CONTENTS

Editorial

Obstructive Sleep Apnoea and Bangladesh Perspective
S M Khorshed Alam Mazumder 1

Original Articles

Video Head Impulse Test (vHIT) and Vestibular Evoked Myogenic Potential (VEMP) Test for Assessment of Vertigo: Our Initial Experience
Ahmed Raquib, Md Abdullah Al Harun, MA Matin, Dhiman Pramanik, M Muinul Hafiz 5

Utility of Tolonium Chloride Rinse in the Diagnosis of Oral Cancer
Md. Kamruzzaman, Kazi Nurjahan, AS Gazi Sharifuddin, SK Ballav 10

Study of Prevalence of Concha Bullosa, Nasal Septal Deviation and Sinusitis based on CT Findings

Comparative study of neck swelling by clinical, cytological and histopathological examination
Mohammad Idrish Ali, Md. Mahmudul Huq, Momenu Haque, Kamrul Hasan Tarafder 24

Hearing Outcome of Stapes Surgery in NIENT, Bangladesh
Md. Zakaria Sarkar, AHM. Ferdows Nur, Utpal Kumar Dutta, Muhammad Rafiqul Islam, Debabrata Roy, SM Shafi Wahid, Mohammad Ashequr Rahman Bhuiyan 31

Clinicopathological Study of Carcinoma Larynx
Mohammad Nazim Uddin, Abu Hena Mohammad Parvez Humayun, Muhammad Bipul Islam, Md. Masudur Rahaman 37

Thyroidectomy without drain
Niloy Ananda Shil, M. Alamgir Chowdhury, Md. Sirajul Islam 41

A Clinical Study on Etiological Factors and Management of Epistaxis at a Tertiary Level Hospital

Case Report

Pulse Oximetry is Essential in Home Management of Elderly COVID-19 Patients

Bilateral Langerhans Cells Histiocytosis in the Temporal Bone: A case report
Kanu Lal Saha, Bishnu Pada Dey, Md. Abul Hasnat Joarder, Mohammad Anamul Haque, Bishwajit Bhowmik 68

White papilloma involving both vocal cords: A Case Report
Abirvab Naha, Utpal Dutta, Pran Gopal Datta, Ashim Kumar Biswas, MA Chowdhury 73
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Obstructive Sleep Apnoea and Bangladesh Perspective

Sleep medicine is a medical superspeciality devoted to the diagnosis and therapy of sleep disturbance and disorders. From the middle of 20th century research has provided increasing knowledge and answered many questions about sleep awake functioning. Disorders and disturbances of sleep are widespread and can have significant consequences for affected individuals as well as economic and other consequences for the society. sleep deprivation has also been a significant factor in dramatic accidents. The first sleep clinic in United states were established in 1970s.

The International Classification of Sleep Disorders (ICSD), the concept of sleep medicine belongs to the second half of the 20th century. Due to the rapidly increasing knowledge about sleep, including the growth of the research field chronobiology from about 1960 and the discoveries of REM sleep (1952–53) and sleep apnea (first described in the medical literature in 1965), the medical importance of sleep was recognized.

The World Federation of Sleep Research & Sleep Medicine Societies (WFSRSMS) was established in 1987. The European Sleep Research Society (ESRS) is a member of the WFSRSMS. The Assembly of National Sleep Societies (ANSS), which includes both medical and scientific organizations from 26 countries as of 2007, is a formal body of the ESRS. The American Academy of Sleep Medicine (AASM), founded in 1978, administered the certification process and sleep medicine examination for doctors.

Elites of Bangladesh having opportunities to get treatment from abroad were availing treatment by surgery or c-pep machines for long time but our common population is not aware of the treatment opportunities for sleep disorders. Above all our repertory physicians and Otolaryngologists were providing limited treatment for sleep apnea. Association of Surgeons for Sleep Apnoea, Bangladesh was established in 2014. Since then we were organizing International conference of Association of Surgeons for Sleep Apnoea, Bangladesh, with Scientific sessions, live surgery workshop and Rallies.

Sleep apnea is a disorder in which breathing is repeatedly interrupted during sleep. The word “apnea” literally means “without breath”. An apnea is defined as a complete cessation of breathing that lasts 10 seconds or greater. There are two principal types of sleep apnea, “obstructive sleep apnea (OSA),” and “central sleep apnea” (CSA). Complex sleep apnea is a combination of obstructive sleep apnea and central sleep apnea. Obstructive sleep apnea is an increasingly well-recognized disease characterized by periodic collapse of the upper airway during sleep. This leads to either complete or partial obstruction of the airway, resulting in apneas, hypopneas, or both. This disorder causes daytime somnolence, neurocognitive defects, and depression. It affects almost every system in the body, resulting in an increased incidence of hypertension, cardiovascular disease, stroke, pulmonary hypertension, cardiac arrhythmias, and altered immune function. It also increases
the risk of having an accident, presumably as a result of associated somnolence. Like obstructive sleep apnea, central sleep apnea is more common in males and people over the age of 65. However, unlike obstructive sleep apnea, central sleep apnea is often associated with serious illness, such as heart disease, stroke, neurological disease, or spinal or brainstem injury.

By far the most common is obstructive sleep apnea, comprising 90 to 96% of apneas diagnosed on overnight sleep study (polysomnography). OSA results from repetitive collapse of the upper airway. Central sleep apnea is due to decreased output from ventilatory control centres in the brain. In clinical practice, the most frequently used measurement of OSA is the Apnoea Hypopnea Index (AHI) derived from an overnight sleep study. It is the number of apneas (complete cessation of airflow) plus hypopneas, (50% reduction in airflow associated with oxygen desaturation and/or arousal from sleep), divided by the number of hours of recorded sleep. An AHI of 5 or greater indicates the presence of OSA, and more than 30 indicates a severe degree of OSA. Obstructive Sleep Apnoea occurs in an estimated 24% of middle-aged males and 9% of middle-aged females as defined by an AHI >5 on sleep study.

