations and relevant investigations were carefully registered in structured proforma.

Results: Total of 197 patients were enrolled in our study with 154 (78.1%) male patients. Hypertension and diabetes were the most common comorbid condition with 43.65% and 31.97% respectively. 42 (21.31%) patients were active smokers. Cough was the most common symptoms followed by anorexia and dyspnea present in 98.98%, 22.84% and 20.31% respectively. Most patients presented with mild hemoptysis with only 12 (6.09%) patients presented with severe hemoptysis. In our study 129 (65.48%) patients had radiological evidence of bronchiectasis. 58(29.44%) patients had history of tuberculosis. 19 (9.64%) patients presented with malignancies.

Conclusion: Bronchiectasis was the most common cause of hemoptysis in our study. Most of the hemoptysis were of mild variety and was managed conservatively.

Keywords: hemoptysis, bronchiectasis, tuberculosis

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INTRODUCTION

Hemoptysis is a common clinical condition encountered by respiratory physician in day-to-day practice. Hemoptysis is expectoration of blood derived from the lungs as a result of pulmonary or bronchial vasculature disruption.[1] No matter how small the quantity of hemoptysis, it is always alarming and frightening to the both patients and physician. Even minimal amount of hemoptysis can be a manifestation of severe underlying lung disease. It is also often seen that patients tend to neglect any respiratory symptoms but are generally present in hospital even in slightest amount of hemoptysis.

Hemoptysis ranges from minimal streaks of blood in sputum to massive life-threatening expectoration of blood. Approximately 1.5% of patients presenting with hemoptysis have massive hemoptysis.[2] Common causes of Hemoptysis depend upon geographical regions and age category. In developing countries still tuberculosis and post tubercular bronchiectasis are the leading causes of hemoptysis. Lung cancer, bronchitis and non-tubercular bronchiectasis are common causes of hemoptysis in developed countries. In children congenital cardiopathies and bronchiectasis (cystic fibrosis) are supposed to be the main reason for hemoptysis.[3]

Even through detailed investigations nearly 20 to 30 percent of hemoptysis patients do not have identifiable etiology.[3-6] In most cases of mild and moderate hemoptysis control over bleeding is achieved with conservative measures.[3,7] Therapeutic measures like bronchoscopy intervention, surgery lobectomy and bronchial arterial embolization may be necessary in severe cases.In this study we tried to document the demographic profile, etiology, clinical profile and treatment of patients presenting with hemoptysis in our hospital.

METHODS

This is a cross sectional observational study carried out in Civil Service Hospital over the period of two and half years from January 2019 to August 2021. All adult patients above the age of 18 years presented with hemoptysis were enrolled in the study. Detailed history, examination and relevant investigations was done and recorded in structured proforma. There is no general consensus on the categorization of hemoptysis till date.[8] Volume to define severe hemoptysis is different in different literatures. We divided mild as less than 50ml of blood in 24 hours, moderated as less than 300 ml in 24 hours and severe as more than 300 or any amount of blood with cardio-pulmonary compromise. We found that expectorated volume of blood range of 100 to 600 ml in 24 hours were classified as severe hemoptysis most of studies.[4,9-12] The study was approved by hospital institutional research review board.

RESULTS

There were total of 197 patients in 2 and half years from January 2019 to August 2021 enrolled in our study presenting with hemoptysis in Civil Service Hospital. There were 154 (78.17%) male and 43 (21.82%) female patients. The age group in our study ranged from 16 to 84 years with mean age group of 53.40 years and most patients prevailing in age group 50 to 59 years. (Table 1)

Hypertension was the most common co-morbid condition present in our study followed by Diabetes Mellitus, which were present in 86 (43.65%) and 63 (31.97%) patients respectively. 22 (11.16 %) patients had both hypertension and diabetes Mellitus. (Table 2) 67(34.01%) patients were non-smokers in our study, 42(21.31%) patients were current smokers and 88(44.67%) were reformed smokers. (Figure 1)

Cough which was present in 193 (98.98%) patients and was the predominate symptom among our patients. Anorexia and dyspnea were other two important symptoms experienced by our patients with frequency of 22.84% and 20.31% respectively. (Table 3) 126 (63.95%) patients presented to with us with mild hemoptysis. 59 (29.94%) patients presented with moderate and 12 (6.09%) patients presented with severe hemoptysis. 5(2.53%) patients were sent for bronchial arterial embolization after admission to our hospital. (Figure 2)

In our study, most common cause of hemoptysis was Bronchiectasis which was present in 129 (65.48%) patients. Among them 58 (29.44%) patients had history and radiographic morphology consistent with old tubercular bronchiectasis and gave clear history of taking Anti-tubercular drugs for 6 to 12 months. (Table 4)
Other 71(36.04%) patients presenting with hemoptysis and bronchiectasis did not have history of past tuberculosis. 68 patients gave

history of pneumonia for which they had taken antibiotics in the past 10 years, three patients do not recall having sign and symptoms of infection but had bronchiectasis changes in radiological films suggestive of old infection.19 (9.64%) patients presented with mass lesions in radiological films. Bronchoscopy was done 12 of these patients and seven patients were subjected to USG/ CT guided biopsy, all of the patients were proven to have malignant lesion.Gene Xpert/MTB for mycobacterium tuberculosis came out to be positive in 11(5.58%) of our patients. Lobar pneumonia was seen in 8(4.06%) patients who were treated with antibiotics. 3(1.52%) patients of hemoptysis after proper evaluation had pulmonary embolism, these patients had mild hemoptysis with atypical chest pain and severe shortness of breath. Radiological evidence of aspergilloma was present in 7(3.55%) patients, 6(3.04%) patients had lung abscess and 3(1.52%) patients were on anticoagulants. 11 (5.58%) patients in our study had no detectable cause.

Table 1. Age distribution:

Age	n	%
16-20	6	3.04
20 – 29	8	4.06
30 – 39	24	12.18
40 – 49	41	20.81
50 – 59	54	27.41
60 – 69	26	13.19
70 – 79	27	13.70
>80	13	6.59

Figure 1.Smoking Profile

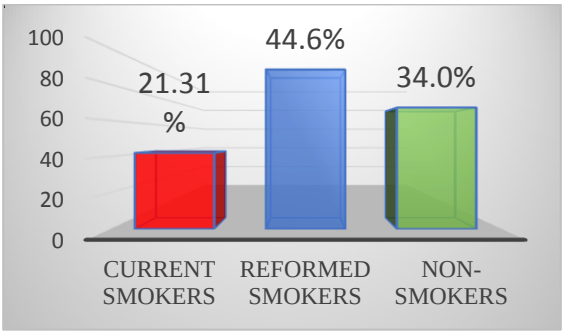


Table 2. Types of Co-morbidities

Comorbidities	n	%
Hypertension	86	43.65
Diabetes Mellitus	63	31.97
Heart Failure	11	5.58
CLD	9	4.50
COPD	28	14.21
ILD	6	3.04
CRF	5	2.53
Obesity	5	2.53

Table 3. Other clinical symptoms with hemoptysis.

Symptoms	n	%
Cough	193	97.96
Dyspnea	40	20.30
Fever	11	5.58
Chest pain	23	11.67
Night Sweats	4	2.03
Malaise	28	14.21
Anorexia	45	22.84

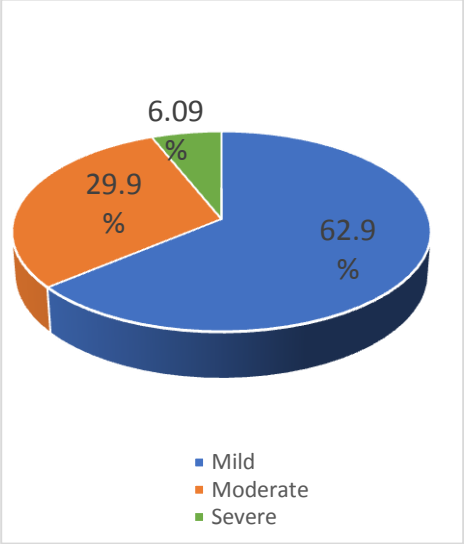
Table 4. Causes of Hemoptysis.

SN	Causes	N	%
1.	Old Tubercular Bronchiectasis	58	29.44
2.	Post Infectious Bronchiectasis	71	36.04
3.	Malignancy	19	9.64
4.	Active Tuberculosis	11	5.58
5.	Pneumonia	8	4.06
6.	Pulmonary Embolism	3	1.52
7.	Idiopathic	11	5.58
8.	Aspergilloma	7	3.55
9.	Lung Abscess	6	3.04
10.	Oral Anticoagulation	3	1.52

Table 5. Severity according to causes

	Mild	Moderate	Severe	total
Post TB Bronchiectasis	35	21	2	58
Post Infectious Bronchiectasis	55	11	5	71
Malignancy	8	8	3	19
Active Tuberculosis	6	5	-	11
Pneumonia	8	-	-	8
Pulmonary Embolism	3	-	-	3
Idiopathic	2	9	-	11
Aspergilloma	2	4	1	7
Lung abscess	5	1	-	6
Oral Anticoagulant	2	-	1	3
Total	126	59	12	197

Figure 2. Severity of Haemoptysis



DISCUSSION

Hemoptysis is a distressing symptom to any patients. In three and half years we had 197 patients of hemoptysis in our hospital. Among them 154 (78.1%) patients were male patients which was ratio of male: female ratio approximately 3:1. Similar studies conducted in India also had male patients 4.2 times more than females[13,14]. Ghimire et al in another study also had male patients 75% in comparison to female patients[3]. Joseph T et al in similar study about hemoptysis had male patients of 70%[1]. Male predominance in hemoptysis patients could be due to the fact that male population likely to be more smokers and do heavy duties in hostile environment for prolong period of time than females. The mean age group in our study was 53.40 years with most patients belonging to age

Most common comorbid condition in our study was Hypertension followed by Diabetes Mellitus and COPD. In our study, 42(21.31%) patients were current smokers and 74 (37.56%) patients were reformed smokers. So, comorbidity along with large smoking and reformed smoking population attributed to risk of hemoptysis[6].

