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Editorial

Artificial Intelligence and Medical Science: Present Perspective

Ahmmad Taous

Introduction

Artificial Intelligence (AI) is a branch of computer science that has extensive and diversified scope of work, concerned with building smart machines capable of performing tasks that typically require human intelligence. Some applications of AI include automated interfaces for visual perception, speech recognition, decision-making and translation between languages. It is an interdisciplinary science.

Extended healthcare services nowadays contains huge amount of data and it rises! So AI becomes more relevant in healthcare sector. Several types of AI are already being employed by payers and providers of healthcare. The key categories of applications are patient engagements and adherence, diagnosis, treatment recommendations, drug discovery as well as administrative activities.

It is widely accepted that the term AI was first thought in 1956 when American computer scientist John McCarthy *et al*. organized the Dartmouth Conference. It came forward when Turing test proposed by Alan Turing as a measure of machine intelligence and a chess-playing program written by Dietrich Prinz.

Artificially intelligent systems in healthcare have the following typical pattern. Such a system starts with a large amount of data; on these data machine-learning algorithms are employed to get information which is to generate a more data to solve a problem in the healthcare system. It also include matching patient symptoms to appropriate physician for their diagnosis, prognosis of disease, drug discovery, translate languages, organize and interpret different images and files.

Discussion

AI systems to apply to drug discovery and doctors personal treatment planning were contents of huge amount of research! Companies, such as Verge Genomics, focus on the application of machine-learning algorithms to analyze human genomic data and identify drugs to combat neurological diseases, such as Parkinson's, Alzheimer's, amyotrophic lateral sclerosis (ALS) in a cost-effective way.

Many companies such as Bot MD have built systems that can help patients with clinical issues regarding:

- Instantly finding which physicians are on call and scheduling the next available appointment; the AI system can also search multiple scheduling systems across different hospitals
- Answering prescription related questions, like drug availability and cost-effective alternative drugs
- Assisting doctors search hospital protocol, list of available clinical tools and available drugs all through the use of a mobile application, thus improving workflow in the hospital.

The most recent application of AI in global healthcare is the prediction of emerging hotspots using contact tracing and flight traveler data to fight off the novel Coronavirus (COVID-19) pandemic.

Artificially intelligent systems is used for diagnosing some specific disease of patients like dematological conditions which can be diagnosed by physicians visual efficiency, medical data of radiological films are processed and analyzed by artificially intelligent machine system. In ophthalmological fields of research, much work has been done. Researchers at Google developed and trained a system using 128,175 retinal fundus images to classify them into diabetic retinopathy and macular edema for adults with diabetes. Here the AI model shows several advantages such as:

1. Automated grading of diabetic retinopathy leading to increased efficiency in diagnosing many patients in shorter time;
2. AI can give second opinion to the Ophthalmologist as assistant to him!

3. Early detection of diabetic retinopathy due to capability of the model to study images at the granular level which is rarely possible for a human Ophthalmologist!

There is virtually no area in medicine and care delivery that is not already being touched by artificial intelligence!

Contact tracing is a disease control measure used by government authorities to limit spread of a disease. Contact tracing works by contacting and informing individuals that have been exposed to a person who has contacted the disease. Then they are advised to be quarantined or isolated to prevent further spread of the disease. As reported by Apple Newsroom, tech giants like Google and Apple have joined forces to create a contact tracing platform that will use AI systems through the use of application programming interfaces. That interface is programmed in the smartphones to reach the users. Location services of Smartphones are then allowed in the vicinity of the infected person which ultimately reported to government health system.

BlueDot, a Canadian company works in health sector. They first published scientific article on AI and ML that can accurately predicted worldwide spread of the virus. They also used other techniques like natural language processing (NLP). About 100,000 articles from over 65 countries analyzed searching travel information and flight paths, an area's climate, temperature and even local livestock to help predict future outbreaks.

Despite the limitations, AI looks well positioned to revolutionize the healthcare industry. AI systems can help free up the time for busy doctors with follow-up care and availability of prescription drug alternatives. AI also has the capability of remotely diagnosing patients, thus extending medical services to remote areas, beyond the major urban centers of the world. The future of AI in healthcare is bright and promising, and yet much remains to be done.

There are many negative effects of modern technology on mental health. However, researchers at the University of Southern California (USC) in collaboration with Defense Advanced Research Projects Agency and the U.S. Army found that people suffering from post-traumatic stress and other forms of mental anguish are more open to discussing their concerns with virtual humans than actual humans for fear of judgment. This research has promising results for the role of virtual assistants resulting in the collection of honest answers from patients that could help doctors diagnose and treat their patients more appropriately and with better information.

Most global pharmaceutical companies have invested their time and money on using AI for drug development of major diseases, such as cancer or cardiovascular disease. Apart from these, AI is incorporated into some sleep medicine software solution. This network approach detect sleep pattern more accurately and predict sleep apnoea markers and can score the sleep apnoea indicators. The FDA now incentivizes companies to develop new treatments for these diseases on priority basis. It should be included in medical curriculum because the cost of a wrong decision can be fatal. The data used to learn from and the optimization strategy used has a deep impact on the applicability of the AI system to solve a particular problem.

In the next decades, AI will integrate more with electronic and digital medical records in the analysis of outcome and risk or benefit of any treatment modalities. While the evolving use of artificial intelligence will continue to play a crucial role in patient outcomes, of course the patients treatment plan will always be in human hands

Conclusion

The ongoing development in AI and ML has significantly improved treatment, medication, screening, prediction, forecasting, contact tracing, and drug/vaccine development process for the Covid-19 pandemic and reduce the human intervention in medical practice. Success of AI during this pandemic encouraged the medical experts to use its skill to handle human disease, its diagnosis, risk detection and drug discovery. But it is not widely used by the clinicians, so adoption of AI in clinical practice needs further development.

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Original Article

Percutaneous Dilatational tracheostomy: an Observational Study at Birat Medical College and Teaching Hospital, Kathmandu, Nepal

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Keywords: Bleeding, percutaneous dilatation tracheostomy, premature extubation, prolonged intubation

Abstract:

Background: *Tracheostomy is the most commonly performed procedure worldwide. It is mainly done in the critically ill patients requiring long term ventilation, facial trauma, laryngeal fractures, laryngeal malignancy, etc. Converting from endotracheal intubation to tracheostomy has many benefits in terms of maintaining the laryngeal function, feeding, safety and it is more comfortable than endotracheal intubation. Tracheostomized patients requires less analgesics and sedatives. It also helps in easier and early weaning from mechanical ventilator, possibility of speech, initiation of oral intake of medication. This all contributes to shorter ICU stay and hospital stay which becomes more cost effective.*

Methods: *This is a prospective observational study that was conducted in the 22 bedded neuro intensive care and medical intensive care unit of Birat Medical College and Teaching Hospital. The data were collected from 1st Aug 2021 to 28th Feb 2022. All the patients needing tracheostomy for prolonged intubation, protection of airway and to maintain tracheobronchial toileting was taking under study.*

Results: *Our study was a prospective observational regarding percutaneous dilatational tracheostomy. A total of 71 patients were included in the study. Out of which 39(54.9%) were male and 32(45.1%) were female with the ratio of (1.2:1). The age of the patients ranged from 18-82 years with the mean age of 53.25. The most common indication of percutaneous dilatational tracheostomy was prolonged intubation and that accounted for 29(40.8%) of the patients which was followed by airway protection 27(38%) patients and to maintain the pulmonary hygiene was seen in 15 (21.1%) patients.*

Conclusion: *Tracheostomy is among the most frequently performed procedures in critically ill patients. Percutaneous dilatational tracheostomy is a safe and feasible procedure performed at bedside with minimal invasive technique in ICU.*

Introduction

Tracheostomy is the most commonly performed procedure worldwide.[1] It is mainly done in the critically ill patients requiring long term ventilation, facial trauma, laryngeal fractures, laryngeal malignancy, etc. Converting from endotracheal intubation to tracheostomy has many benefits in terms of maintaining the laryngeal function, feeding, safety and it is more comfortable than endotracheal intubation. Tracheostomized patients requires less

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analgesics and sedatives. It also helps in easier and early weaning from mechanical ventilator, possibility of speech, initiation of oral intake of medication. This all contributes to shorter ICU stay and hospital stay which becomes more cost effective.[2-4]The other advantage of percutaneous tracheostomy is it can be done in bedside and there is no need of transferring unstable and critically ill patients to the operating room. This method becomes cost effective and time effective in terms of use of manpower and equipment required.[5]

Shelden and his colleagues first reported percutaneous tracheostomy in 1955.[6] Several tracheostomy techniques have been described as percutaneous.[6,7] Several methods of percutaneous techniques came into practice. But the most popular technique which is being practiced was described by Ciaglar[8] as it performed rapidly and safely at the bedside.In the past open surgical tracheostomy was the only method and is one of the oldest known procedures known to mankind. Only after 1985, percutaneous dilatation tracheostomy was popularized and it became an alternative to traditional open surgical tracheostomy.[9]

The aim of this study is to record the learning curve, operative time, safety, complication and different hemodynamic parameters of the body during the percutaneous tracheostomy.