Pathophysiology:
Daytime sleepiness is a characteristic feature of OSA and can be assessed using the Epworth Sleepiness Scale (ESS). There are 8 questions in the scale, which ask a patient how likely they are to doze off in certain situations. A score greater than 10 out of a possible 24, indicates subjective daytime sleepiness. Obstructive Sleep Apnoea occurs as a result of collapse of the upper airway. The upper airway between the back of the nose and the top of the larynx is supported only by muscle tone. With sleep onset, this muscle tone is reduced and the airway narrows. The airspeed through this narrowed upper airway increases and results in vibration of the upper airway, with snoring. The airway may become so narrow that it collapses, usually on inspiration, resulting in an Apnoea or hypopnea. Since air can no longer enter the lungs, the oxygen level in the blood falls, and carbon dioxide levels rise. These changes are sensed by receptors in the carotid artery in the neck and also in the brain, and stimulate increased respiratory effort via the abdominal and chest wall muscles. These efforts are futile against the occluded upper airway. The fall in oxygen levels, the rise in carbon dioxide levels and increased respiratory effort may precipitate an arousal from sleep. Muscle tone then returns to the upper airway which allows breathing to recommence. Surges of sympathetic nerve activity occur during the period of apnea which may contribute to the cardiovascular consequences of OSA. The duration of this obstruction may last up to a minute and occasionally longer, and may occur hundreds of times during the night. The repeated fragmentation results in poor sleep quality and excessive daytime sleepiness.

Symptoms and Complications of OSA
Repeated fragmentation of sleep from OSA results in poor quality of sleep, and symptoms of sleep deprivation. Apart from daytime sleepiness, which does not necessarily relate to the severity of the OSA, there are a wide range of health concerns. Cognitive function can be significantly impaired resulting in difficulty concentrating, depression, learning and memory difficulties, personality changes, and hyperactivity in children. Morning headaches, decreased libido and impotence in men can result from OSA, which can also increase driving risk and impair work performance. OSA has been
linked to several cardiovascular complications. OSA is an independent risk factor for the development of hypertension and insulin resistance, and is associated with heart attack, cardiac arrhythmia, and stroke. Bed partners are also significantly affected, with their own sleep being disrupted, even as they sleep, resulting in symptoms of sleep deprivation. Licensing authorities have strict guidelines on how sleepiness and driving risk should be addressed.

Risk Factors for OSA: There are a number of recognized risk factors for OSA. These include: Male gender, increasing age, Body Mass Index >30, Neck circumference > 42 cm, enlarged tonsils, Alcohol, Smoking, Post-menopause, Sleeping tablets.

Investigation of OSA: In view of the high prevalence of OSA, and the potentially serious consequences of untreated OSA, investigation is essential in order to determine the most effective treatment. Investigation should be considered if the patient presents with persistent snoring, and at least one other associated symptom. Most commonly this will be excessive daytime sleepiness, but may include any of the symptoms mentioned above. Investigations can be divided into four categories: Level 1- Full monitored overnight polysomnography undertaken in a specialist unit with overnight observation. Involving both respiratory, limb and EEG leads. Level 2.- Full overnight polysomnography, without overnight observation. This might be in a specialist unit, or at home. Level 3-Monitoring of respiratory parameters and oximetry with pulse rate, and usually undertaken in the home. Level 4- Pulse oximetry, measuring oxygen desaturation and pulse rate only. Usually undertaken in the home. Level 1 studies have always been considered to be the ‘gold standard’ investigation for sleep disorders.

Treatments of OSA:
There are of four broad categories of effective treatments for OSA.

1. Lifestyle. Lifestyle changes can be very effective in mitigating the symptoms of sleep apnea.

Weight loss is most important in all those who are overweight. However approximately 25% of those suffering from OSA are not overweight but may exhibit some craniofacial characteristics such as micro- or retrognathia. Alcohol in the evening should be reduced to <2 units. Both alcohol and sleeping tablets relax the pharyngeal muscles allowing the pharyngeal walls to collapse more easily.

Smoking results in irritation and swelling of the pharyngeal space, increasing the likelihood of snoring and OSA. Snoring and OSA is almost always worse when lying on the back. Sewing a pocket into the back of the pajamas to hold a tennis ball or golf ball will ensure that lying on the back is impossible.

2. Continuous Positive Air Pressure (CPAP). This is the “gold standard” treatment for OSA. Delivered via a nasal or oronasal mask, pressurized air is used to splint open the floppy upper airway. It is a cumbersome, but extremely effective therapy. As many as 70% of patients can tolerate therapy long term. CPAP can improve quality of life, cognitive function, reduce driving risk, hypertension and cardiovascular risk, particularly in symptomatic patients with severe disease.

3. Mandibular Advancement Splints (MAS). This works by holding the mandible forward. Since the tongue is attached to the mandible, the tongue is held forward preventing it from falling backwards and
causing obstruction. There are a number of devices which are generally effective for snoring, mild and even moderate OSA. They are most effective in patients with mild OSA which is worst in the supine position in non-obese patients. Patients who may be suitable for treatment with a MAS should be referred to a dentist who has an interest in this area. It is very important that the device is properly manufactured and customized for each patient. A number of cheaper appliances are available for purchase over the counter or from the internet. These cannot be recommended.

4. Surgery. Whilst this used to be a very popular treatment for OSA, Uvulopalatopharyngoplasty (UPPP) may improve snoring and sometimes cure OSA, particularly more severe disease. Surgery can be used to correct obstructions in the airways.

This surgery removes tissue from the rear of the mouth and top of the throat. The tissues removed include parts of the uvula (the flap of tissue that hangs down at the back of the mouth), the soft palate, and the harynx. Tonsils and adenoids are usually removed in this operation. This operation significantly improves sleep apnea in slightly more than half of all cases. Tonsillectomy is most effective when the patient has large tonsils. Nasal surgery can be used to relieve obstruction. More extensive procedures are available for selected cases where craniofacial abnormalities are impinging on the upper airway.

The most common surgery is called UPPP, Uvulopalatopharyngoplasty. Reconstructive surgery is possible for those whose OSA is due to constriction of the airway by lower jaw deformities. Genioplasty, which is a procedure that plastic surgeons usually perform to reshape a patient's chin to improve his or her appearance, is now being done to reshape the upper airway in patients with OSA. When other forms of treatment are not successful, obstructive sleep apnea may be treated by tracheotomy.

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Video Head Impulse Test (vHIT) and Vestibular Evoked Myogenic Potential (VEMP) Test for Assessment of Vertigo: Our Initial Experience

Ahmed Raquib¹, Md Abdullah Al Harun², MA Matin³, Dhiman Pramanik⁴, M Muinul Hafiz⁵

Abstract:

Introduction: Loss of balance causes the sensation of vertigo. Balance is maintained by vestibular afferent from labyrinth, eyes and proprioceptors and their central integration. For diagnosis of vertigo, along with history different vestibulometric tests can be done to identify the specific anatomical part that is involved.