Cough was the most common symptoms experienced by our study population present in 193 (98.98%) patients. Hemoptysis is a distressing and irritating symptom. When blood is present in airways generally cough reflex expectorate the blood. 4 patients did not give the history of cough. According to them bleeding was present from mouth in morning hours after waking up without cough or other symptoms. These patients were asymptomatic during day and night time. There upper respiratory examinations were normal and CT scan chest showed consolidation in 2 patients and bronchiectasis changes in 2

patients. Dyspnea was present more with COPD patients in our study. Malaise (14.21%) and anorexia (22.84%) were transient symptoms present during episodes of hemoptysis in our study.

One of the disputed subjects in hemoptysis is its classification according to severity[4,8,11-17]. Numerous classifications have been proposed but none are universally accepted. Severity of hemoptysis is often difficult as it is often over or under estimated by the frightened patients. After going through most available classification, we considered the following classification would be best suitable and practical to our study. Mild hemoptysis if expectorated amount is 5 to 50 ml per 24 hours, Moderate if expectorated amount is 50 to 300 ml per 24 hours and severe if amount is more than 300 ml or hemodynamically unstable[8]. Mortality rate as high as 75% was recorded in patients having a bleeding rate of more than 600 ml within 16 hours in one study.[18]Life threatening hemoptysis can occur even if the amount is as small as 100 ml if it causes abnormal gas exchange, air way obstruction or hemodynamic instability.[19]

In our study only 12 (6.09%) patients presented with severe hemoptysis and were admitted in Intensive Care Unit while 9 (4.5%) patients had to be referred for bronchial arterial embolization. Rest of the patients were treated conservatively in outpatient department or medical wards with oral/intravenous or nebulization of transemic acid, ethamsylate and cough suppressants.

Etiologically most common cause of hemoptysis in our study was bronchiectasis found in 65.48% of our patients. Bronchiectasis was also the most common cause for hemoptysis in studies done by Joseph et al, Bondade et al, Hirschberg et al, MacGuinness at el.[1,6,20,21] Bronchiectasis is seen to be the leading cause for hemoptysis in studies done in developing countries. Tuberculosis is one of the leading causes for bronchiectasis in our part of the world[22]. Some handful of patients may not even be aware of having the disease in the past and present with bronchiectasis and hemoptysis in later part of the life after tuberculosis heals itself [7]. In developing countries due to poor health system and lack of proper treatment many respiratory illnesses in childhood and young adults like severe pneumonia, post measles and whooping cough apart from tuberculosis often lead to fibro- bronchiectasis. In our study 71(36.04%) patients had bronchiectasis in radiological film but had no history of tuberculosis. We tried to rule out other causes of bronchiectasis like autoimmune diseases, malignancies, allergic aspergillosis in these group of patients before labelling as post infectious bronchiectasis.

Active pneumonia and tuberculosis presenting as hemoptysis were comparatively low in our study. In active form of the above diseases fever, cough, sputum production and shortness of breath dominated the clinical picture and hemoptysis tends to occur later if prompt treatment was not initiated. Similar findings were present in studies done by Joseph T et al, Ghimire H.R et al, Bondade K et al, Pires F.S et al[1,3,6,7]. In some older studies like prasad et al, Korvadiya A. et al. and H.J. Lee et al[11,23,24], active tuberculosis was the most common cause of hemoptysis and one study done USA, New York City Community Acquired Pneumonia was the most common cause of hemoptysis[8].

Lung malignancies primary or metastasis are always an important cause of hemoptysis. In developed countries where tuberculosis and infective respiratory illness are scarce lung malignancies are one of the commonest causes of hemoptysis[1,3]. In our study we had 19 (9.64%) patients of malignancy with hemoptysis. 50% of malignancies was squamous cell carcinoma with cavitation in our study, similar study by H.J.Lee also found squamous cell carcinoma to be the most common cause for hemoptysis among lung malignancies.[24] 11(5.58%) patients in our study had no detectable cause for hemoptysis despite extensive investigations and was labelled as idiopathic. In most studies published in literature about 20 to 30% of hemoptysis have no identifiable cause[3-6]. Idiopathic variety of hemoptysis were mild to moderate type and responded to conservative therapy in our study. We had 7(3.55%) patients of aspergilloma presenting as hemoptysis. 1 patient of

aspergilloma died due to massive hemoptysis in our hospital. 3 patients with aspergilloma had post tubercular cavity and 2 patients had hematological malignancy. Out of 197 patients only 12 patients had severe hemoptysis in our study. Most common etiological group with severe hemoptysis was post infectious bronchiectasis. 5 patients were sent for interventions, 1 died and remaining 6 patients were managed with blood transfusion and conservative treatment in ICU.

CONCLUSION

A single episode of hemoptysis can represent serious underlying respiratory disease. In developing countries like Nepal post tuberculosis and post infectious bronchiectasis are still the major causes of hemoptysis. Most of the hemoptysis in our study were of mild to moderate severity which were treated conservatively. Most of our patients had developed infectious respiratory illness in younger working age group thus presenting with bronchiectasis as sequel of their illness in late middle age.

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Original article

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Managing Appendicitis during Covid-19 National Lockdown Period: A Single Centre Experience

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ABSTRACT

Introduction: Covid-19 and related nationwide lockdown had a huge impact on the health care resources and services. The delay in the treatment due to to lockdown may have effect on the managent of surgical emergency like acute appendicits. This study aims to find out spectrum of presentation and possible complication of acute appendicitis seen during COVID-19 period to emphasize the impact of COVID-19 pandemic to the disease burden.

Methods: A retrospective observational study was conducted at Department of Surgery, KIST Medical College and Teaching Hospital. Data was retrieved from Health Management Information System (HMIS) records after approval from institutional review committee(IRC). Cases of acute appendicitis presenting to the hospital during lockdown from 24th March 2020 to 21st July 2020 (Group 1) were compared with cases presented within similar period of time of previous year ;24th March 2019 to 21st July 2019 (Group 2).

Results:Demographic characteristics and Modified Alvarado Score were similar among both groups. There was a statistically significant difference in duration of presentation to hospital, 3.68±3.04days in Group 1 versus 2.49±1.56 days in Group 2. Increase in rate of complications (42% versus 19%, P=0.0222) was observed during lockdown. More patients were managed conservatively in Group 1. Average duration of admission to hospital was similar.

Conclusion: COVID-19 lockdown caused delay in the presentation of acute appendicitis cases which was associated with more complications.

Keywords : Acute Appendicitis; Covid-19; Complication of Acute Appendicitis

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INTRODUCTION

The novel coronavirus COVID-19 (SARS-CoV-2) was first reported in 31 December 2019 in Wuhan City, China.[1] In Nepal, the first COVID-19 patient was reported on January 23, 2020 and Nepal government announced nationwide lockdown from 24 March 2020.[2] Covid-19 and nationwide lockdown affected healthcare sector , including treatment of those with conditions like acute appendicitis that require urgent medical care. Stringent lockdown and inaccessible transportation hindered timely presentation to healthcare centres. Acute appendicitis was one of the common surgical emergency attended during Covid19 lockdown and this study aims to find if there were any assoicated changes in spectrum of presentation and complications due to lockdown effect.

METHODS

The study was a retrospective observational study conducted at Department of Surgery, KIST Medical College and Teaching Hospital, Nepal. Approval was obtained from IRB of KISTMCTH (2077/78/65). Data was acquired from Health Management Information System (HMIS) records of KISTMCTH. Cases of acute appendicitis, diagnosed clinically or via ultrasonography(USG) or Contrast enhanced computed tomography (CECT) presenting to the hospital during lockdown (24th March 2020 to 21st July 2020) were compared with cases during similar period of previous year (24th March 2019 to 21st July 2019). Records were retrieved and relevant data was entered into a separate database. Demographic characters, co-morbidities, presenting features, treatment received (antibiotics based conservative management, open or laparoscopic appendectomy) and complications at presentation or at any point during treatment were recorded. Length of hospital stay was also recorded. All recording of information was done on proforma that was submitted to the IRB for approval.

IBM SPSS Statistics Ver. 27.0.1 was used for analysis. Descriptive variables were calculated as mean with standard deviation (SD), categorical variables between two groups were compared using Chi-squared test and continuous variables were analysed using Student's T test. P value of less than 0.05 was considered significant.

RESULTS

A total of 72 participants were enrolled in the study. 19 participants (Group 1) were from the duration of lockdown (2020-03-24 to 2020-07-21) and 53 were from corresponding period of previous year (2019-03-24 to 2019-07-21) (Group 2). There were 41 males and 31 females (M: F = 1.3). Number of males was more in both groups. Average age in Group 1 was 29.34±15.42 and in Group 2 was 26.68±12.73. There was a statistically significant difference in days since onset of symptoms to presentation to hospital, 3.68±3.04days in Group 1 versus 2.49±1.56 days in Group 2 (P=0.0162). A modified Alvarado score of 6.00±1.29 in Group 1 and 5.79±1.29 in Group 2 were calculated at presentation. Among the score, Raised leucocyte count (TLC >11,000/mm3) was seen in 13 patients in Group 1 and 35 in Group 2.