Methods:

This is a prospective observational study that was conducted in the 22 bedded Neuro Intensive Care and Medical Intensive Care Unit of Birat Medical College and Teaching Hospital, Kathmandu, Nepal. The cases were collected from 1st Aug 2021 to 28th Feb 2022.The written and informed consent for the inclusion in the study was taken from close patient's close relatives. Approval for the study was obtained from Institutional Review Committee.

The inclusion criteria for tracheostomy were patient requiring tracheostomy while the patients having any form of previous radiation of the neck, infection at the site of tracheostomy, age less than 18 years, bleeding diathesis, neck mass, history of neck surgery, patient with cervical injury and emergency tracheostomy were excluded from the study group.

Smith medical portex kit was used for the procedure. The procedure was done under the supervision of an anesthesiologist. Adequate sedation with midazolam or propofol and adequate analgesia with intravenous fentanyl were given to achieve anesthesia. Routine monitoring including ECG, heart rate, blood pressure and oxygen saturation were done.

The patient was positioned in supine position with head extension which was maintained by sand bag in the back of patient. Before the procedure the tube was pulled back such that the tip of the endotracheal tube was located just at the level below the vocal cord with Murphey's eye below the cord. The tube was then re fixed with tape.

Appropriate size percutantous dilator (no. 7,7.5,8) was selected for the patient. The site for percutaneous puncture was marked two finger above the sternal notch and was painted and draped. Injection 2% lignocaine with adrenaline (1:80000) was injected at the marked site. A horizontal incision up to the subcutaneous fascia was given and after that arteyforcep was used to split underlying tisse. A fourteen-gauge needle was used to locate the trachea and was confirmed by sudden loss of resistance and gush of air in the syringe. Once the needle sheath is inside the trachea, the guide wire was inserted till the white marking on the guidewire followed by A fourteen-gauge needle was used to locate the trachea insertion of the short dilator. The short dilator was removed leaving the guidewire in situ and the long guiding catheter was passed over the guidewire into the trachea in the direction of the arrow marked on the catheter. A well lubricated 'single stage dilator' passed over the guiding catheter until it reached the safety stop. Finally, the dilator was removed and well lubricated tracheostomy tube loaded on its introducer over the guiding catheter through the stoma with a slight twisting motion. The tracheal tube position was then finally confirmed by capnography. After that the tube was connected to mechanical ventilator.

Results:

Our study was a prospective observational regarding percutaneous dilatational tracheostomy. A total of 71 patients was included in the study. Out of which 39(54.9%) were male and 32(45.1%)were female with the ratio of (1.2:1). The age of the patients ranged from 18-82 years with the mean age of 53.25.

The most common indication of percutaneous dilatational tracheostomy was prolonged intubation and that accounted for 29(40.8%) of the patients which was followed by lower airway protection

27(38%) patients and to maintain the tracheo-bronchial toileting was seen in 15 (21.1%) patients.

The intraoperative and post operative complication was noted. Bleeding was the most common complication seen and it accounted for 9(12.7%) patients. Thisbv was managed during the interoperative period by applying pressure and suture. Seven patients were managed by pressure while two patients needed suturing. Five patients had stromal site infection. This was because of the excessive secretion and poor tracheostomy care. Stomal site infection was managed with daily dressing and applying dry Neosporin powder. Premature extubation was seen in four patients which was managed by reinsertion of portex tracheostomy tube.

Tracheostomy in faculty passage was seen in 3(4.2%) cases. This complication was noted immediately through capnograph. Transient hypotension was seen in 2 (2.8%) patients who was managed accordingly.

Tubal blockage was seen in 2 (2.8%) cases. This was managed by immediate removal of the tracheostomy and reinsertion of new tracheostomy tube in situ. Two patients had pneumothorax which was managed by insertion of chest tube by surgeons. Similarly, two patients showed tracheoesophageal fistula which was managed conservatively by inserting feeding tube and the patients was kept nil per orally for 7 days. While 42(59.2%) didn't have any kind of complication during the procedure and throughout their hospital stay.

The operating time for percutaneous dilatational tracheostomy was noted. The minimum time noted was 5 minutes while the maximum time noted was 25 minutes. The mean operating time was 11.87. The heart rate ranged from 78-122 beats per minutes with the mean of 93.97. The mean arterial pressure was between 61-110 mm of Hg with the mean of 84.34 during the procedure.

Discussion:

The purpose of our study was to find out the efficacy, operating time, complication and different hemodynamic paraments of the body during the percutaneous dilatational tracheostomy. The main advantage of percutaneous dilatational tracheostomy is the ability to perform it at the bedside in the ICU, thus avoiding a potentially hazardous transfer of critically ill patients to the operating room.

PDT has been shown to reduce significantly the cost of tracheostomy compared with surgical tracheostomy. The incision for percutaneous tracheostomy is relatively smaller compared to open surgical tracheostomy. The portex tracheostomy tube is fitted tightly against the stroma so that there is less tissue dissection and less damage to the tissue in PDT procedure. The advantages being shorter hospital stay and long term follow up studies who underwent PDT in terms of complication and aesthetically more favorable scar.[10-12]

A study conducted by Kearney et al[13] found out the perioperative complication was seen in 6% of the cases and premature extubation was the most common complication. Early postoperative complication in form of bleeding was seen in 5% of the cases. While in our study bleeding was the most common complication which was seen in 9(12.7%) of the patients. Early postoperative complication in form of bleeding was seen in 5% of the cases. The mortality rate was 0.6%.in the study conducted by Kearney et al.

In the study conducted by Toursarkissian et al[14] the mean procedural time was 15 ± 9 minutes (range 5-60 minutes) while in our study the operating time for the percutaneous dilatational tracheostomy range from 5-25 minutes with the mean of 11.87.

Percutaneous dilatational procedure is a closed procedure and has a unique risk of paratracheal insertion of tracheostomy tube insertion and posterolateral wall laceration. This complication has to be managed surgically with good outcome.[15]

There are certain situation in which open surgical tracheostomy is preferred over PDT like inexperienced surgeon, emergency placement of tracheostomy tube, in the condition where the anatomical landmarks are not clearly palpable like short neck, obese, enlarged thyroid gland, nonpalpable cricoid cartilage and gross shifting of the trachea.

Use of adjuncts like preoperative ultrasonography helps in identifying aberrant blood vessels thus preventing damage to the vessels and avoiding risk of bleeding. Based upon the preoperative ultrasound finding the Keling Et al[16] changed the site of tracheal puncture in 24% of the cases.The use of bronchoscopy during the procedure gives additional benefit of confirmation of needle placement, dilatation and tube placement.

Conclusion:

Tracheostomy is among the most frequently performed procedures in critically ill patients. Percutaneous dilatational tracheostomy is a safe and feasible procedure performed at bedside with minimal invasive technique in ICU. It has a very low morbidity if performed by skilled surgeon. The complication following percutaneous dilatational tracheostomy is relatively less. This technique is very cost effective as it can be performed in the bedside thus eliminating the use of operating room and extra man power. It also saves time for transporting the critically ill patients to the operating room. Thus this method is safe, cost effective and can be done in a bed side. It is believed that use of technical adjuncts like use of ultrasound and bronchoscopy will improve patient safety.