Material and methods: A cross sectional study was done among 82 patients who did video Head Impulse Test (vHIT) and among 75 patients who did Vestibular Evoked Myogenic Potential (VEMP) test at Audiovestibular Centre (AVC) at Bangladesh ENT Hospital Ltd. during the period from April 2018 to September 2019.

Results: Age range of the sample was 16 to 80 years. Among the 82 patients who did vHIT 62 (75.6%) had abnormality in either Semi Circular Canal. Among 75 patients who did VEMP 27 (36%) were detected to have abnormality in either in saccule or utricle.

Conclusion: For diagnosis of cause of vertigo the appropriate test for individual part of vestibule is essential. vHIT and VEMP are two tests which are complementary to each other in explaining common peripheral causes of vertigo.

Key words: Video head impulse test (vHIT), Vestibular evoked myogenic potentials (VEMP), vertigo, balance.
to gravity. iii. Gaze stabilization or visual stability – so that objects in the visual field remain stable and do not appear to be moving when the head is moved, or when the visual surroundings move, or when both the head and the visual surroundings move.

Vestibular afferent from labyrinth, eyes and proprioceptors execute their function through efferent motor organs through vestibuloocular reflex (VOR), vestibulocollic reflex (VCR) and vesibulospinal reflex (VSR). For diagnosis of patients presented with dizziness, vertigo, taking history from the patient is of utmost importance and different vestibulometric tests are now also available to identify the specific anatomical part that is involved.

The video head impulse test (vHIT) incorporates a new technology that uses a pair of high-speed, light-weight video goggles to measure (left or right) eye velocity in response to head movement and record “catch-up” saccades (and other abnormalities) in patients with an impaired VOR.

vHIT provides a quick and objective measure of the VOR in response to head movements in the natural range of daily motions and thus evaluates the functional integrity of all the six Semi Circular Canals (SCC)s of bothsides (Fig.1,2,3). Hence, this test is much more relevant than the caloric ENG/VNG tests.

Vestibular evoked myogenic potentials (VEMPs) are becoming widely used for detailed neurophysiological assessment of the vestibular system. A VEMP is basically a myogenic response from the muscles of the neck or eyes, in response to loud acoustic stimulation of the otolith organs (viz., the saccule and utricle). Ocular VEMPs (oVEMPs) (Fig. 4) measure the function of the vestibulo-ocular reflex arc (utricle, superior vestibular nerve, brainstem vestibular nuclei, medial longitudinal fasciculus, inferior oblique muscle). Cervical VEMPs (cVEMPs) (Fig.5) measure the integrity of the vestibulo-collic reflex (saccular afferents, inferior vestibular nerve, the brainstem vestibular nuclei, the medial vesibulospinal tract, upper cervical motor neurons and the accessory nerve).

Materials and Methods:
A cross sectional study was done among 82 patients who were referred for video Head Impulse Test (vHIT) and among 75 patients who did Vestibular Evoked Myogenic Potential (VEMP) test during the period from April 2018 to September 2019. All the tests were done in AudiovestibularCentre (AVC) at Bangladesh ENT Hospital Ltd. vHIT is done by Eye See Cam of Interacoustics and VEMP tests are done by protocol of Eclipse by Interacoustics.

Results:
Age range of the sample was 16 to 80 years. Among the 82 patients who did vHIT 62(75.6%) had abnormality in either SCC. Among 75 patients who did VEMP 27(36%) were detected to have abnormality in either in saccule or utricle.

Table 1:
Age distribution of patients

<table>
<thead>
<tr>
<th>Age</th>
<th>vHIT</th>
<th>VEMP</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-20</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>21-30</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>31-40</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>41-50</td>
<td>24</td>
<td>23</td>
</tr>
<tr>
<td>51-60</td>
<td>18</td>
<td>17</td>
</tr>
<tr>
<td>61-70</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>71-80</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>82</td>
<td>75</td>
</tr>
</tbody>
</table>
Table II: Abnormality in vHIT test

<table>
<thead>
<tr>
<th>Canal involved</th>
<th>Abnormal=62(75.6%) in 82</th>
<th>Frequency Side of involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Bilateral</td>
</tr>
<tr>
<td>Lateral</td>
<td>27(43.5%)</td>
<td>20(75%)</td>
</tr>
<tr>
<td>Posterior</td>
<td>15(24%)</td>
<td>3(20%)</td>
</tr>
<tr>
<td>Anterior</td>
<td>20(32.2%)</td>
<td>5(25%)</td>
</tr>
</tbody>
</table>

Table III: Abnormality in cVEMP and oVEMP

<table>
<thead>
<tr>
<th></th>
<th>Abnormal=27(36%) in 75</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both</td>
<td>11(14.7%)</td>
</tr>
<tr>
<td>oVEMP</td>
<td>7(9.3%)</td>
</tr>
<tr>
<td>cVEMP</td>
<td>9(12%)</td>
</tr>
</tbody>
</table>

Fig 1: Bilateral Lateral canal graph with Gain comparison

Fig 2: Right Anterior-Left Posterior canal (RALP) graph
Discussion:
The central and peripheral vestibular system, in conjunction with the ocular and somatosensory system, is responsible for equilibrium balance and orientation in the space. Of all the symptoms of otological/neurotological diseases vertigo can be one of the most incapacitating of symptoms.

A detailed history, clinical examination, neurological examination is mandatory in assessment of a dizzy patient. With advancement of computer aided neurotological investigation we can locate the more accurately the site of lesion.

Table I shows among the referred patients about two-third (~64%) belonged to 41-70 years of age range. It represent the referral pattern in this series but Prevalence of dizziness increases significantly with age and among institutionalized patients 6.

Table II shows distribution of result of video Head Impulse test (vHIT) according to the individual semicircular canal affected. In interpreting vHIT the following points are considered: i) the gain of VOR (normal range 0.7-1), ii) presence or absence of saccades (jerky corrective movement of eye). Lateral and Superior SCC are innervated by...
Superior division of Vestibular nerve and the Inferior division innervating the Posterior SCC.