Statistically significant increase in rate of complications was observed during Lockdown. There were 8 complicated appendicitis (42%) like perforation and abscess formation in operative finding during lockdown period compared to 10 in corresponding period of previous year (19%), P=0.0222. There was a statistically significant (P=0.0025) increase in number of patients managed conservatively during lockdown. 19 patients were managed conservatively in previous year while 14 were managed conservatively during lockdown. 25 patients were operated laparoscopically and 9 underwent open appendectomy in Group 2. There were 2 conversions from Laparoscopic to open appendectomy. In Group 1, 2 were operated

Table comparing acute appendicitis during Covid-19 lockdown period with pre lockdown period of same duration.

	Lockdown (N=19) [Group 1]	Previous year (N=53) [Group 2]	p-value
Age	26.68±12.73	29.34±15.42	0.2518
Sex	M:10; F:9	M:31; F:22	0.3299
No of days of pain	3.68±3.04	2.49±1.56	0.0162
Alvarado score	6.00±1.29	5.79±1.29	0.2748
Fever	7	21	0.4168
Vomiting	14	30	0.0951
Raised TLC	13	35	0.4246
Previous treatment	9	17	0.1170
Complicated	8	10	0.0222
Laparoscopic	2	25	
Open	3	9	
Conservative	14	19	0.0025
Complication during conservative management	28.57%	15.78%	0.1867
Fecalith	2	5	0.4443
Conversion to open	0	2	
Average hospital stay	5.21±2.18	4.75±1.85	0.1910

laparoscopically and 3 underwent open appendectomy.Four out of 14 , managed conservatively developed complications during hospital stay in Group 1 ; and three out of 19 managed conservatively developed complications during hospital stay in Group 2. Presence of feacolith was seen in two in Group 2 and five in Group 1. There were 2 readmissions within 30 days among patients in Group 2 and 1 readmission among patients in Group 1. Average stay in hospital was 4.75±1.85 days in Group 2 and 5.21±2.18 days in Group 1. The increase in length of hospital stay was not statistically significant (0.1910).

DISCUSSION

Covid-19 and lockdown had a great impact on healthcare services. There was obvious delay in the treatment and lack of human resources . Managing surgical emergency like acute appendicitis was also a tricky situation.

Statistically significant (P=0.0162) delay in presentation to hospital can be attributed to unavailability of transportation services, closure of health centres, reluctance of health centres towards treatment of patients with unknown COVID-19 status ,reluctance of patients towards seeking healthcare services with fear of contagion.

Various studies have shown that delay in seeking/receiving treatment is reflected on an increase in rate of complications.[4,5] Andersson has claimed that duration of symptoms at operation is dependent mainly on pre-hospital delay.[5] During lockdown, pre-hospital delays due to multiple factors as discussed above might have

accounted for increased rate in complications. In our study, a complication rate of 42% in patients presenting during lockdown as compared to 19% in previous corresponding period was found (P=0.0222). An increase in rate of perforation by 4.5% was also noted. This is consistent with numerous studies. Scheijmans et al., in their multicentre study concluded that proportion of complicated cases increased during lockdown.[6] Bickell et al., in their retrospective review concluded that after the first 36 hours from the onset of symptoms the average rate of perforation is between 16% and 36%, and the risk of perforation is 5% for every subsequent 12-hour period.[7] This finding is consistent with our observation of increased rate of perforation with increase in duration of presentation since onset of symptoms.

Not all studies agree with the theory that logistical difficulties or unwillingness of patients to seek treatment are the only reasons for reduction in number of cases presenting to hospital. Delay in seeking/receiving care could have allowed for spontaneous resolution of many cases of appendicitis.[8]

An increase in conservative management of patients were seen during lockdown. 19 patients were managed conservatively (i.e., 36%) in Group 1 while 14 were managed conservatively in Group 2 (i.e., 74%). It was statistically significant (P=0.0025). Multiple studies show increase in proportion of conservatively managed patients during COVID-19 [9-11.] Multiple studies have shown that antibiotics first approach is reasonable and safe for uncomplicated acute appendicitis.[12] Worldwide, overwhelming of health services due to influx of patients with COVID-19 resulted in delayed healthcare or antibiotics based conservative management in patients. In our study, preference of conservative management was largely due to delayed presentation of patients with signs of spontaneous resolution of symptoms and signs. Also, well known complications of delayed presentation, there were cases of appendicular lump or abscess which are preferably managed conservatively.[12]

Symptoms like fever and nausea/vomiting are not known to be associated with duration of illness. While fever and nausea/vomiting are common symptoms with known sensitivity of 27-74% and 40-72% respectively,[13] their relation with duration of illness have not been elaborated. There is no statistically significant difference in presence of fever and nausea/vomiting between Group 1 and Group 2. While 21 in Group 1 had fever, 7 in Group 2 had fever (P= 0.4168). Similarly, 30 in Group 1 had nausea/vomiting and 14 in Group 2 had nausea/vomiting (P=0.0951).

Leucocytosis, a sensitive finding in acute appendicitis was seen in 66% in Group 1 and 68% in Group 2. While various studies have shown an increase in WBC count with corresponding increase in rate of complications, no such increase in WBC count was seen in Group 2 despite statistically significant increase in rate of complications (P=0.4246) (Guraya et al., 2005), (Al-gaithy, 2012).[14,15]

There was an increase in proportion of patients receiving some sort of treatment before presentation to hospital during lockdown. While 32% of patients in Group 1 received antibiotics or medications for pain, 47% in Group 2 did so. It is explained, again by difficulty in accessibility of health service or reluctance of patients to seek health service. Instead, most patients took medications from pharmacies or local health centres before deciding to visit our center. We did not take into account the kind of treatment patients received before presenting to our center. Our interest in this was to understand increase in self-treatment pattern as a result of lack of accessibility to health service rather than the actual medications or other forms of treatment received. Literature search yields little information regarding increase in self-medications of diseases other than COVID-19 during the pandemic.

Rate of complications increased among conservatively managed patients during lockdown. While previous years' (Group 1) rate of complications rate among conservatively managed patients of 15.7% is consistent with meta-analysis Zhengyang et al., Group 2 complication rate of 28.5% is higher and not

consistent with most other studies.[16] It could be attributed to pre-existing severity of disease due to delay in presentation. As such, a different approach to patient selection for conservative management might have yielded reduced rate of complications in conservatively managed patients.

5 patients in Group 1 and 2 patients in Group 2 had fecalith. As mentioned in multiple studies, presence of fecalith is an adverse factor and hence conservative management is not advisable in these cases. Patients presenting with fecalith were managed surgically in both groups.

Time duration taken for performing surgery was similar for both groups. 68.53±20.84 minutes was average duration of surgery in Group 1 and 70.00±18.71 minutes was average duration of surgery in Group 2 (P=0.4412). While similar study by Baral et al. have shown an increase in duration of surgery during lockdown owing to preparedness like donning of PPE, no such significant increase in duration was noticed in our centre.[17] Preventive measures like use of PPE were practisedadequately in our center, but such preparedness did not result in increase in total duration of surgery.

Average duration of hospital stay was not statistically different between two groups. While average stay in hospital is expected to increase with conservative management due to requirement of prolonged observation, studies show that conservative treatment was associated with a similar or shorter overall length of stay than appendectomy.[16,18] Shorter length of stay was not seen in our study and but similar length of stay is consistent with other studies.[9]

This study adds useful insights to the limited body of information available regarding the impact of COVID-19 pandemic on health care services delivery. Especially in regards to one of the most common surgical emergencies like acute appendicitis, increase in number of days since onset of symptoms to presentation and increase rate of complicated appendicitis show that COVID-19 and subsequent lockdown caused severe hindrance to people seeking health services. It also highlights how conservative management might be an acceptable method of management in acute appendicitis, as also shown by multiple studies.[11,12,19] Our studies show no statistically significant increase in rate of complications among conservatively managed patients, at least in the short term. There was no statistically significant difference in readmission among two groups.

One major limitation of this study is the smaller number of participants, especially in Group 2. While it again reinforces the view that fewer patients had access to health services during lockdown, fewer patients might have biased the findings due to higher variability. Also, since it was a retrospective study, long term follows up of patients was not done, hence long-term outcomes are not known.

CONCLUSION

COVID-19 pandemic and lockdown was a challenge to health service providers. Due to various reasons, COVID-19 lockdown caused delay in the presentation of acute appendicitis cases which was associated with more complications. Our study showed the similar findings and justified the need for early intervention in such cases.

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Original article

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Prevalence of Patients Seeking Treatment for Tooth Wear Related Problems

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ABSTRACT

Introduction: Tooth wear is defined as the loss of tooth structure that occurs in the absence of carious mechanism which can cause deleterious effects in the dental health. The aim of this study was to assess the prevalence of awareness among patients and if they seek the treatment for tooth wear.

Methods: This study was done in the Department of Conservative Dentistry and Endodontics KIST Medical College and Teaching Hospital Imadol during October 2019 to March 2020. A cross-sectional study was done including data collection from a questionnaire and clinical examination. Total 370 participants, both male and females of age group 18-70 years were included in the study.

Results: A total of 370 patients were examined out of which 148 male and 222 females were examined. 351 (95%) of them showed the sign of tooth wear. Prevalence of tooth wear was 95% for both males and females. More than half of the patients with tooth wear reported of having GI symptoms (54%). Patients who brushed twice daily (54.9%) and using soft (46.2%) and medium (43.5%) showed the sign of tooth wear. Patients lacking awareness of tooth wear was 64.9%. however, those seeking treatment was 68.9%. Chi Square test was applied for statistical analysis

Conclusion: Tooth wear is a common finding having higher prevalence in this population. Severity increased with progressing age group. Even though there was lack of awareness of the condition, most of them sought treatment for tooth wear.