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Original Article

The "Lelli's Test": a Screening Clinical Test for the Diagnosis of Anterior Cruciate Ligament Injury

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Keywords: Anterior cruciate ligament, Anterior drawer test, Lachman test, Pivot shift test, Lelli's test

Abstract

Background: *The anterior cruciate ligament (ACL) is a major knee stabilizing factor during both of the knee's rotational and anteroposterior stability. ACL damage is a major injury to the knee joint. For identification of ACL injury routinely we practice Anterior drawer test, Lachman's test and Pivot shift test. In this study we evaluate the accuracy of Lelli's test for detecting ACL tear and compare it with MRI findings.*

Methods: *This study included 100 patients attending outdoor patient department at Department of orthopedics, Combined Military Hospital (CMH) Bogura from February 2022 to February 2023. aged between 20-60 years with knee symptoms of giving way/locking/pain. Clinical history and detail clinical assessment of knee for instability including Lelli's test were performed by standard technique and recorded in the Performa. All patients send for MRI of knee and result were compared with Lelli's test to assess the reliability of clinical test as screening test for ACL injury.*

Results: *In this study total numbers of cases were 100 with mean age was 35 ± 09 years and most of the patients were male 98(98.00%). Maximum injuries occurred on the right side 80 (80.00%). The most common cause of ACL injury was sports activities 85(85.00%) and chief complaints of giving way 82(82.00%). In this study Lelli's test had sensitivity 94.18 %(CI 70.93-94.57) and Specificity 93.33 %(CI 79.85-97.17)*

Conclusion: *Lelli's test is a simple with high sensitivity and specificity which can be used as a screening test for evaluation of ACL function in both acute and chronic knee injury.*

Introduction

The anterior cruciate ligament (ACL) is a major biomechanical component of knee stabilizing factor during both of the knee's rotational and anteroposterior stability.[1]Anterior cruciate ligament (ACL) damage is a major injury to the knee joint, [2] with an annual incidence of 68.6 per 100,000 person-years and.[3] In the United States nearly 200,000 injuries of ACL occur per year, with an estimated 100,000 reconstructions annually.[4]

ACL injuries can be identified by a detail history of knee trauma followed by a typical physical examination finding of anterior sliding of the tibia over the femur.[5]

Anterior drawer test, Lachman's test, pivot shift test, and the Lelli's test are the physical exam tests for detecting ACL deficiency. Compared to the other physical examination maneuvers, the Lelli's test is the simplest and easiest to perform regardless of who performs the test.[6,7] Lever Sign test would be

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diagnostic for both partial and complete tears of the ACL regardless of the elapsed time from injury.[8]

For diagnosis of ACL injury arthroscopic visualization is the gold standard technique and magnetic resonance imaging (MRI) is a valid and noninvasive diagnostic method, with a specificity and sensitivity of 94–98 %. [8]

Since the Lelli's test is simple, it can be performed with high accuracy by all medical personnel, even if done by non-orthopedic providers. Our aim in this study is to measure the accuracy of the test to performed as a screening test for ACL injury.[1]

Methods

This survey was carried out in CMH Bogura, a tertiary hospital of Bangladesh from February 2022 to February 2023. Total 100 patients included in this study who were attending orthopaedic outpatient department, aged between 20-60 years with knee symptoms of giving way or locking or pain following sports or non-sports injury. Clinical history and detail clinical assessment of knee for instability including Anterior drawer test, Lachman test, Pivot shift test, Lelli's test were performed by standard technique and recorded in the Performa. Lelli's test was carried out with patient in supine position, knee in full extension and heel touching the bed, clenched fist is placed beneath the proximal calf just distal to tibial tuberosity then a gentle posterior directed thrust is applied over quadriceps tendon and we look for heel liftoff from the bed. The test is positive if there is no heel liftoff from the bed in springy manner compared to normal side. All patients send for MRL of knee and result were compared with Lelli's test finding

Ethical permission had been taken from institute keeping compliance with Helsinki Declaration for medical research involving human subject 1964. The study subjects were informed verbally about the study design, the purpose of the study and right for withdrawing themselves from the project at any time, for any reason, what so ever. Persons who gave informed written consent to participate voluntarily in the study were included in the study sample. The SPSS version 20.0 was used for data analysis.

Results

In this study total numbers of cases were 100. 35 ± 09 years was the mean age of the patients. Among them, 02% (*n*=2) were female and 98% (*n* =*98*) were male. Maximum injuries occurred on the right side 80 %(n=80). The most common cause of ACL injury was sports activities 85(85.00%) and chief complaints of patients were giving way 82(82.00%), pain 43(43.00%), locking 28(28.00%). Demographic and clinical features of the patients are given in Table I, II.

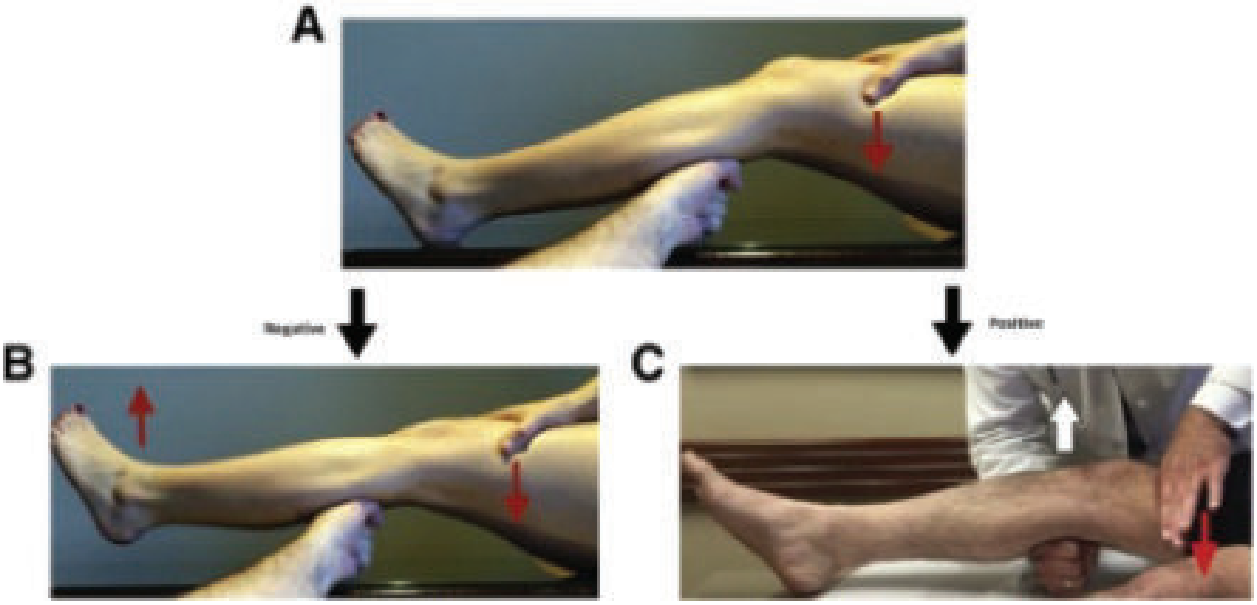

Figure - 1: (*A) A photograph of the lever test setup, with the examiner's hand positioned for the test. (B) A photograph of a negative lever test, with the femur being translated posteriorly using the right hand (downward red arrow) and levering of the tibia resulting in lift-off of the heel (upward red arrow). The examiner's fist is just distal to the tibia tubercle. (C) A photograph of a positive lever test, with the femur being translated posteriorly using the left hand (downward red arrow) and translation of the proximal tibia ante*riorly (white upward arrow) with no heel lift-off [1].

Table I: *Demographics features of the survey respondents (n=100)*

Demographic Feature			
Age		Mean ±SD	35±09 yrs
Gender	Female	N(%)	2(02.00%)
	Male	N(%)	98(98.00%)
Lesion	Right	N(%)	80(80.00%)
	Lt	N(%)	20(20.00%)
Cause	Sports injury	N(%)	85(85.00%)
	Fall on slippery ground	N(%)	02(02.00%)
	Fall from height	N(%)	07(07.00%)
	Trauma	N(%)	06(06.00%)

Table II: *Clinical Features of the survey respondents (n=100)*

Clinical Features		
Only giving way	N (%)	37(37.00%)
Only Pain	N (%)	05(05.00%)
Only Locking	N(%)	10(10.00%)
Both giving way and pain	N(%)	30(30.00%)
Both giving way and locking	N(%)	10(10.00%)
Both locking and pain	N(%)	03(03.00%)
All symptoms including giving way, pain and locking	N(%)	05(05.00%)

Clinical diagnosis of ACL injury

Comparison of the MRI findings of ACL Tear and clinical Lelli's test findings yielded the following results shown in table-3.