Table III shows the frequency of abnormality in Ocular and Cervical VEMP test. In interpreting the tracing of these tests following points are considered: i) particular pattern of graph at defined time interval ii) EMG scaling. Abnormality in oVEMP and cVEMP represent abnormality in Utricle and Saccule respectively. It assist in the diagnosis of disorders such as Superior Semicircular Canal Dehiscence (SSCD) and Meniere's disease.

it is obvious that the combined use of VEMPs and vHIT we can analyze the peripheral vestibular function to far greater detail than by only using the caloric test.

Conclusion:
Vertigo almost always arises from the vestibule and rarely from central or intracranial causes. Approximately 80% of vertigo cases result from peripheral causes, including Meniere’s disease, vestibular neuritis, and benign paroxysmal positional vertigo. Central-type vertigo is caused by more severe diseases, including migrainous vertigo, brainstem ischemia, cerebellar infarction, and intracranial hemorrhage.

So for identification of the part of the vestibule involved, the appropriate test for individual part is an essential key to diagnosis. vHIT and VEMP are two tests which are complementary to each other in explaining common peripheral causes of vertigo.

References:
Utility of Tolonium Chloride Rinse in the Diagnosis of Oral Cancer

Md. Kamruzzaman¹, Kazi Nurjahan², AS Gazi Sharifuddin³, SK Ballav⁴

Abstract

Background: Oral cancer burden in developing countries is huge. In Bangladesh and India incidence were 10.6% and 10.4% respectively on 2018. At the same time worldwide incident was only 2%. Majority patients present at advanced stage and their survival rate is poor. Diagnostic delay from patient side and health delivery system side is significantly longer and it is more in developing countries. Like other malignancy early diagnosis can save a lot of these patient.

Methods: This prospective study was carried out in Khulna Medical College Hospital from July 2017 to July 2019. Patients who will meet the criteria for this prospective study and capable and willing to give informed consent were enrolled. 20 second rinse/gargle with 10ml of 1% Tolonium chloride solution was done. Biopsy were taken from stained lesion, biopsy report were compared with TC stained lesions.

Results: Out of 1650 patients in our outdoor department for various problem and only 30 cases were selected for this study according to selection criteria. Of 30 patients, 18 (60%) were male and 12 (40%) were female. The male-to-female ratio was 3:2. It was found that the sensitivity of 1% Tolonium Chloride rinse for oral precancer and cancer detection was 83.33%, whereas the specificity was 84.21%.

Conclusion: Tolonium chloride rinse is a good screening test for oral cancer diagnosis with sensitivity 83.33% and specificity 84.21%.

Keywords: Oral cancer, Tolonium Chloride, Oral cancer screening;

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Introduction: There were 18078957 new cases of cancer and 9555027 deaths worldwide in 2018, of which male and female are 9456418 and 8622539 respectively.¹ In 2018 total population of Bangladesh was 166 million, number of new cancer case were 150781 and death due to cancer were 108137. Among this oral and lip cancer were 8895(10.6%) and it is almost similar to India (10.4%). But worldwide incidence rate is only 2%, that indicates oral cancer burden is higher in developing countries. The American Cancer Society estimated that 34,360 men and women (24,180 men and 10,180 women) would be diagnosed with and
7,550 men and women would die of cancer in oral cavity and pharynx in 2007. Although definite figure about oral cancer is not available in Bangladesh, it has become a serious issue for Bangladesh. Source based on 21,238 cancer (Male 14,222 and female 7,076) treated at the Radiotherapy Department of Dhaka Medical College Hospital during the period of 1985-92, relative percentage of oral cancer was 12% and 13% among male and female respectively. In India and Pakistan when compared with overall incidence of all body cancers Oral cancer stands second to bronchogenic carcinoma in males and breast carcinoma in female. Oral cancer is a significant health threat with one of the lowest survival rates (fewer than 50% patients surviving more than 5 years). Early diagnosis of oral cancer is of critical importance because of the impact of stage of cancer in prognosis for cure. The 5 year prognosis for oral cancer is reduced by approximately half if tumor has spread regionally to lymph nodes or bone and morbidity and cost of treatment increase with stage of the disease. The stage distribution based on historic stage shows that 33% of oral cavity and pharynx cancer cases are diagnosed while the cancer is still confined to the primary site (localized stage); 52% are diagnosed after the cancer has spread to regional lymphnodes or directly beyond the primary site; 10% are diagnosed after the cancer has already metastasized (distant stage) and for the remaining 5% the staging information was unknown. The corresponding 5-year relative survival rates were 81.8% for localized; 52.1% for regional; 26.5% for distant; and 46.2% for unstaged. The median total delay of diagnosis is 4 months of which two-thirds is patient delay. Both patients and professionals were responsible for the delay in diagnosis. This delay was longer for tumors in early stages. Multiple logistic regression analysis indicated that the professional delay was the most associated variable to the stage of tumor (P = 0.03). Despite this late presentation, oral cancer occurs in known risk groups and might be seen with detectable mucosal changes, including leukoplakia, erythroplakia, or mixed red and white lesion earlier in the course of the disease. Screening for oral cancer might be useful, because of the easily detectable precancerous lesions, early invasive cancers. Visual inspection of oral cavity with Tolonium Chloride (TC) rinse is simple procedure of oral cancer screening. TC used in this study is a component of toluidine blue, a metachromatic, basic aniline dye that was first used approximately 50 years ago as an anti-heparin agent in certain types of bleeding disorders. The safety of the topical application of TC in the oral cavity has been demonstrated in a number of studies. In the early 1960s, initial reports were published suggesting the clinical utility of topically applied TC as an aid in the diagnosis of carcinoma of the cervix and oral mucosa and delimitation of the area to be treated. Subsequent studies suggested that TC staining might be useful in identifying the presence and dimensions of bronchogenic, esophageal, and gastric carcinomas during endoscopic examination. Since the early 1970s, numerous clinical studies have been conducted in which the sensitivity and specificity of TC in the diagnosis of oral carcinoma were evaluated. Prior studies support the use of TC as an adjunct in the detection and clinical evaluation of oral lesions suspicious for cancer. A study conducted in Sri Lanka assessed 102 patients in whom 18 oral/oropharyngeal CA were found and of these 7 were detected only on TC assisted examination. It is strange to think that, at present, pelvic examination and pap smears appear more
acceptable than looking in the mouth. We have to remember that screening for oral cancer is simple non-invasive procedure, which need lighting, gauze, and gloves, whereas the detection of most solid malignancies in their early asymptomatic stages almost always require special, costly, and often invasive techniques.