Keywords: Awareness; Questionnaire, Seeking Treatment, Tooth wear

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INTRODUCTION

Tooth wear is a non-carious, non-traumatic, irreversible, multi-factorial destructive process of dental hard tissues. It results in the functional loss of tooth surface. The main etiology behind such lesion is dietary acids, teeth grinding habit, acid regurgitation from stomach and various lifestyle factors.[1]Tooth wear is broadly classified as attrition, erosion, abrasion and abfraction.[2]

Tooth wear usually leads to discomfort as well as sensitivity during eating, drinking or tooth brushing.[3] Untreated cases of tooth wear might result in pain, pulpal pathology, occlusal impairment, functional imbalance, esthetic problems which eventually renders tooth being non vital.[3] In the initial stage, tooth wear patients might not notice its effect, but later on, due to sensitivity or esthetic reasons, they get concerned. [3] The knowledge of multi-factorial character of tooth wear and its etiology is important for diagnosis and its management. [3]

The interest in tooth wear related studies seem to be increasing according to literature in dental science. [4] The incidence of such lesions varies in different places. Tooth wear indices are the only authentic measure to determine effects and changes in tooth structure due to non-carious lesions in large populations.[4] The literature review discloses various methods of tooth wear indices.

Qualitative methods of indices depend on clinical descriptions that can be more subjective and can be evaluated as mild, moderate, severe or extreme. Another approach is quantitative that depends on objective physical measurements like crown height, facets, depths of grooves. [5] In this study, Smith and Knight Tooth Wear Index (1984) was used.[5]

There is not much epidemiological study regarding tooth wear for Nepal. A study in Kathmandu Medical College conducted by Shrestha D and Rajbhandari P in 2018 shows that out of 364 individuals examined, the prevalence of tooth wear was 218 (60.1%) with no significant gender difference.[6] The tooth wear increased with increasing age group and was statistically significant.[6]

Nowadays, there has been a marked increase in the number of patients seeking treatment for tooth wear. Timely diagnosis and management of tooth wear lesions are important for overall wellbeing of the dentition. In order to manage tooth wear and its consequences, a thorough history, proper diagnosis, etiology and risk factors should be assessed.[6]

The objective of this study was to find out the prevalence of tooth wear in patients coming to the Department of Conservative Dentistry and Endodontics, KIST Medical College and to know whether the participants seek for treatment. The findings would be beneficial to plan the preventive and treatment modalities required for tooth wear.

METHODS

This is a cross-sectional study conducted in the OPD of Department of Conservative Dentistry and Endodontics KIST Medical College and Teaching Hospital Imadol during October 2019 to March 2020. The sample size of this study was determined using convenience sampling method.

A pre-tested questionnaire on demographics, dietary factors, oral habits and lifestyle was used.

A questionnaire was delivered to the participants to collect the data regarding demographic factors, awareness about tooth wear and their attitude towards treatment of tooth wear related problems and also about the etiology of tooth wear. Smith and Knight Tooth wear index (1984) was used to assess the tooth wear. The data was analyzed using Chi- square test with SPSS version 22.

Clinical examination of the oral cavity was done using a sterile mouth mirror, dental probe, tweezers and gauzes (to remove food debris if any) under operating light of the dental chair.

Participants in the age group of 18-70 years who gave written consent and those having more than or at least 20 teeth in the oral cavity were included in the study. Participants with full coverage crown, edentulous arch, those having less than 20 teeth in the oral cavity, pregnant and those not willing to participate in the survey were excluded from the study. Ethical approval was received from institutional Review Committee KIST (Ref. no :2076/77/19)

Table 1. Smith and Knight Tooth Wear Index (1984)

Score	Surface	Criteria
0	B/L/O/I C	No loss of enamel surface characteristics No loss of contour
1	B/L/O/I C	Loss of enamel surface characteristics Minimal loss of contour
2	B/L/O I C	Loss of enamel exposing dentine for less than 1/3rd of surface Loss of enamel just exposing dentine Defect less than 1 mm deep
3	B/L/O I C	Loss of enamel exposing dentine for more than 1/3rd of surface Loss of enamel and substantial loss of dentine Defect less than 1-2 mm deep
4	B/L/O I C	Complete enamel loss - pulp exposure – secondary dentine exposure Pulp exposure or exposure of secondary dentine Defect more than 2 mm deep - pulp exposure - secondary dentine exposure

Scores were given from 0-4 depending upon the severity of tooth wear. (Table 1)

B: Buccal, L: Lingual, O: Occlusal, I: Incisal, C: Cervical

RESULTS

Out of 370 patients (male:148 and female:222) examined, 95% patients showed sign of tooth wear. Mean age of the study subjects was 38 (SD ± 13) years. 148 patients were male and 222 were females. Tooth wear and gender: Prevalence of tooth wear was 95% for males and 95% for females. (Table 2)

Table 2. Prevalence of tooth wear in males and females

Sex	Total pts examined	Pts with tooth wear (n%)
Male	148	141 (95%)
Female	222	210 (95%)

Table 3. Prevalence of tooth wear in different age group

Age group	Total pts examined	Pts with tooth wear (n%)	p value
18-25	70	58 (83%)	<0.001
26-35	109	103 (94%)	
36-45	83	82 (99%)	
46-55	67	67 (100%)	
56-65	28	28 (100%)	
66-70	13	13 (100%)	

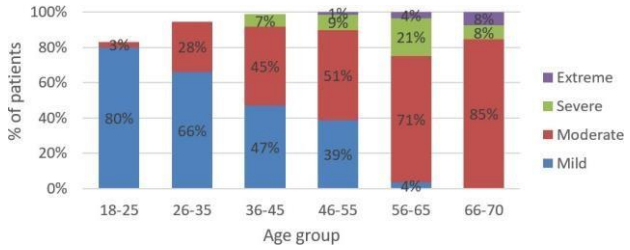

Figure 1. Prevalence of tooth wear in different age groups

Table 4. Tooth wear and brush frequency

Brush frequency	No. of patients (n%)	p-value
Once 1	167 (45.1%)	<0.001
Twice 2	203 (54.9%)	

Table 5. Tooth wear and brush type

Brush type	No. of patients (n%)	P-value
Ultra - soft	2 (0.5%)	0.006
Soft	171 (46.2%)	
Medium	161 (43.5%)	
Hard	36 (9.7%)	

Table 6. Gastrointestinal symptoms and tooth wear

GI symptoms	Severity (n%)						P-value
	None	Mild	Moderate	Severe	Extreme	Total	
Yes	9 (47.4%)	88 (45.4%)	85 (63.0%)	14 (73.7%)	3 (100.0%)	199 (53.8%)	<0.001
No	10 (52.6%)	106 (54.6%)	50 (37.0%)	5 (26.3%)	0 (0.0%)	171 (46.2%)	
Total	19	194	135	19	3	370	

Table 7. Tooth wear and patient's awareness

Aware	None	Mild	Moderate	Severe	Extreme	Total
Yes	5 (26.3%)	74 (38.1%)	41 (30.4%)	9 (47.4%)	1 (33.3%)	130 (35.1%)
No	14 (73.7%)	120 (61.9%)	94 (69.6%)	10 (52.6%)	2 (66.7%)	240 (64.9%)
Total	19 (100%)	194	135	19	3	370

Table 8. Patients seeking treatment and tooth wear

Seeking treatment	Mild	Moderate	Severe	Extreme	Total	P- value
Yes	153 (78.9%)	72 (53.3%)	14 (73.7%)	3 (100%)	242 (68.9%)	<0.001
No	41 (21.1%)	63 (46.7%)	5 (26.3%)	0 (0.0%)	109 (31.1%)	

The difference in gender was not statistically significant (p=0.132) Prevalence of tooth wear increased with aging (Table 3, figure 1). For 66-70years, 56-65 years and 46-55 years age, the prevalence was 100%, whereas for 26-35 years, it was 94% and 18-25 years 83%. The chi-square test between tooth wear and age showed significant association. (p=<0.001). Out of 370 patients, 167 (45.1%) brushed once daily and 203 (54.9%) brushed twice. The chi-square test between tooth wear and brush frequency showed significant association (p=<0.001). (Table 4) Out of 370 patients, ≈90% used soft to medium toothbrush. The chi-square test between tooth wear and brush type showed significant association. (p=0.006) **(**Table 5) Patients with more GI symptoms((heartburn / gastritis/ vomiting/ chest pain/ acid regurgitation reflux) had higher prevalence of tooth wear. The chi-square test between tooth wear and GI symptoms showed significant association. (p= <0.001).(Table 6) A total of 130 (35.1%) were aware of tooth wear whereas, 240 (64.9%) were unaware of the problem. The difference was statistically not significant (p=0.404).(Table 7) The patients seeking treatment for tooth wear was high (68.9%). It was highest in the extreme severity group (100%) and lowest in the moderate group (53.3%). Those not seeking treatment was found to be 31.1%. The chi-square test between tooth wear and patients seeking treatment showed significant association (<0.001).(Table 8)

DISCUSSION

Tooth wear is a multi-factorial process commonly involving various physical and chemical agent and considered a global epidemic [7,8]. This study was centered on the results of questionnaire followed by clinical examination. The overall prevalence of patients aware of the tooth wear was 95%.This study sought for the prevalence of patients for tooth wear and whether they want any treatment for the problem. If left untreated, tooth wear could be the risk factor for function, esthetics and longevity of dentition after acute trauma, dental caries and periodontal disease. [9,10,11]The prevalence of tooth wear increases with age. [12] When there is excessive tooth wear, it leads to the exposure of dentin, shortening of the tooth height, dentinal hypersensitivity, eventually leading to pulpal exposure, pulpitis and necrosis of the pulp, even leading to unattractive appearance. [13,14]Tooth wear was significantly high in the elderly that is in agreement with other studies. [15,16,17]