Table III: *Lelli's test and ACL tear*

Lelli's test	MRI findings		Total	Sensitivity (CI)	Specificity (CI)
	ACL tear present	ACL tear absent			
Positive	80	1	81	94.18(70.93-94.57)	93.33(79.85-97.17)
Negative	5	14	19		
Total	85	15	100		

Lelli test had sensitivity 94.18 %(CI 70.93-94.57) and Specificity 93.33 %(CI 79.85-97.17)

Discussion

In most of the patients excess knee laxity and the joint becomes unstable is the most detectable signs after ACL rupture.[9] Anterior drawer, the Lachman, and the pivot shift test are the three commonly applied tests to determine ACL injuries.[10]

In a meta-analysis of Twenty-eight studies that assessed the accuracy of clinical tests for diagnosing ACL ruptures by Benjaminse et al[2] with pooled sensitivity of Anterior drawer test, Lachman test, Pivot shift test 92% (CI 88-95) , 85% (CI 83-87), 24% (CI 21-27) respectively and pooled specificity 91% (

CI 87-94) ,94% (95% CI, 92-95), 98% (CI 96-99) respectively.

In this study we found Lelli test had sensitivity 94.18 %(CI 70.93-94.57) and Specificity 93.33 %(CI 79.85-97.17), which is comparable to three commonly applied tests in clinical practice to determine ACL injuries. There are limitations to the commonly applied test like for Lachman test; examiners who have small hands may face difficulties on patients with a large thigh girth[2]. For pivot shift test patient with a chronic ACL-deficient knee is familiar with unpleasant phenomenon of pivoting and will show protective muscle action.[11] The accuracy of a complex test maneuver such as the pivot shift test may increase with experience thus the pivot shift test has very high specificity and low sensitivity. For Anterior drawer test the hemarthrosis and reactive synovitis may preclude knee flexion to 90°, hindering the proper performance of the test, protective muscle action of the hamstrings secondary to joint pain provides a vector force opposite to the anterior translation of the tibia and the posterior horn of the medial meniscus becomes buttressed against the posterior most margin of the medial femoral condyle and may preclude anterior translation of the tibia[12]. We found Lelli's test to be least affected by those phenomenon, relatively easy to carryout in both acute and chronic knee injury situation with comparable sensitivity and specificity to those routinely applied clinical test for ACL tear. The most significant finding of this study was the perfect agreement between the outcome of the Lever Sign test and the MRI findings, regardless of whether the ACL was partially or completely ruptured and regardless of the time elapsed from the injury. MR has been shown to have a specificity and sensitivity of 94–98 % in detecting ACL injury[2,12,13].

Conclusion

Lelli's test is a simple with high sensitivity and specificity in comparison to those routinely practiced clinical test for ACL injury. As such it can be used as a screening test for evaluation of ACL function in both acute and chronic knee injury. But for more validity a multi-centric meta-analysis is required.

Conflict of interests: None declared.

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Original Article

Factors Related to Respiratory Distress Syndrome in Neonates

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Keywords: *Respiratory distress syndrome, neonatal mortality, intercostals recession, intercostals recession.*

Abstract

Background: *Respiratory distress syndrome of neonates (RDS) is one of the most common causes of neonatal mortality.*

Objective: *The purpose of this study was to investigate socio-demographic, maternal and neonatal factors related to RDS in neonates in context of tertiary level hospital.*

Methods: *This cross sectional study was conducted in Dhaka Medical College Hospital and Ad-din Women's Medical College and Hospitalduring 1st January to 31st December 2017 among 186 purposively selected neonates. Data were collected by document review and face to face interview with complete privacy using semi-structured questionnaire and check list.*

Results: *Regarding socio-demographic factors, Considering the maternal factors, majority of the mothers(61.3%) had taken 4 or more checkup during their antenatal period and 87.1% had institutional delivery while approximately half (52.7%) of the mothers had Caesarean delivery. Among the mothers, 17.2% had history of high blood pressure during pregnancy, 10.8% diabetes mellitus, 14% oligohydramnios and 37.1% mothers had PROM. RDS was more common in preterm neonates or below 37 weeks (85.5%) and maximum were low birth weight or below 2500 gram (90.3%), 52 babies (28%) were born of multiple pregnancy, more than half of the babies (62.4%) had moaning sound (grunting) and most of all (92.5%) had chest recession.*

Conclusion: *The factors related to RDS are not preventable but are predictable if ANC for all the mothers can be ensured.If the possibility of occurrence of RDS can be assumed considering these factors, necessary precautions for earlier diagnosis and adequate management can be taken which can contribute in reducing neonatal mortality rate.*

Keywords: *Respiratory distress syndrome, neonatal mortality, intercostals recession, intercostals recession.*

Introduction

Infections and complications during the first 28 days of life are responsible for approximately 1.5% of total child deaths. Within this period of life 7% to 50% of neonates are likely to suffer from RDS. Among them 3 to 4 out of 10 requires admission[1]. Statistics show that even in USA every year 20,000 to 30,000 neonates suffer from RDS and about 1% pregnancies have got the possibility to have this complication.

RDS is the second most common reason for the respiratory distress in newborns and those who suffer from respiratory distress are 2 to 4 times more prone to death from those who do not[2].

About 10 -12% of total live born babies are born before completion of their full term gestation[3]. Globally, in 2010 more than one out of 10 babies was born before completion of 37 weeks of intrauterine life.Again, in the same year around one million babies died due to

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this preterm condition[4]. At present, preterm delivery is the second leading cause of death among under 5 children and the single most important cause of neonatal death[5]. About 50% of babies who are born at 26–28 weeks of gestation are likely to develop RDS while the risk is about only 25% at 30–31 weeks of gestational age. Among the neonates born in 37 weeks of gestation, only 7.8% suffer from RDS[6].

Birth weight of the baby is considered to be another important concern regarding development of RDS. Different studies found that among the babies born with a weight of 2500 gram or more proportion of developing RDS varies from 9.9%[6] to 11.5%[7]. Moreover, a previous study shows that proportion of developing RDS is inversely related to the birth weight of the newborns[8].

Again, according to Nelson Text Book of Paediatrics[9] not only neonatal factors but also some maternal factors influence in both occurrence and outcome of RDS. The second born of preterm twins[9], mature neonates with meconium aspiration syndrome[10,] delayed crying or perinatal asphyxia (hypoxic ischaemic encephalopathy)[11], congenital anomalies[10,] IDM (Infant of diabetic mothers)[12], delivery by LUCS, particularly in absence of labour[13]are commonly documented risk factors in developing RDS among the neonates foundin different countries in different studies.

Apnea (cessation of breathing), cyanosis (bluish or blackish discolouration of body), grunting (a moaning sound at expiration), inspiratory stridor, nasal flaring, poor feeding, tachypnea (respiratory rate 60 or more), lower chest wall indrawing (intercostal, subcostal, or suprasternal recession) are considered as the more commonly presented features in a neonate suffering from RDS. A neonate suffering from RDS may present with any one or more than one of the aforesaid clinical manifestations either just after birth or within a very short time after birth, usually with increasing severity with the course of time, reaching the worst peak within the first 48-72 hours of life[14].

Despite all new options like mechanical ventilators and continuous positive airway pressure (CPAP), mortality rates still remain as high about 36%. In a retrospective study carried out in Neonatal Intensive Care Unit (NICU) of Ad-din Hospital from July 2013 to June 2014, it was found that among all indications for mechanical ventilation, RDS contributed to the maximum which was 62% followed by 23% mortality rate[15].In another retrospective study conducted from December 2014 to November 2015 at the neonatal unit of North East Medical College and Hospital in Sylhet, Bangladesh, it was observed that RDS was responsible for 0.6% of admission into hospital and contributed to 16.7% of the total mortality rate[16].

In a bulletin of the World Health Organization, neonatal deaths presently contribute to more than two-thirds of under-one mortality and for about half of all deaths in children under-five years of age[17].Neonatal mortality rate (NMR) is 28 per 1,000 live births in Bangladesh[18]. So, proper measures must be taken to promote the survival of children under five years of age because by signing in SDG, the Government of Bangladesh has declared the vision of decreasing the mortality of children below five years of age by two thirds.

A previous study in Bangladesh[15] stated that although RDS is the most common reason for cardio-respiratory failure in newborns, it also provides with the best prognosis compared to the other reasons if measures can be taken timely. Early intervention can significantly decrease the complications, severity, requirement for oxygen therapy and ventilation, duration of hospital stay[19]and ultimately treatment cost.