Methods:
This prospective study was carried out in Khulna Medical College Hospital from July 2017 to July 2019. Patients who will meet the criteria for this prospective study and capable and willing to give informed consent were enrolled. Patient of age 18 years or older and having clinically suspicious or premalignant lesion in oral cavity was included in this study.

Patients treated for oral cancer in the 3 months before entry, Pregnant and breast feeding women, Known medical condition with oral manifestations and Medical condition that would prevent study participation were excluded from this study.

During first visit after informed consent demographic and medical data will be recorded, oral cavity was examined. Clinically suspicious or premalignant lesions in the oral cavity was rinsed with Tolonium Chloride. Following procedure will be adopted for staining:

a. Patient’s oral cavity rinse with 30 ml 1% acetic acid solution for 20 seconds. This solution remove excess saliva and provides a consistent oral environment.

b. Patient rinse with water for 20 seconds and expectorate.

c. 20 second rinse/gargle with 10ml of 1% Tolonium chloride solution.

d. Patient then rinse with 30ml 1% acetic acid solution for 20 seconds and this step is repeated.

e. Final water rinse and it is repeated.

After TC staining, any lesions believed to require biopsy or that stained with TC were biopsied. Biopsy specimens was placed in 10% formalin and sent to the local pathology laboratory. Lesions were categorized as benign (keratosis, hyperkeratosis, hyperplasia), inflammatory (mild, moderate, severe), dysplasia (mild, moderate, severe), CIS (carcinoma in situ), Ca, or other. Dysplasia was characterized as cellular abnormalities, which might include variation in cell size, morphology, or orientation. When dysplasia is seen in the full thickness of the epithelium in any one microscopic field, the diagnosis is CIS, whereas squamous cell carcinoma (SCC) involve disruption of the basement membrane in the presence of dysplastic cells.

Statistical analysis:
Sensitivity was calculated using the following lesion definitions. Lesions were considered clinically suspicious (CS+) and TC positive (TC+) if they stained. Exceptions to this rule include biopsied lesions that were (1) CS-/TC+, (2) CS-/TC- (3) CS+/TC- and 4) CS+/TC+. Continuous and categorical variables were characterized by means/standard deviations and proportions, respectively. In general, groups were compared using Student’s $t$ test for continuous variables and Fisher’s exact test when the variables were categorical.

Result:
In this study we examined 1650 patients in our outdoor department for various problem and only 30 cases were selected for this study according to selection criteria. Data was collected by interview of the patients, visual screening and investigation. Of 30 patients, 18 (60%) were male and 12 (40%) were female. The male-to-female ratio was 3:2.
The age range was 39 to 77 with an average age of 60.50±10.88 years. Duration of the lesions ranged from 1 to 24 months with the average duration of 6.13±6.80 months. Locations of lesions were as follows: floor of the mouth, 8 (24.2%); lateral tongue, 8 (24.2%); buccal mucosa, 7 (21.2%); lower lip, 4 (12.1%); hard palate, 2 (6.1%); soft palate, 2 (6.1%); and alveolar ridge, 2 (6.1%). Seventy-seven percent of our patients smoked, 25% consumed alcohol, and 67% chewed betel nut. When the patients were separated into 2 groups by sex, it was found that 100% and 25% of male patients smoked and consumed alcohol. On the other hand, only 16.7% of female patients smoked and 0% consumed alcohol, while 96.7% chewed betel nut.

The results from 1% Tolonium Chloride rinse and histopathological diagnosis are shown in Table I.

Table I:

<table>
<thead>
<tr>
<th>Tolonium chloride rinse</th>
<th>Disease $^+$</th>
<th>Disease $^-$</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ Result (%)</td>
<td>30(90.9)$^3$</td>
<td>3(9.1)</td>
<td>33</td>
</tr>
<tr>
<td>- Result (%)</td>
<td>6(27.3)</td>
<td>16(72.7)$^4$</td>
<td>22</td>
</tr>
<tr>
<td>Total</td>
<td>36</td>
<td>19</td>
<td>55</td>
</tr>
</tbody>
</table>

1- Disease- are dysplasia, carcinoma in situ and squamous cell carcinoma.
2- Disease- are hyperplasia, inflammation and normal mucosa
3- Sensitivity- 30/36 (83.33%)
4- Specificity- 16/19 (84.21%)

Fig. 1: Showing the sex distribution of the participants

Fig. 2: Distribution of oral lesion according to site

Fig. 3: Showing the percentage of Tobacco and Betel leaf & nut user
It was found that the sensitivity of 1% Tolonium Chloride rinse for oral precancer and cancer detection was 83.33%, whereas the specificity was 84.21%. In addition, the positive predictive value of the use of 1% Tolonium Chloride rinse for oral cancer examination was 90.91% and the negative predictive value was 72.73%. The relationship between the results of oral cancer examination using 1% Tolonium Chloride rinse and the results of histopathological diagnoses revealed significant association (P = .001).

Discussion:
The average age of our patients was 60.50±10.88 with a male-to-female ratio of 3:2. These findings are consistent with age and gender of oral cancer patients reported by other studies.18,19 However, the proportion of female patients in our study is slightly higher than that of other studies. This is probably because betel nut is still used by our elder female population. The distribution of lesions, from 24.2% at the lateral tongue and floor of mouth, to 6.1% at the hard palate, soft palate, and alveolar ridge is also comparable to the distribution of oral cancer lesions obtained from other studies.1,19,20

We, however, observed a higher occurrence of oral cancer on the buccal mucosa (21.2%) than that reported by others. This could stem from the use of betel nut as well.

It is widely accepted that smoking, alcohol consumption, and betel nut chewing are leading risk factors for the development of oral cancer. We found that 66.7% of our patients smoked, 25% drank alcohol, and 67% chewed betel nut. This confirms the danger of those risk factors. The association between sex and the risk factors indicates that sociological habits associated with gender determine the risk factors for oral cancer development.

This study aimed to examine the sensitivity, specificity, and accuracy of 1% Tolonium Chloride rinse in the detection of early oral cancer, an area in which no researcher has explored the possibilities. When we compared the sensitivity and specificity of 1% Tolonium Chloride rinse (83.33% and 84.21%, respectively) from this study to the reported sensitivity (77% to 100%) and specificity (44% to 93%) of toluidine blue from 9 studies.20-26
The significant relationship found between clinical examination using 1% Tolonium Chloride rinse and histopathological diagnoses confirmed that 1% Tolonium Chloride rinse reacted better with tissues that had turned dysplastic or malignant than with normal tissues and warranted the use of Tolonium Chloride rinse in oral cancer examination.