There was no difference between genders in the prevalence of tooth wear that was also found in other studies. [18,19,20]There was no relation between various brushing aids (toothbrush, neem stick, finger) and tooth wear that is similar to that of a Nigerian study. [21]Our study showed, patients who brushed twice daily (54.9%) had increased tooth wear than those who brushed once daily (45.1%). This is in accordance with a study done by Nayantara Sud. [22] This may be due to abrasives present in the toothpaste, due to faulty tooth brushing habit or extended time period of brushing.Similarly, type of tooth brush bristle had a significant relation with tooth wear. In our study, patients using soft (46.2%) and medium (43.5%) bristled toothbrushes had higher prevalence of tooth wear. This is in accordance with other study as well. [23]

Tooth surface loss was also found to be significant with those with gastrointestinal symptoms (heart burn, gastritis, vomiting, chest pain, acid regurgitation, acid reflux). Similar observation was found in other studies done in a dental clinic in Trinidad, West Indies. [24,25]General symptoms of GERD are heart burn, belching, but some patients might not experience any symptoms. Dentists need to ask specific questions regarding those symptoms. [26]There was no association with or without parafunctional habits like clenching, grinding, bruxism and tooth wear. This is in agreement to other studies. [27]

There was no association with tobacco use (pan, tobacco, betel nut, khaini, gutkha) and tooth wear which is in similarity with the study done by Sadaf *et.al.* [27]Though frequency of hard food and acidic food increases the risk of tooth wear, it was not significant in our study. This is in accordance with the study done in Nigeria and China. [28,29]

Oral habits play an important role in tooth wear. These may be in the form of repetitive behaviors in the oral cavity resulting in the loss of tooth structure. They might include brushing technique, parafunctional habits, dietary habits, gastrointestinal disorders.[30]Since creating awareness among patients about tooth wear and its risk factors is an important aspect for us despite being a challenge. In this study, there was no significance of tooth wear and awareness among the participants. Patients seeking

treatment for tooth wear related problem was 68.9%. Those seeking treatment for tooth wear was significant in this study. All of the patients with extreme severity of tooth wear wanted the treatment.

CONCLUSION

Since the etiology of tooth wear may be various physical or chemical factors, the findings of our study also indicate aging, brushing habits, type of toothbrush, GI symptoms, oral parafunctions like nail biting as a possible contributor to the occurrence of tooth wear. Though, the patients seem to be lacking awareness about tooth wear and its risk factors, we need to emphasize the importance of early diagnosis and treatment of tooth wear. When the severity increases, patient become more concerned about tooth wear and seek treatment.

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Original Article

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E-Learning during Covid-19 Pandemic: Experience of Teachers And Students in a Medical Institute in Nepal

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ABSTRACT

Introduction: Covid-19 has had a discernible effect on medical education globally. The higher education sector in Nepal was intensely affected by the pandemic. The necessity of educating medical students amidst Covid 19 was a challenge. The main challenges were safety issues against the highly contagious virus and adaptation to new innovative approaches to meet the education demands. Although worldwide e-learning had been well accepted and acclaimed, in Nepal it was not a popular method of teaching-learning until during the covid crisis when almost all of the medical institutions redesigned the pedagogy from physical didactic lectures to e-learning. This phase of crisis will have a long-lasting impact on medical education. Some students may experience drastic turning points in their career progression. This research paper aims to recognize the challenges of education, share the experiences of the teachers and students, and identify the advantages of e-learning in medical education during a crisis.

Methods: This is an Observational, qualitative, cross-sectional, descriptive, and analytical online survey done using google form at Kist medical college and hospital. The participants were undergraduate medical and dental students (Year I, year II, year III, and year IV) and faculty members.

Results: E-learning is a novel experience in Nepal, especially in the context of medical education. Only 15.2% of faculty had received formal training on conducting online classes and merely 12.1% of faculty had conducted online classes before the onset of the crisis. 70 % of the students already had exposure to the pedagogical method in comparison to only 42 percent of the faculties. A majority of faculties seemed to be unaware of this teaching-learning method.

Conclusion: E-learning cannot replace physical learning as it has its own limitations, however, there are certain advantages of e-learning like time-saving, addressing larger crowds over a wide range of geographical areas, during the situation like covid 19 due to safety issues. E-learning like any other pedagogical method has its norms and system, and requires adequate preparation and training, in regards to administrative, managerial, and technical beforehand to achieve adequate beneficial effects. e-learning encompasses a pedagogical approach that typically aspires to be flexible, engaging and learner–centred (one that encourages interaction)

Keywords: Covid-19; E-Learning; SARS COV-2 Medical education

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INTRODUCTION

The Covid 19 pandemic seeks for the safety of medical students and patients. Social distancing needed to be practised as an integral part of the prophylactic measures to limit the spread of the air-borne disease, which transformed the medical education from in-person to on-line. Amidst the uncertainty of the disease and the need to continue education, e learning was the only pedagogical method of choice during the pandemic. E-learning was not a popular method of teaching learning until the outset of covid pandemic in Nepal and many parts of the world. After the pandemic Nepalese medical education had the opportunity to explore the different aspects of the e learning. Many institutes researched and had innovative ideas on continuing online medical education. In contrary to the long held belief e-learning certainly proved beneficial. Not just in terms of conventional didactic type of teaching methods, e learning was implemented for various other purposes like webinars and assessments. As this method is still a novel idea for many teachers and students in Nepal, this study was done using the google form to gather experiences of the teachers and the students which can be used for improvement and development of e learning.

A 31-year-old student who had returned to Kathmandu, Nepal on 9 January 2020[1]from Wuhan, China was the first diagnosed case of Covid-19 in Nepal. Till 11 September 2021, Nepal had seen a total confirmed cases of 774,587with 10,903 deaths.[2] A lockdown was implemented across the country starting on March 24 to stop physical classrooms affecting the entrance tests, admissions, teaching, learning and assessments.

The pandemic caused chaos everywhere in the education sector, one of the worst-hit areas of education being medical. Apprehension related to the abrupt transition of the predominant didactic lecture method of teaching-learning to e-learning activities was evident. The challenges to be faced, the efforts to be put, unlearning and learning to adapt to a new method of teaching-learning, and to identify advantages of e-learning over didactic lecture formed the broader idea of the shift to the novice method of teaching in medical education in Nepal. Deploying new technology introduced tensions however, education, not technology, was the prime goal. It required creativity and adaptability in response to the specific and changing contexts in which it was used.

The practicals and clinical rotations are the most affected areas but around the world, many works of literature have been published with many innovative ideas and remedies. Nepali medical institutions quickly initiated the online education to continue the educational activities to prevent the academic delay. Imparting medical education via e-learning was a novice idea until then for all the medical institutes in the country. E-learning in a developing country like Nepal has many hurdles and challenges to face e.g. IT infrastructure/Technical support, Faculty's familiarity with the method and their training, students' access to computer/internet, internet speed, etc[3]. Another difficulty was assessment and the need to develop a new curriculum that incorporated e learning as a component.

Medical education has not been able to adapt to a rapidly altering educational system demanding for the flexibility in terms of change and transformation.[4]The Covid-19 crisis has been a

motivation for overdue innovation in the field of medical education.[2]

Time and again infectious diseases have affected the education system as the 2003 SARS infection that affected medical schools in several parts of Asia. Similar situations in the future are inevitable. The experience learnt can be future guidance.[5] This study included the experiences of both the teachers and the students during the E learning.

METHODS

This is an Observational, qualitative, cross-sectional, descriptive and analytical study done at KIST medical college and hospital. The participants were undergraduate medical and dental students (Year I,year II, year III and year IV) and the faculty members. Teaching learning activities were primarily done using the Zoom platform which provided with options like screen share, slide projection and white board. Each class was 45-60 minutes in duration. 10-15 minutes was allotted for discussion after every class. Random 80 MBBS and BDS students from the year I, II, III and IV participated. 28 basic sciences faculties also participated in the research study. Simple random sampling method was used for the purpose. Different sets of questionnaires were given to the faculties and the students. ***Inclusion Criteria:*** All the students studying in MBBS and BDS and the faculties giving consents to participate in the research study, categorised in two groups, students and faculties, who have been part of the e-learning during the Covid 19 pandemic. ***Exclusion Criteria****:*Any student/faculty who i) Has not been part of the e-learning ii) Did not give consent to participation iii) Wanted to withdraw their participation from the study.

Data collection was done using Questionnaires and survey was done with the aid of Google form. Microsoft excel was used as a data collection tool.

RESULTS

15.2% faculty had received formal training on conducting online classes and merely 12.1% faculty had actually conducted online classes before the onset of crisis. 70 % of the students already had an exposure to the pedagogical

Table 1.

E-Learning exposure before covid 19 pandemic		
Faculties	Yes	42%
	No	58%
Students	Yes	70%
	No	30%

Table 2.

Disadvantages of E-learning as perceived by the faculties
1. Ineffective
2. Non interactive
3. Students easily distracted
4. Difficult to assess the attentiveness of the students

Table 3.

Online assessment methods as perceived effective by the students	
Methods	Percentage
Multiple choice questions	40.5%
Viva	29.1%
Short answer questions	22.8%
Others	7.6%

Table 4.

Online teaching method perceived effective by the students
Interactive classes
Adequate use of audio visual aids, illustrative power point slides, white board, animation etc
Breaks in between sessions

method in comparison to only 42 % of the faculties, signifying the increase in trend of e learning even before the onset of covid 19 pandemic.

Most of the faculties believed e learning to be lesser interactive and effective (table). In terms of practical/clinical classes and assessment the method was perceived by almost all the faculties as of not much use.

However, 75.8 % of faculties realized that the institutional faculty training should incorporate e-learning as an integral part. Students predominantly used laptop and mobile phone together comprising 97.5% and around 2.5 percent of them used tablet/ipad (Fig.) 91 percent students relied on wifi whereas remaining 9% used mobile data to attend the class. Internet cost ranged from 500 nrs to 1800 nrs per month with maximum ranging over 1000 to 1500 nrs per month. Students preferred time per session was minimum 30 minutes and maximum 60 minutes.