Methods:

This cross sectional study was done from 1st January to 31st December 2017,which was approved by the ethical review board of National Institute of Preventive and Social Medicine. Data was collected through face to face interview from purposively chosen186 mothers of admitted newborn babies diagnosed as RDS into Dhaka Medical College Hospital and Ad-din Women's Medical College and Hospital.Document review was done to collect the data about ANC visits and obstetric history of the mothers as well as the health related events of the neonates since birth. Confidentiality of the respondents was maintained with outmost care and treatment of the neonates in acute condition was ensured prior the data collection.

Statistical Package for Social Science (SPSS) version 20 for windows was used to analyze the data. Associations among qualitative and quantitative variables of various socio-demographic, maternal and neonatal factors were studied by using chi- square test and t-test where appropriate. To assess the independent relationship within the factors, logistic regression analysis was performed. A p value < 0.05 was considered to be significant.

Results:

Table I: *Distribution of the neonates by baseline characteristics and various neonatal factors (n=186)*

Gestational Age	Frequency (n)	Percent (%)
24-27 weeks	9	4.8
28-30 weeks	37	19.9
31-32 weeks	37	19.9
33-34 weeks	38	20.4
35-36 weeks	38	20.4
37-39 weeks	27	14.5
Total	186	100.0
Birth weight in gram		
<750	4	2.2
750-1499	61	32.8
1500-2499	103	55.4
2500-3900	18	9.7
Total	186	100.0
Sex		
Male	128	68.8
Female	58	31.2
Cyanosis at Birth		
Present	97	52.2
Absent	74	39.8
Record not Found	15	8.1
Grunting		
Present	116	62.4%
Absent	70	37.6%
Subcostal Recession		
Present	172	92.5%
Absent	14	7.5%
History of delayed cry after birth		
Yes	34	18.3
No	150	80.6
Record not found	2	1.1
Respiratory rate of the baby on admission		
Absent/gasping	5	2.7
<60/minute	55	29.6
>60/minute	126	67.7
Less Foetal Movement		
Yes	34	18.3
No	150	80.6
Don't know	2	1.1
Treatment modality used for giving oxygen		
Room air	32	17.2
Oxygen with nasal prong	11	5.9
Oxygen with face mask	71	38.2
Oxygen with hood	37	19.9
Bubble CPAP	17	9.1
Mechanical ventilation	18	9.7
Severity of RDS		
Less Severe	151	81.2%
More Severe	35	18.8%

Table II: Distribution of the mothers by socio-demographic characteristics and maternal factors (n=186)

	Frequency (n)	Percent (%)
Maternal Age in years		
Below 19	40	21.5
20-24	63	33.9
25-29	45	24.2
30-34	25	13.4
35-39	12	6.5
40-45	1	0.5
Educational qualification of mothers		
Below Primary	42	22.6
Below Secondary	69	37.1
Higher Secondary and Under	45	24.2
Graduate		
Graduate and Post Graduate	30	16.1
Occupation		
Home maker	127	68.3
Teacher	16	8.6
Service Holder	21	11.3
Business	11	5.9
Others	11	5.9
Area of Residence		
Rural	103	55.4%
Urban	83	44.6%
Number of antenatal check up during pregnancy		
No ANC	1	0.5
<4	71	38.2
4 or more	114	61.3
Place of Delivery		
Institution	162	87.1%
Home	24	12.9%
Mode of Delivery		
Spontaneous vaginal	30	16.1
Assisted vaginal	58	31.2
Caesarean	98	52.7
Maternal Factors		
PIH	32	17.2%
GDM	20	10.8%
Oligohydramnios	26	14%
PROM	69	37.1%
Pre-eclampsia	24	12.9%
Placenta Praevia	7	3.8%
Abruptio Placenta	4	2.2%
Multiple Pregnancy	52	28%

Table III: *Multivariate Analysis to see the relationship between the socio-demographic variables and number of ANC*

Variable	B	P Value	OR	95% C.I. for OR
Rural versus Urban	1.038	0.004	2.823	1.390-5.736
Group of income	-0.185	0.658	0.831	0.367-1.882
Category of occupation	0.034	0.936	1.035	0.453-2.360
Educational Status	1.254	0.003*	3.505	1.543-7.960
Constant	-0.336	0.425	0.715	

*Statistically significant

Discussion

Among the 186 babies, there were 85.5% preterm (below 37 weeks) and 14.5% term neonates (above 37 weeks). So it does not correspond with the traditional saying "RDS only occurs in preterm neonates"[19].

A retrospective case-control study conducted by Liu J et al[20] showed that elective LUCS, severe perinatal asphyxia, PROM (Premature Rupture of Membrane), male sex, GDM (Gestational Diabetes Mellitus), LBW (Low Birth Weight), IUGR (Intra Uterine Growth Retardation) and maternal-fetal infection are associated with developing RDS in term newborns. Also, Ghafoor T *et al*[21]conducted a prospective study which revealed that 93.61% preterm and 6.38% term neonates developed RDS. The frequency of RDS was, 100% at 26 or less weeks of gestational age, 57.14% at 32 weeks, and 3.70% at 36 weeks of gestational age. Another retrospective cohort study conducted by Mehrabadi*et al*[22] revealed that the rate of RDS per 1000 live births, among live born newborns whose gestational age was <32 weeks and among newborns whose gestational age was 39 weeks or more were 6.4, 113.2 and 1.6 per 1000 live births correspondingly.These results have similarity with the present study that RDS can occur also among term newborns.

More than half (55.4%) weighed between 1500-2499 gram, 61 babies (32.8%) weighed between 750-1499 gram, 18 babies (9.7%) weighed between 2500-3900 gram and only 4 babies (2.2%) weighed <750 gram.In a report prepared by Pramanik A K[8], the incidence rate of RDS in neonates with birth weight 501-1500g, 501-750g, 751-1000g, 1001-1250g, and 1251-1500g were 42%, 71%, 54%, 36% and 22% correspondingly.

More than two third (68.8%) was boys and 31.2% were girls. This finding corresponds to the result of a study conducted by Ghafoor T *et al*[21] which found that 34.04% were girls and 65.95% were boys. Also, a survey conducted by Luerti M *et al*[23]revealed that the risk of RDS was more in males than in female neonates.

The more than half of the babies (62.4%) had grunting and the majority (92.5%) had chest recession.A retrospective study conducted by Desai *et al*[24] also supports this finding which revealed that most common clinical manifestations in neonates with RDS are subcostal (xiphoid) recession (98.61%), grunting (93.05%) and intercostal recession (83.33%).

The mean age of the mothers was 24.45 ± 5.627 years and 63 mothers (33.9%) were in the age group of 20-24 years of age.Age specific fertility rate of Bangladesh is maximum (143/1000 women) in this age group[18].

Mothers were almost all educated and among them 37.1% were educated up to secondary level of education. This may be due to the fact that educated mothers are more conscious and more likely to take their babies to the hospital than the mothers educated below the secondary level. More than two third of the mothers (68.3%) were home makers. This reflects the common picture of the females in Bangladesh[18]. Most of the above data depict that the sample is similar to national population. Among 186 mothers, maximum proportion i.e. 103 (55.4%) resided in rural area and the rest 83 (44.6%) were inhabitants of urban area.Antenatal care (ANC) from a medically-trained health care provider is essential to evaluate the status of a pregnancy, identify the complications related to the pregnancy and prevent unwanted situations. The present study shows that the majority (61.3%) mothers had taken 4 or more ANC which corresponds with the normal scenario of the women in Bangladesh which states that the majority of women (64 percent) received ANC[18].

Although in Bangladesh, only 38 percent delivery occurs in a health facility, and 62 percent at home[18], this study shows that among the 186 participants, majority (87.1%) of the mothers had institutional delivery whereas only 12.9% had home delivery. This may be due to the fact that those mothers who conduct their delivery at institution have their babies early diagnosed and are conscious enough to bring their child to hospital.