We stated earlier that clinical changes due to 1% Tolonium Chloride rinse in oral cancer examination and the results of histopathological diagnoses are significantly correlated. Regarding patients’ tolerance after the application of 1% Tolonium Chloride rinse, we found that most patients had no complaint over the use of 1% Tolonium Chloride rinse. Four patients had records of bleeding and 3 patients had burning sensation. These were patients with ulcerations of at least 1 cm in diameter.

This is a preliminary study investigating the use of 1% Tolonium Chloride rinse in oral cancer detection. Thus, any patients with lesions suspected of having oral squamous cell carcinoma were included in the study.

The added values of 1% Tolonium Chloride rinse can be summarized as follows:

1. In 14 patients we also biopsied the sites that did not change to blue but were close to the lesions. We found that all those specimens were normal mucosa, chronic inflammation or epithelial hyperplasia. Thus, 1% Tolonium Chloride rinse helps demarcate dysplastic areas from nonmalignant tissue. Interestingly, specimens from a lesion that we biopsied in 3 areas were histopathologically identified as squamous cell carcinoma, lichen planus, and normal mucosa, respectively.

2. There were 3 patients in whom we also biopsied normal areas that had turned blue but were not part of the lesions of primary interest. We found that those areas were dysplastic.

This study, however, has few limitations. First, only a single investigator assessed patients with clinically known cancer or dysplastic lesions. Thus, the results of the 1% Tolonium Chloride rinse examination were influenced by the clinical examination. Second, only patients with lesions were included in this study; therefore, we recommend further study and evaluation of 1% Tolonium Chloride rinse used for oral cancer screening in rural communities because of its acceptable sensitivity, specificity, and accuracy.

Conclusion:
Tolonium Chloride rinse showed promising sensitivity, specificity, and accuracy for oral cancer examination. The results of clinical examination using 1% Tolonium Chloride rinse also correlate with the histopathology. 1% Tolonium Chloride rinse is suitable to be used for oral cancer examination, especially in developing countries.

References:


19. Mashberg A. Final evaluation of tolonium chloride rinse for screening of high-risk patients with asymptomatic...


Original Article
Study of Prevalence of Concha Bullosa, Nasal Septal Deviation and Sinusitis based on CT Findings

Abstract:
The anatomical variations and pathological conditions of the sinonasal area can be easily identified using computed tomography (CT) scan. The study was done to observe the prevalence of concha bullosa (CB) and nasal septal deviation (DNS) in sinusitis patients. 135 CT scan of nose and paranasal (PNS) sinuses were taken and reviewed retrospectively for the presence of concha bullosa, nasal septal deviation and sinusitis in the department of Otolaryngology, Head and Neck Surgery, Border Guard Hospital, Dhaka from March 2019 to January 2020. Out of 135 patients, CT scan of nose and PNS revealed 74.81% patients exhibited some sinus disease, 68.14% nasal septal deviation and 42.22% had concha bullosa. In this study, we have done a retrospective analysis of the CT scan of PNS in order to assess the prevalence CB, DNS and sinusitis.

Key words: Concha bullosa, Nasal septal deviation, Chronic sinusitis, Computed tomography scan.

Introduction:
Concha bullosa (CB) is the pneumatization of the middle turbinate and is one of the anatomic variations of the paranasal region.1 It can be either unilateral or bilateral and generally occurs together with a septal deviation to the contralateral side.2,1 There are three types of CB according to the location of pneumatization; lamellar type (vertical lamella of the concha is pneumatized); bulbous type (bulbous segment is pneumatized) and extensive concha bullosa (both the lamellar and bulbous segments are pneumatized).3,1 It is most commonly encountered in the middle concha, though can also be seen in superior and inferior concha. It might present unilaterally or bilaterally, very small or may attain a considerable size.4 It is usually asymptomatic, but it sometimes can cause different sinonasal symptoms. The severity of symptoms is related to degree of pneumatization.5 CT scan of the PNS has become a widely accepted tool for the...
diagnosis of anatomic abnormalities, location and severity of the disease. CB is best diagnosed radiographically by CT scan; it appears as an air space of the middle turbinate. Many patients with concha bullosa have been found to have co-existent deviation of the nasal septum and sinusitis. In most guidelines, chronic sinusitis is defined by the presence of at least two out of four cardinal symptoms (facial pain/pressure, hyposmia/anosmia, nasal drainage and nasal obstruction) for at least 12 consecutive weeks. Relationship of concha bullosa with paranasal sinus disease continues to be debated. It is suggested that the enlarged concha may compress or deviate the uncinate process against the lateral wall of the nasal cavity or compress the middle meatus and narrow the ethmoidal infundibulum, thereby causing ipsilateral maxillary sinus disease. Similarly, the role of nasal septal deviation in the etiology of sinusitis remains unclear. It has been suggested that when a concha bullosa is present, the nasal septum is deviated with a convexity to the opposite side, narrowing the middle meatus and therefore resulting in obstructed drainage of the ipsilateral maxillary, anterior ethmoid and frontal sinuses. Herein we have done a retrospective analysis of the CT scan of PNS in order to assess the prevalence of CB, DNS and sinusitis. This knowledge will be useful for future endoscopic surgeons in order to understand the pathogenesis of sinusitis and therefore avoid iatrogenic injury due to these common anatomical variations.

Materials and Methods:
The study was done retrospectively on the basis of radiology database for all paranasal sinus CT findings obtained from March 2019 to January 2020 at the department of Otolaryngology, Head and Neck Surgery, Border Guard Hospital, Dhaka. A total of 135 consecutive CT studies were identified. Adult patients irrespective of age, sex and socio-economic status with clinical diagnosis of chronic sinusitis who were advised CT scan as a part of routine management protocol were included in the study. Patients with the history of previous sinus surgery, benign or malignant sino-nasal tumor, facial trauma, having mucosal polyps, craniofacial anomalies, odontogenic sinusitis, acute rhinosinusitis, sinus malignancies and who were not willing to undergo necessary investigations were excluded from the study. The left and right sides of each of the frontal, ethmoid, sphenoid and maxillary sinuses were assessed separately for the presence of mucosal disease. This disease was evaluated as either being present or absent.