They had different preferred methods of teaching learning for online methods as illustrated in the the table below (table). Students thought that discussion amongst teachers and students made the online classes effective. A proper use of audiovisual aid, power points, white board were well sought after.

The cause of frequent interruption of online classes were mainly bad internet connection followed by electricity cut off. Most of the faculties 94% believed that online classes are lesser effective than physical classes, likewise 91% of them believed that it is lesser interactive and 94 percent believed that keeping track of students activity is difficult during e-learning.

DISCUSSION

Covid-19, a pandemic is caused by a highly infectious virus with potentially deadly consequences that gave world a unique experience in terms of health, social, economical and educational aspects.[6] It presented practical and logistical challenges and concerns for patient safety, and can be source of infection spread even during the asymptomatic period.[7] Worldwide many research articles are published those share the experiences of schools and students, problems and their mitigations [8-11] The Covid-19 pandemic has caused an abrupt change within the social and academic sector. Medical education worldwide has been tremendously affected.[12] Natural calamities and disasters were experienced in the past when medical education wasn't significantly impacted, of course during those situations medical students extended voluntary help. During this situation, taking classroom lectures may well be potentially fatal to both the schools and students. The didactic lectures had to get replaced by safer teaching-learning activities to keep up the social distance between the learner and educators. Alternative routes were wanted to continue medical education whilst at the identical time reducing the untoward effects of the virus during the method.[13] Globally, health care professionals were using e-learning. Worldwide studies were conducted to spot the effectiveness of e-learning. Some studies showed the benefits of e-learning over the standard method [.12, 14, 6] Although, in our study faculties and students were not very happy with the e-learning, however, it maybe that the online method of teaching learning in terms of development is very much lagged behind, as shown by our study that more than 80 percent of faculties didn't have training on elearning pedagogy neither had any kind of experience or exposure. As correctly said by someone (anonymous) "eLearning doesn't just "happen"! It requires careful planning and implementation." Deploying new technologies usually introduces tensions. Amidst the difficulties to show and learn now, there are types of advanced technological solutions. An abrupt transition from the normal method to e-learning has some technical difficulties e.g. not all schools and students are tech-savvy or comfortable using the technology gadgets (Especially in developing nations). Many teachers in medical institutes in Nepal searched for training to control the e-learning activities.[10] Many are of the opinion that e-learning and assessment should be structured and designed in a way so on appear as similar as possible to face-to-face learning.[15] Online educational sessions are more flexible within the

context of your time and space. Technological solutions offer to show individual or group teaching and permit processing the individual student's responses in real-time. Zoom has been used widely as an internet meeting platform for education purposes offering the aforementioned advantages of web education over the traditional methods[13] likewise Zoom was the preferred online platform in our study. Online teaching sessions have some disadvantages, mainly related to technical issues e.g. they may be disrupted in areas with poor Wi-Fi or for college kids in countries with lesser internet facilities. Also, it has to offer training to the scholars and faculties who lack the knowledge to use it. Online classes may be a possible source of distraction for several students. Interaction amongst the participants might not be as interactive as during face-to-face sessions[16]. Similarly, the major problem encountered in our study was internet connection and electricity cut off. Shah et al. believed that in terms of greater flexibility, cost-effectiveness, time saving and flexibility, e-learning is superior to the standard method and allows conducting webinars and conferences with cosmopolitan participation[17] Wolanskyj-Spinner said 'In the context of patient- centred teaching, today's mandate to "flatten the curve" raises many questions which will reshape medical education(18). How can we train future doctors within the constraints of social distancing? Additionally, to web-based learning and digital content, can we simulate virtual patient encounters?' Similar concerns are also raised by Emanuel who advised that the update of medical education with the most effective use of obtainable technology through e-learning and modification of clinical training into competency- based models, instead of being time-consuming learning" [18,19.] The technological changes set by the COVID-19 pandemic have some beneficial changes in medical education and will be continued and preserved even after the crisis16. Pros and Cons of online learning.[20]

There are many varieties of literature from the various countries including from Nepal sharing their experiences during this pandemic. Questionnaires are going to be given to the teachers and also the students to record their experiences. Questionnaires regarding the assessment methods online also will lean on the scholars and teachers. Was the assessment taken helped the scholars in learning activities? Questionnaires like what could are done to boost the teaching-learning and assessment methods during e-learning classes? The future of those online taught medical students is intriguing. Especially the ultimate year students who will graduate soon after a really minimum hands-on training and clinical exposure. A real-time experience of the students' posts COVID-19 is studied. Will or not it is justifiable to coach doctors with lesser hands-on training? Attempts also will be made to spot the longer-term role of e-learning in medical education in a very developing nation like Nepal after the pandemic.

Advantages
Economic
Not space bound
Easy acessibility
Easy access to experts
Global interaction possible
Travel time saving

Major Disadvantages and limitations of E learning
Technical issues
Easy distractions and lesser participation
Lack of direct social interaction
Difficulty in learning communication and interpersonal skills
Difficulty in learning other skilled works
Difficulty in taking practical classes
Assessment difficulty

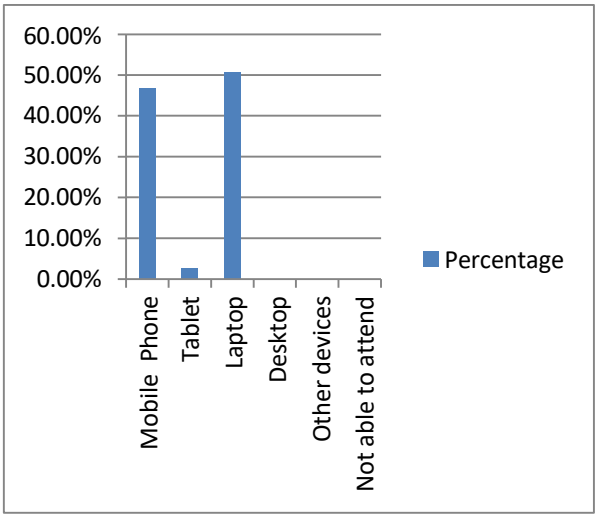

Figure showing percentage of E device used

CONCLUSION

This study showed that everyone believed that e learning was the best substitute for physical classes during the pandemic. E-learning should be done in a systematic way with an adequate preparation. E-learning is here to stay and done in the right way has many future opportunities and possibilities to offer. The disadvantages and limitations of e learning should be tackled with newer ideas and brain storming.

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Case Report

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Journal of KIST Medical College

Multisystem Inflammatory Syndrome In Children (MIS-C) with Seropositivity for Scrub Typhus and Leptosipra: A Case Report

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ABSTRACT

Multisystem inflammatory syndrome in children (MIS-C) is rare phenomenon that presents after corona virus disease 2019 (COVID-19). According to The Centres for Disease Control and Prevention, one important criterion in diagnosing MIS-C is to exclude other obvious microbiological causes. An 11-year-old boy presented with septic shock, elevated inflammatory markers and multisystem dysfunction. He had antibodies to SARS-CoV-2, Scrub typhus and Leptospira. The patient was initially treated with antibiotics, and other supportive treatments. Patient clinically improved before confirmation of MIS-C thus immunoglobulin and steroid therapy was not instituted. Diagnostic criteria of MIS-C includes absence of other alternative plausible diagnoses but in an endemic area for tropical febrile illness like Nepal, there is the possibility that MIS-C can co-exist with other infectious condition. Therefore there is need of re-evaluation of diagnostic criteria of MIS-C.

Keywords: Co-infection; COVID-19; Leptospira; MIS-C; Scrub typhus

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INTRODUCTION

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection despite being aggressive in certain groups, is typically mild and often asymptomatic in children.[1, 2] However, a rare phenomenon described as the multisystem inflammatory syndrome in children (MIS-C)[3, 4] can occur which predominantly affects children around 8.6 years.[4]

MIS-C ranges from mild illness to severe involvement of two or more organ systems with shock, with laboratory evidence of inflammation and laboratory or epidemiologic evidence of SARS-CoV-2 infection.[2,3]Severe physiological impairments necessitating an intensive care (ICU)is observed in the majority.[4] A surge in MIS-C has raised questions about the unique effects of SARS-CoV-2 in children.[5] The relationship of MIS-C to SARS-CoV-2 infection suggests that the pathogenesis involves post-infectious immune dysregulation.[3] However the inflammatory response in MIS-C differs from the cytokine storm of severe acute COVID-19.[2] Here, we report a child with typical features of MIS-C but had seropositivity for Scrub typhus and Leptospira.

CASE REPORT

An 11-years-old male child presented to outpatients (2021/01/17) with fever and neck swelling for five days. There were no other localising symptoms and signs and the vitals were normal. He had history of exposure to corona virus disease 2019 (COVID-19) positive individual but reverse transcription polymerase chain reaction (RT-PCR) for SARS-CoV-2 was negative. Ultrasonography (USG) of neck showed significant cervical lymphadenopathy (largest node 17mm X 8.7mm) which was thought to be reactive lymphadenitis secondary to bacterial infection. Hence child was prescribed Cloxacillin empirically but the fever persisted even after five days of the oral antibiotic.

Subsequently, he developed new symptoms: myalgia, headache, mild pain abdomen, anorexia, occasional vomiting with persistence of cough however the cervical lymph nodes had decreased in size. There was no history of chest pain, shortness of breath, or rashes. He was toxic looking, febrile, and had tachycardia, tachypnea and blood pressure less than third percentile (80/50 mmHg) for his age and sex. He also had decreased urine output for past 24 hours and warm peripheries. There was epigastric tenderness and tender hepatomegaly (liver palpable 5cm below subcostal margin with span of 14cm). There were no signs of meningeal irritations nor splenomegaly. The child was admitted to an ICU with septic shock (differential diagnosis; enteric fever, bacterial sepsis, MIS-C). He was resuscitated with fluids and nor-adrenaline support (0.1mcg/kg/min) following which blood pressure stabilized. He was treated with Meropenem 20mg/kg /dose (8 hourly) in view of severe sepsis and Azithromycin (20mg/kg) to cover rickettsial diseases empirically.