More than half (52.7%) of the mothers had LUCS whereas among the rest 31.2% mothers had assisted vaginal delivery and 16.1% mothers had spontaneous vaginal delivery. Although in Bangladesh, 23 percent of births are found to be delivered by LUCS[18], which implies that six in ten births in a health facility are delivered by C-section. This may be due to the fact that RDS is more prevalent in babies born by LUCS. This finding is supported by the multiple logistic regression statistical method by Bryan H *et al*[25] which revealed that the risk of RDS is more with LUCS in absence of labor pain compared to NVD (p = 0.03). This result is also similar to a retrospective study conducted by Wu XJ *et al.*[26] which revealed that severe RDS can occur in term newborns after elective LUCS. In another study conducted by Goldberg JD *et al*[27] among 236 newborns delivered by LUCS, the presence of labour before LUCS did not decrease the risk of RDS significantly, although a trend, not statistically significant, was noted in this direction.

Another hospital-based case–control study conducted by Khalid A. Y[28] revealed that the likelihood of LUCS was nearly twice as high among neonates diagnosed with HMD compared to the non-HMD control group. All these information suggest that the chance of RDS is associated with LUCS. Physiology also supports that the vaginal route of delivery is till now known as a better option for enhancement of neonatal cardio-respiratory adaptation[28].

This study has also found that out of 186 mothers, 32 (17.2%) mothers had history of PIH, 20 (10.8%) mothers had history of GDM, 26 (14%) mothers had history of oligohydramnios, 69 (37.1%) mothers had history of PROM and 52 babies (28%) were born of multiple pregnancy. This finding is supported by the results of another prospective, descriptive, cross sectional hospital based study, conducted by Swarnkar K and Swarnkar M[2] which revealed that maternal causative factors like PROM (25.9%), PIH (16.7%), diabetes mellitus (4.2%) and twin pregnancy (16.7%) were present in cases of RDS. Bowen JR *et al.*[29] showed by a case control study that the rate of RDS was more among neonates of mothers with PIH comparison to controls (60% versus 33%; p = 0.001).

Besides, the number of ANC visits, education level and wealth status have a positive relationship with the likelihood of delivering in a health facility[18]. In Bangladesh half of women who have secondary or higher education and those who are in the higher socio-economic group undergo delivery by LUCS[18.]

By logistic regression analysis, the educational status of mothers independently predicted the variation of number of ANC (p=0.003, OR=3.505), place of delivery (p=0.020, OR=15.925,) and mode of delivery (p=0.003, OR=3.505).

To determine the factors influencing the course of RDS, the babies who required mechanical ventilation or bubble CPAP were graded as more severe and the babies who were kept in room air, face mask or oxyhood were graded as less severe RDS.By logistic regression analysis, category of mothers according to income independently predicted the variation of severity of RDS (p=0.021, OR=0.379).

Conclusion

This study found that mothers of neonates with RDS share some certain socio-demographic characteristics such as mostly residing in rural area, belonging to lower socio-economic group, educated below secondary level and mostly home maker in occupation. Certain pregnancy associated complications such as diabetes, PIH, oligohydramnios and PROM were common. RDS was more prevalent among male newborns than female ones and neonates born of multiple pregnancy. So as soon as a pregnant mother is diagnosed to have a male foetus or multiple gestation or any of the above mentioned factors she and her family must be prepared for emergency management of the newborn after delivery and transport facilities to higher referral centre must be ensured.

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Original Article

Comparative Study of neck swelling by clinical, cytological and histopathological examination – a study of 50 cases

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Keywords: Close clinicopathological correlation is absolutely necessary for useful clinical interpretation.

Abstract:

Objective: *In this study 50 patients of neck swelling were studied to compare the findings with clinical diagnosis and histopathological report for its diagnostic reliability.*

Methods: *This cross sectional study was done in Department of Otolaryngology – Head & Neck Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka from July 2015 to June 2017. Fine needle aspiration cytology, MRI, CT scan, and histopathological examinations of postoperative specimen of neck swelling, presentation of analyzed data by various tables, graphs and figures done.*

Results: *In the present series, 50 cases of neck swelling were studied. Out of these 50 cases 19 were male and 31 were female. The male, female ratio was 1:1.63. Age range was 4 – 60 years with maximum frequency in the 4th decade with the 3rd and 2nd in the following suit. Most of the patient were poor. Clinical, cytological and histopathological diagnosis were available in all the cases. The three sorts of diagnoses were compared with each other. Histopathologically 12 cases were tubercular lymphadenopathy. Metastatic carcinoma and lymphoma, 5 cases for each. 12 were nodular goiter, 5 were thyroid carcinoma. Rest were benign, congenital and nonspecific inflammatory conditions. Correct diagnosis was made by FNAC in 45 cases. In the rest 5 cases, smear were unsatisfactory in 2 cases and gives inconclusive result, remaining 3 were follicular neoplasm and no definitive result were made which were subsequently diagnosed by histopathological examination as a follicular adenoma in 1, and follicular carcinoma in 2 cases. Sensitivity of FNAC in the diagnosis of neck masses were found 91% for tuberculosis, 100% for metastatic carcinoma also for salivary gland tumour. In case of nodular goiter sensitivity was 92%. But it is only 60% sensitive in case of thyroid malignancy, as FNAC cannot demarcate clearly between follicular adenoma and follicular cell carcinoma. But its accuracy in diagnosing papillary cell carcinoma of thyroid was 100%.*

Conclusion: *Keeping the limitations in mind, FNAC can reduce substantially the need of open biopsy for histopathological examination. The study with the popular saying of Stewart "Diagnosis by aspiration is as reliable as the combined intelligence of the clinician and pathologist makes it".*

Introduction:

Swelling in the head and neck region is one of the commonest clinical presentation in the otolaryngologic practice. Presence of a neck mass pose a diagnostic dilemma for the Otolaryngologist. A great number of disease manifeast as a palpable and /or visible swellings in the neck. These may be congenital/developmental, inflammatory/reactionary or neoplastic (primary/secondary).

Each disease may have different mode of presentation. Conversely many diseases may present with similar

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symptoms. For this reasons diagnosis often becomes difficult in neck swelling. Many case of neck swelling may be diagnosed after a comprehensive history and a thorough clinical examination of the head neck. Further evaluation is done by hematological, cytological and imaging technique. Diagnosis is confirmed by histopathological examination of the specimen.

The medical profession must be emphatically remained of the frequency with which cervical metastasis may appear as the first and only symptom in cancer of the mouth, pharynx and larynx, less often elsewhere in the body. There can be no possibility of cure until the primary lesion is found. The immediate removal of a lymph node for diagnosis in the does never go best interest of the patient. This procedure should be deferred and used only as a last diagnostic resort.[1]

For this reason, the head neck surgeon have advocated a careful search for primary malignancy before the presenting neck lump is biopsied.Open biopsy causes seedling of tumour cell into avascular plane making them resistant to curative radiotherapy or chemotherapy and the placing of a biopsy incision in an area which may subsequently be inappropriate for radical neck dissection flaps[2,3,4]

Open biopsy is an invasive procedure requiring surgical skill and facilities. It is time consuming, costly and some time hospitalization and general anaesthesia may be needed. It delays the definitive treatment.[1,3] Fine needle aspiration cytology is a simple procedure that can be done on an outpatient basis without local anaesthetic and gives rapid result. It is simple, cost-effective, less traumatic. The procedure may be repeated several times to obtain adequate material for cytological analysis[6,7].

In our country FNAC is gradually becoming more popular as a preoperative highly sensitive and cost effective diagnostic tools.

Through this study, exploration of spectrum of diseases producing neck swelling and their socio-demographic feature done. Histopathological report has been taken as a confirmatory diagnostic test in all the cases and compared with the FNAC findings to find out its diagnostic reliability.

Methods:

This cross sectional study was done in Department of Otolaryngology –Head & Neck Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka from July 2015 to June 2017. Fine needle aspiration cytology, MRI, CT scan, and histopathological examination of postoperative specimen of neck swelling, presentation of analyzed data by various tables, graphs and figures done.

A total of 50 patients irrespective of age and sex with neck swelling randomly selected for the study who admitted in the Department of Otolaryngology-Head & Neck Surgery, Bangabandhu Sheikh Mujib Medical University Hospital Dhaka from July 2015 to June 2017.

This was a cross sectional study with a sample size 50. Method used in this study included.

Clinical presentation, Fine needle aspirating cytology, Imaging of different types in selective cases, Histopathological examination of post-operative specimen of neck swelling.

All information recorded in a standardized data collection sheet for the study. Data were complied, analyzed and tabulated in order to obtain statistical and comprehensive results of the study.