There was leucopenia (3200/cumm with neutrophil 57% and lymphocyte 43%), with normal haemoglobin and platelets. Repeat RT-PCR for SARS-CoV-2 was negative. Chest X-ray showed infiltrates on lower zone of right lung. Liver function was deranged (bilirubin total 1.8 mg/dl, bilirubin direct 1 mg/dl, aspartate aminotransferase 522 IU/L, alanine aminotransferase 371 IU/L) however renal function test, prothrombin time and international

normalized ratio was normal. The inflammatory markers:C-reactive protein (CRP) (156.34 mg/L), erythrocyte sedimentation ratio (ESR) (11mm/hr), procalcitonin (3.78ng/ml), D-dimer (8.2 ug/dl), serum ferritin (950ng/ml) and lactic acid dehydrogenase (LDH) (1719 IU/L) were all elevated. Serum Anti SARS-CoV-2 total antibody serum was detected (41.31 COI), which with other features confirmed diagnoses of MIS-C. The child had persistent epigastric pain with tenderness but serum amylase was normal (63 IU/L) and USG showed only thicken gall bladder wall. The child had intermittent episodes of asymptomatic bradycardia which resolved spontaneously. Electrocardiography and creatinine phosphokinase myocardial band was normal. Echocardiography showed normal left ventricular function and normal coronaries. Blood and urine cultures was negative. The child had persistent high grade fever for 3 days refractory to antipyretics therefore tests for tropical illness were sent. Malaria and dengue were negative. The child improved clinically after fourth day. Inotrope was gradually tapered. The child became afebrile and inflammatory markers were normalized by the time the report of serum Anti SARS-CoV-2 total antibody test was received. Therefore, immunoglobulin or steroids therapy was not instituted, moreover echocardiography was normal. Similarly reports for Scrub typhus and Leptospira was received after significant clinical improvements. Scrub typhus IgM (immunoglobulin) serum (ELISA-enzyme-linked immunosorbent assay) was positive (4.2 U/ml) and Leptospira IgM serum (ELISA) was positive (16 U/ml). Further interventions was not carried out as patient was already being treated with Azithromycin and was clinically better. The child was discharged on tenth day of admission and followed up closely for three month. Repeat echocardiography was normal. Child didn't showed any residual effects, though chest computerized tomography (CT) scan was never done.

DISCUSSION

The Centres for Disease Control and Prevention (CDC) has provided a case definition for MIS-C and one of the criteria is that there should be no other alternative plausible diagnoses.[6]

Our case was 11-year-old boy with high grade fever and elevated inflammatory markers. He had dysfunction of cardiac (tachycardia and hypotension requiring inotrope support), gastrointestinal (loose stool, vomiting, and severe abdominal pain), respiratory (tachypnea, cough), and renal system (decrease urine output) thus was admitted in ICU. Our patient had detectable antibody for SARS-CoV-2 however, IgM for Scrub typhus and Leptospira were also positive. In diagnostic criteria of MIS-C, one important criterion is to exclude other obvious microbiological causes. But in our patient, it was a diagnostic dilemma as all the criteria were met except for absence of other microbiological causes. Should diagnosis of MIS-C be completely discarded based on the given definition and treatment only focused on alternate infectious condition? Or was this case incidental co-infection? Or this was case of false seropositivity with Scrub typhus or Leptospiral antibodies. Therefore focusing in treating MIS-C is a clinical and circumstantial challenge. Could this clinical condition be attributed to serological cross-reactivity, incidental co-infection, or perhaps signifies serological positivity of Scrub typhus and Leptospira in endemic regions that poses unique challenge of differentiating and managing these disease entities together.

There are no literature that advocates cross-reactivity of MIS-C with Scrub typhus and Leptospira therefore it can't be said with certainty that this was the case of cross-reactivity. But cross-reactivity between the dengue virus and SARS-CoV-2 has been reported to be possible and has been attributed to false-positive serology among COVID-19 patients and vice versa.[7] Serological cross-reactivity between SARS-CoV-2 and Zika virus was also observed. [8]

An Indian guideline suggest possibility of co-infection of COVID-19 with Scrub typhus, Leptospira, Chikungunya, Dengue, Malaria and even bacterial infection.[9] If co-infection with COVID-19 is possible then why should we not consider same in MIS-C? Can co-infection with COVID-19 result into MIS-C with persistence of antibodies for infectious condition like Scrub typhus and Leptospira. These seasonal epidemic-prone diseases, may all present as a febrile illness, with symptoms mimicking COVID-19 [9], and they also have multisystem manifestation thus may also mimic MIS-C which also presents as febrile illness.

As Nepal is an endemic region for tropical and shares border with India, Indian guideline can be adapted in absence of local guideline. Therefore MIS-C should be considered when symptomology similar to tropical febrile illness appears.[10] In an seroprevalence study in India which is also endemic region for similar tropical illness like Nepal, among 91 COVID-19 seropositive patient, 11 has co-infections of which 5 had co-infection with Scrub typhus. Among 44 seropositive MIS-C, 11% (5) had co-infection. [11]

It is paramount to be familiar with MIS-C owing to its severity and consider it as differential diagnosis, even in cases where classic diagnostic criteria are not initially fulfilled.[12] This case report aims to showcase that MIS-C may mimic a more routine diagnosis. Pediatricians in developing countries need to be aware of the overlapping feature of MIS-C with tropical fevers in order to early recognize and treat the condition.[10]

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Case Report

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Journal of KIST Medical College

Jejunojejunal Intussusception causing Intestinal Obstruction with Anastomotic Site as Lead Point

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ABSTRACT

Intussusception is a condition in which a segment of the intestine invaginates into the lumen of an adjacent segment of the intestine. Adult patients presenting with intestinal obstruction due to intussusception is rare. We present a case of a 35-year old male,who presented with features of intestinal obstruction due to intussusception , lead point being previous anastomosis site on jenunum.

Keywords :Jejunojenunal Anastomosis;Intestinal Obstruction;Intussusception

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INTRODUCTION

Intussusception is a condition in which a segment of the intestine invaginates into the lumen of an adjacent segment of the intestine.Intestinal intussusception in adults is considered a rare condition, accounting for 5% of all cases of intussusceptions and only 1%-5% of intestinal obstruction[1,2] The clinical presentation of intussusception in adults can be nonspecific, with the pathognomonic clinical picture rarely seen. As the symptoms are nonspecific, intermittent, and subacute in nature, diagnosis is usually missed in adults.[1,3] Though most cases of intestinal obstructions in adults are caused by structural lesions, commonly malignant neoplasms, intussusception is a vital differential to consider.

Intussusception is a rare cause of postoperative intestinal obstruction in adults.[2,4,5] We present a case of an adult male presenting with intestinal obstruction due to jejunojejuenal intussusception in the postoperative period following resection and anastomosis of Gastro-Intestinal Stromal Tumours from the jejunum.

CASE PRESENTATION

A 35-year old male presented with complaints of multiple episodes of vomiting, pain abdomen and absolute constipation for 4 days. He had undergone resection of Gastro-Intestinal Stromal Tumor (GIST) of jejunum 20 cm from ligament of Treiz with jejunojejunostomy one month ago.On abdominal examination, a palpable mass felt over the upper abdomen, with visible peristalsis. All lab investigations were within normal limits and a plain X-ray of abdomen didn't show an air-fluid level. A computed tomography scan (CT scan) of the abdomen showed bowel within bowel configuration forming concentric rings suggestive of target lesions, slight dilation of small bowel(3.2cm) proximal to this area suggestive of intussusception. (Figure 1)

After initial management of the condition, an exploratory laparotomy was performed. An intussusception at a previously operated jejunojejunostomy site around 20cm from Duodenojejunal flexure. junction with adhesion of proximal and distal bowel loops was found intraoperatively.(Figure 2) Resection of intussusception with jejunojejuenal anastomosis was done. The histopathological report of the resected segment showed an intussusception is with Chronic inflammation with giant cell reaction to suture material.hypertrophic cells at the anastomosis site. After one month of follow-up, the patient was doing fine. He had an uneventful post-operative period.

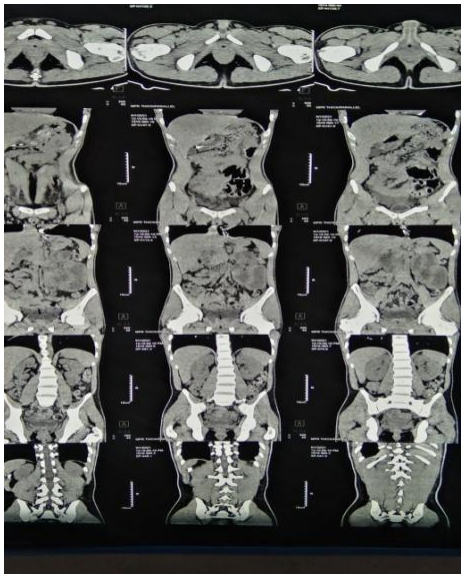

Figure 1. CT Scan showing

the proximal jejunojenunal intussusception

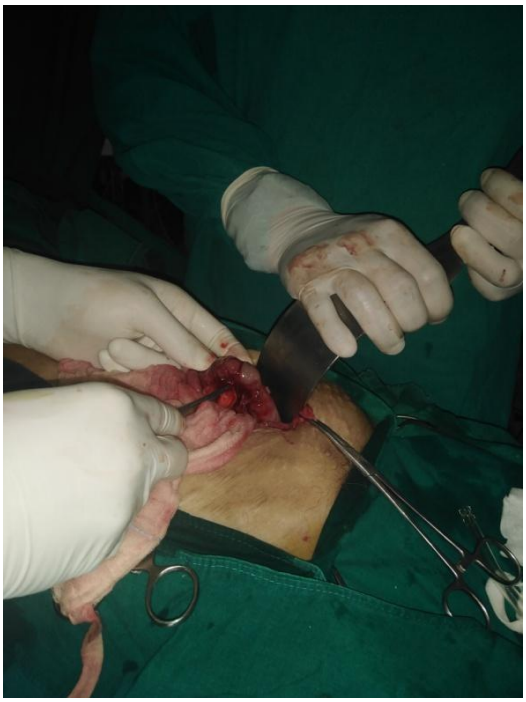

Figure 2. Intra-operative picture showing

Jenunojejunal Intussusception at previous anastomis site .