Results and observation:

Table-I: *Age distribution of the patients.*

Age group	No of cases	Percentage
0 – 10	2	4
11 – 20	10	20
21 – 30	14	28
31 – 40	16	32
41 – 50	6	12
51 – 60	2	4
Total	50	100

Table-II: Socioeconomic condition (n=50).

Socioeconomic condition	No of cases	Percentage
Poor	30	60%
Middle class	15	30%
Affluent	5	10%

Table-III: *Clinical diagnosis of neck masses.*

Clinical diagnosis	Disease	Total No of cases	Percentage (%)
Cervical lymph adenopathy	Tubercular lymph adenitis	19	38
	Metastatic carcinoma	5	10
Thyroid and related neck mass	Goiter	18	36
	Thyroglossal cyst	1	2
Salivary gland swelling	Salivary gland tumour	4	8
Other congenital and developmental neck mass	Branchial cyst	1	2
	Submental dermoid	2	4
	Total	50	100

Table-IV: *FNAC diagnosis of neck masses*

Clinical diagnosis	FNAC diagnosis	Total No of cases	Percentage (%)
Cervical lymph adenopathy (24)	Tubercular lymph adenitis	10	20
	Metastatic carcinoma	5	10
	Non specific lymphadenitis	3	6
	Lymphoma	5	10
	Unsatisfactory smear	1	2
Thyroid and related neck mass(19)	Nodular goiter	11	22
	Papillary carcinoma of thyroid gland	3	6
	Follicular neoplasm	3	6
	Thyroglossal cyst	1	2
	Unsatisfactory smear	1	2
Salivary gland) swelling (4	Pleomorphic adenoma of salivary gland	3	6
	No specific submandibular sialoadenitis	1	2
Other congenital and developmental neck mass(3)	Branchial cyst	1	2
	Submental dermoid	1	2
	Unsatisfactory smear	1	2

Table-V: *Histopathological diagnosis of Neck swelling.*

Clinical diagnosis	Histopathological diagnosis	Total No of cases	Percentage (%)
Cervical lymph adenopathy (24)	Tubercular lymph adenitis	11	22
	Metastatic carcinoma	5	10
	Non specific lymphadenitis	3	6
	Lymphoma	5	10
Thyroid and related neck mass(20)	Nodular goiter	12	24
	Papillary carcinoma of thyroid gland	3	6
	Follicular carcinoma	2	4
	Follicular adenoma	1	2
	Thyroglosal cyst	2	4
Salivary gland swelling (4)	Pleomorphic adenoma of salivary gland	3	6
	No specific submandibular sialoadenitis	1	2
Other congenital and developmental neck mass(3)	Branchial cyst	1	2
	Submental dermoid	1	2
	Total	50	100

Table-VI: *Comparison between clinical FNAC and histopathological diagnosis of cervical lymph node masses*

Clinical diagnosis	No of cases	FNAC diagnosis	No of cases	Histopathological diagnosis	No of cases
Tuberculosis	19	Tubercular lymphadenitis	10	Tubercular lymph adenitis	10
		Non specific lymph adenitis	3	Non specific lymph adenitis	3
		Lymphoma	5	Lymphoma	5
		Unsatisfactory smear	1	Tubercular lymph adenitis	1
Metastatic carcinoma	5	Metastatic carcinoma	5	Metastatic carcinoma	5

Table-VII: *Compare between clinical FNAC and histopathological diagnosis of thyroid and related disease*

Clinical diagnosis	No of cases	FNAC diagnosis	No of cases	Histopathological diagnosis	No of cases
Goiter	18	Nodular goiter	11	Nodular goiter	11
		Papillary carcinoma of thyroid	3	Papillary carcinoma of thyroid	3
		Follicular neoplasm	3	Follicular carcinoma thyroid	2
				Follicular adenoma	1
		Unsatisfactory smear	1	Nodular goiter	1
Thyroglossal cyst	1	Thyroglossal cyst	1	Thyroglossal cyst	1

Table-VIII: *Compare between clinical, FNAC and histopathological diagnosis of salivary gland disease*

Clinical diagnosis	No of cases	FNAC diagnosis	No of cases	Histopathological diagnosis	No of cases
Salivary gland tumour	4	Pleomorphic adenoma	3	Pleomorphic adenoma	3
		Chronic submandibular sialoadenitis	1	Chronic submandibular sialoadenitis	1

Discussion

Patients with palpable and or visible neck mass is a quite common presentation to an Otolaryngologist. So one should be rational and methodical for the diagnosis and management of such a patient. In the present study 1 tried to establish the role of FNAC in the management of such patients by establishing its diagnostic sensitivity and specificity in comparison with histopathological one, which is a accuate but cost effective, time consuming and also an invasive procedure.

In the present study of analyzed FNAC report of 50 cases, satisfactory smears were found in 47(94%) cases. In 3(6%) cases smears were unsatisfactory as they showed in adequate material, definitive diagnosis were made by histopathological examination. The rate of unsatisfactory smear in this study is in close proximity, to that of other studies.[8,10,11]

In this study out of 50 cases 19(38%) were male and 31(62%) were female. The male to female ratio was 1:1.63. The male to female ratio is consistent with the study of other[8,11,12,13].

In the present study age of the patient ranged from 4 to 65 years. The highest number of cases were found in 4th decade. This was followed by 3rd and 2nd decades.

In this present series 40% of neck mass were of thyroid in origin which consistent with other studies.[3,14]

In case of thyroid swelling out of 20 cases, 12 (60%) cases were proved to be multinodular goiter on histopathology and it is comparable with others.[10,15]

Here FNAC shows highly sensitivity (91%) and specificity (100%) for nodular goiter. But in case of thyroid malignancy its sensitivity is very low (60%) as it cannot demarcate clearly between follicular carcinoma and follicular adenoma. Although highly sensitive (100%) for papillary carcinoma of thyroid. It is comparable with others studies.[15,16]

Cervical lymphadenopathy scored the first position (48%) of which tubercular lymphadenitis was 11 cases (46%). This is consistent with the findings of other studies[17,18]. In this study, the sensitivity (91%) and specificity (100%) of FNAC for diagnosing tubercular lymphadenopathy is high and aligned with other studies[8,11].

In this study, only one false negative result was found for tubercular lymphadenopathy by FNAC which was due to inadequate aspirate or observer error.

Metastastic carcinoma was found in about 21% of total cervical lymphadenopathy and sensitivity and specificity for diagnosing such lesion is 100% which was aligned with other studies.[17,18,20,21,22]

In case of salivary gland lesion which scored in the third position in this series, it is found that FNAC is very useful tool for diagnosis as it a nearly 100% sensitive and specific for such lesion.[2,3,16]

The overall sensitivity and specificity of FNAC in relation to histopathology is 90% and 100% respectively which are compatible with other study.[2]

The overall accuracy of FNAC was found in 90% which is similar to that of other studies[2,3,16,23].

To obtain maximum benefit from the procedure, close co-operation between the surgeon and pathologist is very important. The role of an experienced cytopathologist is critical for correct diagnosis[24]. Adequate amount of aspirate from the lesion is essential for accurate diagnosis. Operator must be skilled in performing aspiration. The pathologist must be experienced in cytologic interpretation of the material aspirated. Close clinicopathological correlation is absolutely necessary for useful clinical interpretation.[7]

Conclusion

Keeping the limitations in mind, FNAC can reduce substantially the need of open biopsy for histopathological examination. Actually the diagnosis by aspiration is reliable when it is the teamwork of the clinician and pathologist.

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Original Article

Visual Acuity of Children of Darisharifpur Village, Pabna

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Abstract

***Background**: Refractive error in children aged 5-15 years is an important public health problem. Myopia and hypermetropia are leading cause of refractive errors in children in this age group. Both which are visually impairing conditions that can be significantly improved through adequate refractive correction. Population based refractive error studies in children have shows that nearly half of the visual impairment associated with correctable refractive error in this age group in not receiving attention specially those children living in disadvantaged social and economic condition*

***Methods:** This is an observational study. One hundred children of a village Darisharifpur, upazilla- Bera, district Pabna were studied*

in Random sampling method. Data were collected from children aged between 9-15 years. Refractive error with other related variables were enclosed with data and and that were analyzed.

***Results:**100 children of village with visual problem or symptoms related to visual acuity were examined and prevalence of refractive error in my study 11%. Myopia (72.72%) is more common refractive error my study, myopia 46%, hypermetropia 25%, astigmatism 27%. Majority (63.63%) of refractive error was found in between -0.50D to -1.99D in my study . In my study majority of refractive errors are within 6/9 to 6/18.*

***Conclusions:** Myopia and hypermetropia are leading cause of refractive errors in children in this age group. Both which are visually impairing conditions that can be significantly improved through adequate refractive correction.*

Introduction

In Bangladesh, 77% of the population of country lives in rural area. According to Bangladesh national blindness and low vision survey 2002, about 3.3 million adult and 1.3 million children are suffering from refractive errors. Refractive error is second largest cause of visual impairment & blindness at all ages in Bangladesh Refractive error can easily be corrected by spectacles. If refractive error is detected and treated early, the visual loss is reversible in case of children. Despite the huge number of people need spectacles, only 3% of them wire spectacles.

In Bangladesh, ophthalmologists are the main provider of this service but number of ophthalmologists are grossly inadequate and they work mainly in the large cities. Whereas 77% of population of our country lives in rural area. Refractive service is unavailable in rural area beyond Upazilla level.

Statement of problem:

Blind children due to uncorrected refractive error suffer more than blindness in old aged people and it is a greater socio-economic burden for society. Blindness due to refractive error is one of the obstacles for development of personality, education and career opportunities. Observations on London children aged of 5-8 years (Dustan 1932) shows a peak at +2.30D hypermetropia. In Bangladesh several studies were carried out to determine the refractive error especially in school going children.[3,5,8]

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There are 45 million blind and 135 million visually disabled people in the world. Increasing number of blind is big burden and this will be doubled by 2020, if appropriate measures are not taken. In February 1999 WHO taken global initiative to eliminate the avoidable blindness, "**Vision 2020 the right to sight.**"

The national prevalence survey reveals that number of refractive errors in Bangladesh are 27250 adult and 9925 children per million of population. This means there are estimated 3.3 million adult with refractive error cases with <6/12 visual acuity and 1.3 million children with < 6/18 visual acuity.

Total number of population at the age of 40 years need refractive error correction for near works. Refractive error low vision should be given utmost importance specially for children because delayed intervention can lead them blindness.

Child blindness is relatively complex & demanding areas of works. Though the overall number of blind children is low compared to adult in terms of blindness years it is second only to cataract.

The childhood blindness study in Bangladesh revealed that 31% of blindness was due to problem with lens (cataract) and 27% of blindness was due to problem in the corner (vitamin a deficiency) including Glaucoma (4%) and aphakia (5%) of childhood blindness is thus avoidable (preventable and treatable). This study found that 90% of childhood blindness was developed within first 5 years of life there are estimated 40,000 children are blind in Bangladesh. The national workshop on childhood blindness 2003 recommended that planning for the control of blindness in children should be based on catchments of population of 10 millions rather than 1 million used for planning control of blindness in adult.

Objectives of the study:

The objectives of this study is to determine the prevalence and defferent pattern of refracting error among children of village aged between 9-15 years. However the specific objectives are as follows:

1. To find out the existing problems of refractive error in village children.
2. To asses deferent pattern of refractive errors.
3. To suggest measures to solve the problem.

Rationale of the study:

Refractive error in children age 5-15 years is an important public health problem. Myopia and hypermetropia are leading cause of refractive errors in children in this age group. Both which are visually impairing conditions that can be significantly improved through adequate refractive correction. Population based refractive error studies in children have shows that nearly half of the visual impairment associated with correctable refractive error in this age group in not receiving attention specially those children living in underprivilaged social and economic conditions and such refractive error remains uncorrected and unnecessary visual impairment persists.

In Bangladesh assuming a prevalence of 4 % children aged 5-15 years to have visual acuity of less than 6/18. It is estimated that there are approximate 1.3 million children having refractive error, the large majority of them are correctable.

Methods:

This is an observational study.

Place of study.

Study population : Children age between 9-15 years.
Study period : July 2008 to 30th June 2009
Sample size : 100 children

Data collection and analysis:

By purposive sampling method data were collected from children age between 9-15 years. The questionnaire was prepared containing all information regarding the patient's chief complaints with duration, refractive condition of family. Socio-economical condition of family, finding related to refractive error collected. visual acuity will be tested with the help of snellen's E chart followed by Ophthalmoscopy and Ratinoscopy were done data analysed by EPI info 6 programme.

Results

Results are given in tabulated form

Table I : *Incidence of refractive error among different sex group*

Sex	Total No. (%)	Normal No(%)	Error No(%)
Boys	50 (50%)	44(44%)	6(6%)

Table II: *Incidence of refractive error among different occupation*

Occupation	Total(%)	Normal(%)	Error(%)
Student	96(96%)	86(86%)	10(10%)
Non student	4(4%)	3(3%)	1(1%)
Total	100(100%)	89(89%)	11(11%)

Table III : *Pattern of chief complaints of children*

Chief complaints	Number	Percent
Headache	5	45.45%
Defective vision	4	36.36%
Incidental	2	18.18%

Table IV: *Pattern of refractive error in different age group*

Age group	Number	Percent
9-10 years	4	36.36%
11-13years	5	45.45%
14-15years	2	18.18%

Table V: *Pattern of refractive error in one or both eyes*

Eye	Number	Percent
One eye	2	18.18%
Both eyes	9	81.81%

Table VI: *Severity of refractive error*

Visual acuity	Number	Percent
<6/12	4	36.36%
6/12-6/18	3	27.27%
>6/18	4	36.36%

Table VII : *Pattern of different types of refractive error*

Type of refractive errror	Number	Percent
Myopia	8	72.72%
Hypermetropia	2	18.18%
Astigmatism	1	9.09%

Table VIII : *Refractive error of children using the eye with highest refractive error*

Power	Number	Percent
-0.50D to -1.99D	7	63.63%
-2.00D to-3.99D	2	18.18%
>-3.00D	1	9.09%
+0.50D to+2.00D	1	9.09%

Discussion

100 Village children with visual problem or symptoms related to visual acuity were examined and prevalence of refractive error in my study 11%.Studies carried out R. Mowla Johurul[8], Sharif and Amanullah[10] showed the figures8.19% and 6.35% respectively. The difference is due to those studies were done in urban area but my study was done in rural area. Myopia (72.72%) is more common refractive error my study also corerelated with other observations of Husssain[3], Rahman [7] and Muqtadir[5] of our country According to Dutta et al[1], myopia 46%, hypermetropia25%, astigmatism 27%. In Japan by Muslim et al 1960,agreater prevalence of myopia was reported.

Majority (63.63%) of refractive error was found in between -0.50D to -1.99D in my study which is similar to that of Kragha1987[4] and Grosvenor 1970[2]. In this study majority of refractive errors are within 6/9 to 6/18.

The efforts of Vision 2020 have resulted in increased funding through governmental and non-governmental sources that are instrumental to the elimination of avoidable causes of blindness. It has been pivotal in gaining and unifying advocacy for eye health at an international and national level. The reduced rates of age-related blindness globally are encouraging of the efforts of Vision 2020. However, there is an overall increase in crude prevalence, and this points to the need for a significant upscaling of efforts. The growing population and demographic shifts will present huge challenges in efforts to minimise vision impairment. To achieve the aims of Vision 2020, there will need to be significant up-scaling of current programmes, increased education, and better reporting of outcomes to better target care. There needs to be continued focus on areas of the world where the magnitude of vision loss is the worst

and the resources available are minimal. There will need to be an increased focus to tackle the burden of NCED that will increase owing to epidemiologic shifts that have already taken place in high-income countries but are also encroaching on low- and middle-income countries. The recent COVID-19 pandemic may have an impact on achieving elimination of avoidable blindness as a public health problem, but it is difficult to say what these may be currently. Undoubtedly, Vision 2020 has led to huge milestones in the way we perceive the importance of eye care and our approaches to providing eye care. However, as can be seen from the most recent data on vision we have a while to go.

Limitation and Recommendation:

Al though children of rural area all over the Bangladesh facing the same problem, the present study cover only one village due to time and other constraines, sample size is 100 which is too small is main limitation of the study.

In spite of these limitation it is hopeful that the study will attract other attention who are interested in depth of issue, although the study not comprehensive it is envisaged to provide some food for thinking about the issue and it enable to attract the attention of the policy makers there might have opportunity to take up necessary steps to strengthen school sight testing program.

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