DISCUSSION

While intussusception is a rare clinical entity in adults, the condition is almost always secondary to a definable lesion.[6] Inflammed mucosa or mass lesions could act as lead point which results in hyperperistaltic movement leading a segment of the bowel to telescope into the adjacent distal bowel lumen.[7] 90% of cases of intussusception in adults are due to organic and pathological conditions like inflammatory bowel disease, Meckel's diverticulum, iatrogenic causes, or many benign or malignant lesions serving as a lead point; while about 8-20% of cases are are are without a lead point.[1] In our case, postoperative inflammation of the intestinal wall or suture line adhesions around the anastomotic site was the cause of intussusception, serving as a lead point.

Intussusception following abdominal operations is established as a well-known cause of intestinal obstruction in the pediatric age group but is rarely considered in adults.[8]Post-operative intussusception in adults has been recognized as a distinct entity and few cases had been reported. Intussusception from the site of anastomosis site after resection of the intestine is extremely rare

with abnormal motility in proximity to duodenal flexure and larger diameter acting as probable predisposing factors.[4] In our case resection of GIST was followed by jejunojejuenal anastomosis.

In the age group 45-50, idiopathic postoperative intussusception may occur around 4th or 5th postoperative day, especially the jejunojejunal type; whereas intussusception with predisposing factors like suture line adhesions may have late presentation.[9] Suture line adhesion could be a probable cause in our case; thus the presentation was late, i.e. one-month postoperative period.

A high index of suspicion is necessary for its early detection of intussusception presenting with intestinal obstruction in postoperative period following resection anastomosis. The classic clinical triad of conventional intussusception consisting of abdominal pain, palpable sausage-shaped mass, and “currant-jelly” stools are rarely present and the most important symptoms are vomiting and abdominal distension.[8] In our case, there was a typical feature of intestinal obstruction like abdominal pain, vomiting, unable to pass stool, and flatus. A palpable abdominal mass was also present. This led to a high degree of suspicion and early diagnosis.

In a study of 25 cases of adult intussusception, the underlying pathologic processes were identified in 92% of patients in which tumor-related was 52% and the postoperative cause was found in 36%. Various factors like suture lines(end-to-end, end-to-side, and Roux-en-Y types), oversewn ileum in jejunoileal bypass, closure sites, long intestinal tubes, electrolyte imbalance, chronic dilatation of bowel, etc were associated with postoperative intussusception. Jejjunogastric (4%), jejunojejunal (28%), ileoileal (16%), ileocolic (40%), and colocolic (12%) were the sites involved in intussusception.[8] Matsumoto et al. reported two cases of postoperative intestinal obstruction due to jejuno-jejunal intussusception at the site of anastomosis after harvest of a free jejunal graft. Early bowel obstruction and resection of the anastomotic site and re anastomosis (side to side) were needed in both cases.[5] The same study reported another literature where eight cases of post-operative intussusception occurred after a free jejunal transfer where jejuno-jejunostomies in an end-to-end fashion by the Albert-Lembert method was performed, which acted as a lead point in all cases. All patients underwent reoperation, and almost all of the patients required bowel resection.[5] in our case the lead point was the anastomosis site and the patient underwent resection of the jejunal gastrointestinal stromal tumour a month back. Literature suggests that reconstruction by Albert-Lembert end-to-end anastomosis should be avoided to prevent the occurrence of postoperative intussusception.[5] Instead, Single-layer or side-to-side anastomosis could be a safer alternative to prevent the rare complication of anastomotic site intussuception.[4]

Computed tomography (CT scan) is the most sensitive diagnostic modality in the diagnosis of intussusception [1,10]and can distinguish between intussusceptions with and without a lead point.[1]Wang et al. conducted a study of 44 intussusceptions wherein, 65.9% of intussusceptions were diagnosed preoperatively using a CT scan (90.5% accurate) and ultrasonography (60.0% accurate, rising to 91.7% for patients who had a palpable abdominal mass). [11] Therefore, ultrasonography is also helpful for diagnosis in the case of a palpable abdominal mass.[11]Ultrasound, CT scan, and oral barium contrast examination have been found helpful in the diagnosis of postoperative intussusception. [8]In our case CT scan was diagnostic.

In contrast to pediatric intussusceptions, which are managed nonoperatively, [3]operative management is almost always necessary in adults.[6]Transient asymptomatic enteric cases may resolve spontaneously; however, surgery is indicated in complete and persistent bowel obstruction.[2]

Surgery is the definitive treatment of adult intussusceptions because adult intussusception is often frequently associated with malignant organic lesions.[1,7] Formal resection of the involved bowel segment is usually definitive treatment.[1,3,7] To limit the extent of resection and/or prevent short bowel syndrome, reduction may be attempted in certain cases.[1] In intussusceptions occurring postoperatively after bowel resection and anastomosis when cause is the anastomotic point , reduction might be attempted , but in our case, resection of intussusception was done taking into account for recurrence in future.

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Book Review

E-mail :info@kistmcth.edu.np I www.kistmcth.edu.np
Journal of KIST Medical College

Principles of Health Science Research:Key Concepts and Methods for Health Care Professionals by Mohan Raj Sharma

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When I look back to my post-graduate residency days, we had dearth of good books regarding how to carry on research in proper way . Thanks to training conducted by Nepal Health Research Council back then which put the insight into the subject to some extent. Most of the time,our mentors and seniors guided us .I always felt a lack of concise help book on research which contained all the aspect of research in simplified terms to help the novice researcher . Nearly twenty years later, this book “Principles of Health Science Research” written by Prof. Mohan Raj Sharma ,in my hand was what I was looking for back then. I feel grateful to the author who must have worked so hard through erudite tomes of research to bring forth this amazing consice and comprehensive book on health science research. The author himself clearifies the objective of writing the book is to bust the myth of the research process so that everyone can carry it out safely and effectively.

There are eight sections in the book with with 25 chapters.Section one with two chapters, explains overview of health science research and research process. It has a fascinating brief description of world history of health research ,and of types of research with examples as quantitative research and qualitative research.The diagrammatic representation of the research cycle has depicted the stages of basic research regardless of subject area . This fundamental concept has been nicely explained as stages beginning with indentifying the problem , reviewing the literature , setting research question, objectives and hypothesis, choosing the appropriate research design, collecting the data, processing and analyzing data and reporting the results. In fact, this book is all about explaining concisely all these topics and serves as excellent handbook for novice researchers as well as experts for refreshing the topics as part of review of the articles.

In section two, elements of research proposal has been explained lucidly with Gantt chart work plan. This will be helpful for submitting the proposal in institutional review committee.I hope that Post Graduate residents will have great help from this chapter.

Many of us have problem formulating the study designs. It depends upon the types of research questions whether it is observational or interventional. The beauty of the book is the examples given with easy to understand diagrames.of research designs such as cross sectional studies, case-control study or cohort studies or randomized control trials.Critical appraisal of the literature in section four will definitely help reseachers to find out good quality references for their own quality of research work .

Health researchers usually have problems dealing with sampling and sample size calculation. Author has tried to solve this big problem in section five elaborating sampling methods and basic principle of sample size calculations for common research designs with examples such as if a researcher is interested in knowing the average weight of college students in a city. I strongly recommend health researchers to get help from biostatistician at the very beginning of conducting research regarding the sampling methods and sample size calculation. Author has mentioned two important software tools like Epi Info (www.cdc.gov?epiinfo/index.html) and openepi (www.openepi.com) which I think is very handy at sample size calculation and statistical analysis on our own. You should try it !

Reporting result is most cumbersome part of a research when data is in hand. It is a complex process. The bulk of the book is focussd on statistical concepts such as types of data, descriptive statistics, data visualizaion, inferential statistics, statistics to test confidence,significance of diffences and compare risk, statistics to analyze relationships, diagnostic accuracy and survival. The use of figures, tables, pie charts, bar diagramms adds to grasping the concepts. This chapter is full of terminologies which readers might find difficult to understand and needs re-readings. Ethical issues in health search is a major concern and because of this, reseachers find their proposal not approved timely .There are practical tips given in section seven to address this issue. Lastly section eight highlights dessimination of research findings.

There is no doubt that this book will provide a simple step by step approach to conducting , analyzing and reporting research. There are practical pearls and references at the end of each chapter. Being a professor and head of department of neurosurgery and chairperson of institutional review committee at the institiube of medicine, Dr. Mohan Raj Sharma has specialized in Epidiomogy and Biostatistics in public health practice from Johns Hopkins University. Having extensive experiece in research proposal reviews, research methodolgy training and journal editing, this book is an example of his research acumen.I have found him an avid enthusiast for promoting research in the country. I m sure this book will significantly glorify p value of your understanding of key concepts and methods of health science research.

About the book:

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