A concha bullosa was defined as being present when more than 50% of the vertical height (measured from superior to inferior in the coronal plane) of the middle turbinate was pneumatized. A concha was subjectively assessed as being absent, small, moderate or large. Deviation of the nasal septum was subjectively assessed as being absent, mild, moderate or severe and the direction of deviation was described by the convexity of the septal curvature. The preservation or obliteration of the air channel between a concha and the nasal septum was also assessed.

Result:
Among the 135 patients, who were included in the study, 79 (58.51%) were female and 56 (41.49%) were male with female to male ratio of 1.41: 1. Patients were aged between 19-72 years and the mean age was 32.45 years (Table-I).

<table>
<thead>
<tr>
<th>Total</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>135</td>
<td>79 (58.51%)</td>
<td>56 (41.49%)</td>
</tr>
</tbody>
</table>

Of all 135 patients, CT Nose and PNS revealed 101 (74.81%) had some sinus disease, 92 (68.14%) had nasal septal deviation and 57 (42.22%) had concha bullosa (Table-II).
Table II:

Distribution of sinus disease, nasal septal deviation and concha bullosa

<table>
<thead>
<tr>
<th>Sinus disease</th>
<th>Nasal septal deviation</th>
<th>Concha bullosa</th>
</tr>
</thead>
<tbody>
<tr>
<td>101 (74.81%)</td>
<td>92 (68.14%)</td>
<td>57 (42.22%)</td>
</tr>
</tbody>
</table>

Of the 135 patients, 57 (42.22%) had concha bullosa, among them who had concha bullosa 34 (59.64%) patients had unilateral concha and 23 (40.35%) had bilateral concha (Table-IV).

Table III:

Types of concha bullosa

<table>
<thead>
<tr>
<th>Unilateral</th>
<th>Bilateral</th>
</tr>
</thead>
<tbody>
<tr>
<td>34 (59.64%)</td>
<td>23 (40.35%)</td>
</tr>
</tbody>
</table>

Among the patients, who (92) had nasal septal deviation, convexity to the right side were found in 44 (47.82%) cases, convexity to the left side were found in 38 (41.30%) cases and only 10 (10.86%) cases had biconvex nasal septal deviation (Table-IV).

Table IV:

Types of nasal septal deviation (n=92)

<table>
<thead>
<tr>
<th>Convexity to right</th>
<th>Convexity to left</th>
<th>Biconvex</th>
</tr>
</thead>
<tbody>
<tr>
<td>44 (47.82%)</td>
<td>38 (41.30%)</td>
<td>10 (10.86%)</td>
</tr>
</tbody>
</table>

Out of 57 patients, with concha bullosa, 39 (68.42%) had nasal septal deviation and 18 (31.57%) patients had no septal deviation. Among the 78 patient without concha, 43 (55.12%) had nasal septal deviation and the rest 35 (44.87%) had no nasal septal deviation (Table-V).

Out of the 92 patients who had nasal septal deviation, 70 (76.08%) suffered from some kinds of sinus diseases and out of the rest 45 without septal deviation 32 (71.11%) had some sinus disease (Table-V).

Out of the 57 patients who had concha bullosa, 41 (71.92%) had sinus diseases and 16 (28.07%) had no sinus disease. Among the rest 78 patients without concha bullosa 60 (76.92%) had sinus diseases and the rest 18 (23.07%) had no sinus diseases (Table-VII).

Table V:

Nasal Septal Deviation with or without concha

<table>
<thead>
<tr>
<th>With concha bullosa (n=57)</th>
<th>Without concha bullosa (n=78)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Had septal deviation</td>
<td>Had septal deviation</td>
</tr>
<tr>
<td>39 (68.42%)</td>
<td>43 (55.12%)</td>
</tr>
<tr>
<td>No septal deviation</td>
<td>No septal deviation</td>
</tr>
<tr>
<td>18 (31.57%)</td>
<td>35 (44.87%)</td>
</tr>
</tbody>
</table>

Table VI:

Relationship of sinus diseases and nasal septal deviation

<table>
<thead>
<tr>
<th>Septal deviation (N=92)</th>
<th>Without septal deviation (n= 43)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Had sinus disease</td>
<td>Had sinus disease</td>
</tr>
<tr>
<td>70 (76.08 %)</td>
<td>31 (72.09%)</td>
</tr>
<tr>
<td>No sinus disease</td>
<td>No sinus disease</td>
</tr>
<tr>
<td>22 (23.91%)</td>
<td>12 (27.90%)</td>
</tr>
</tbody>
</table>

Table VII:

Relationship of sinus diseases and concha

<table>
<thead>
<tr>
<th>With concha (N=57)</th>
<th>Without concha (N=78)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sinus disease</td>
<td>Sinus disease</td>
</tr>
<tr>
<td>41 (71.92%)</td>
<td>60 (76.92%)</td>
</tr>
<tr>
<td>No sinus disease</td>
<td>No sinus disease</td>
</tr>
<tr>
<td>16 (28.07%)</td>
<td>18 (23.07%)</td>
</tr>
</tbody>
</table>
Discussion:

There is great interest among otorhinolaryngologists and researchers in the exploration of the anatomy of paranasal region, its variations and correlation of these variants with CRS. In the present study we found 79 (58.51%) female patients and 56 (41.49%) male patients. Females were more than males. In a study, done by Kucyba I et al. in 2017 found 58.4% females and 41.6% male patient. In another study, done by Kyle D. Smith et al. from Omaha, USA also found 43.6% male patients and 56.3% females. In the present study, out of 135 patients, CT Nose and PNS revealed 101 (74.81%) had some sinus disease, 92 (68.14%) had nasal septal deviation and 57 (42.22%) had concha bullosa. In another study done by Fatma Homoud Al Anazy from Bahrain in 2011 found CB in 37.3%, sinus disease in 80.1% patients and 64.6% had deviated nasal septum. We also observed that out of 57 patients with CB, 34 (59.64%) patients had unilateral concha and 23 (40.35%) had bilateral concha (Table-III). In a study from Istanbul, Turky by Turhan San et al. found concha bullosa in 55.5% of patients with allergic rhinitis patient. Among them 28% had unilateral and 72% had bilateral CB. In our study we found more patients with unilateral CB, but in their study they found bilateral CB is more than unilateral CB. In another study done by Raja Kalaiarasi, at the Department of ENT and Head Neck Surgery, Puducherry, India. Out of the 202 patients studied, CB was found in 31.7% patients. Among them 54.7% patients had bilateral CB and 45.3% patient had unilateral CB. Regarding Nasal septal deviation, among the 92 (68.14%) patients with DNS, convexity to the right side were found in 44 (47.82%) cases, convexity to the left side were found in 38 (41.30%) cases and only 10 (10.86%) cases had biconvex nasal septal deviation. Fatma Homoud Al Anazy from Bahrain in 2011 also found 64.6% patient had DNS. The side to which DNS was deviated was not recorded in all 160 patients, but of those who were recorded 31 (48%) were deviated to the right, 18 (28%) were deviated to the left and 15 (24%) were S shaped. Though, we only observe the prevalence and did not analyze to find out the correlation between CB, DNS and sinusitis in this study. It can be noted that some authors suggested that CB could predispose sinusitis; while others concluded that there is no correlation between CB and sinusitis similarly, results of some studies have suggested that there was an association between DNS and the presence of CB, but some study results found no association between these two. But this association of cause is not clear yet. Krishnan ASJ and Shoba K found no significant association statistically between concha bullosa and chronic sinusitis. In another study by T E S Vincent and B S Gendeh said that CB and DNS are coincidental variations. They could not found any association between DNS and CB with the development and pathogenesis of sinusitis. However, Hatipoglu et al. found that there was an association between the degree of deviation and the presence of sinusitis. In another study, Ozdemir Sevinal et al. (2013) found that the incidence of CB was higher in individuals with septal deviation. Smrity Rupa Borah Dutta et al. (2015) also found correlation between CB and DNS, but no relationship between CB and sinusitis.

Conclusion:

Sinonasal anatomical variations are common findings in patients with chronic sinusitis. There is a continuous debate regarding the relationship of CB with DNS and sinusitis. Larger studies are required to
gather knowledge on sinonasal anatomical variations. This will provide information for the ENT surgeon to avoid the unwanted complications or to avoid recurrence of symptoms if certain anatomical variations are not treated adequately.

References:


Comparative Study of Neck Swelling by Clinical, Cytological and Histopathological Examination

Mohammad Idrish Ali¹, Md. Mahmudul Huq², Momenul Haque³, Kamrul Hasan Tarafder⁴

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 compatibility.

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, analyzed data presented by various tables, graphs and figures.

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. Twelve were nodular goiter, 5 were thyroid carcinoma. Rest were benign, congenital and nonspecific inflammatory conditions. Correct diagnosis were 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. 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 can not 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. Last of all I wish to conclude 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”.

Key words: Neck swelling, FNAC, cytological, histological study

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 manifest as a palpable and /or visible swellings in the neck. These may congenital/developmental, inflammatory/reactionary or neoplastic (primary/secondary).
Each disease may have different mode of presentation. Conversely many diseases may present with similar 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 is never goes in the best interest of the patient. This procedure should be deferred and used only as a last diagnostic resort.

For this reason now 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.

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. 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 repeated several times to obtain adequate material for cytological analysis.

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

Through this study I tried to find out spectrum of diseases producing neck swelling and their socio-demographic feature. 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, analyzed data presented by various tables, graphs and figures.

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 postoperative specimen of neck swelling.

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

Results and observation:

<table>
<thead>
<tr>
<th>Age group</th>
<th>No of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 10</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>11 – 20</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>21 – 30</td>
<td>14</td>
<td>28</td>
</tr>
<tr>
<td>31 – 40</td>
<td>16</td>
<td>32</td>
</tr>
<tr>
<td>41 – 50</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>51 – 60</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>
Table II:

Socioeconomic condition (n=50).

<table>
<thead>
<tr>
<th>Socioeconomic condition</th>
<th>No of cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
<td>30</td>
<td>60</td>
</tr>
<tr>
<td>Middle</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td>Affluent</td>
<td>5</td>
<td>10</td>
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</tbody>
</table>

Table III:

Clinical diagnosis of neck masses.

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

Table IV:

FNAC diagnosis of neck masses

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

**Histopathological diagnosis of Neck swelling.**

<table>
<thead>
<tr>
<th>Clinical diagnosis</th>
<th>Histopathological diagnosis</th>
<th>Total no of cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cervical lymph adenopathy (24)</td>
<td>Tubercular lymph adenitis</td>
<td>11</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Metastatic carcinoma</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Non specific lymphadenitis</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Lymphoma</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Thyroid and related neck mass (20)</td>
<td>Nodular goiter</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Papillary carcinoma</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Follicular carcinoma</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Follicular adenoma</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Thyroglosal cyst</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Salivary gland swelling (4)</td>
<td>Pleomorphic adenoma of salivary gland</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>No specific submandibular sialoadenitis</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Other congenital and developmental neck mass (3)</td>
<td>Branchial cyst</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Submental dermoid</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>50</td>
<td>100</td>
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</tbody>
</table>

### Table VI

**Comparison between clinical FNAC and histopathological diagnosis of cervical lymph node masses**

<table>
<thead>
<tr>
<th>Clinical diagnosis</th>
<th>No of cases</th>
<th>FNAC diagnosis</th>
<th>No of cases</th>
<th>Histopathological diagnosis</th>
<th>No of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuberculosis</td>
<td>19</td>
<td>Tubercular lymphadenitis</td>
<td>10</td>
<td>Tubercular lymph adenitis</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non specific lymphadenitis</td>
<td>3</td>
<td>Non specific lymph adenitis</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lymphoma</td>
<td>5</td>
<td>Lymphoma</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unsatisfactory smear</td>
<td>1</td>
<td>Tubercular lymph adenitis</td>
<td>1</td>
</tr>
<tr>
<td>Metastatic carcinoma</td>
<td>5</td>
<td>Metastatic carcinoma</td>
<td>5</td>
<td>Metastatic carcinoma</td>
<td>5</td>
</tr>
</tbody>
</table>
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 accurate but cost effective, time consuming and also an invasive procedure.

In the present study we analyzed FNAC report of 50 cases. Here 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.\textsuperscript{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\textsuperscript{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 4\textsuperscript{th} decade. This was followed by 3\textsuperscript{rd} and 2\textsuperscript{nd} decades.

In this present series 40% of neck mass were of thyroid in origin which consistent with other studies.\textsuperscript{3,14}

In case of thyroid swelling out of 20 cases 12 (60%) cases were proved to be

<table>
<thead>
<tr>
<th>Table VII :</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compare between clinical FNAC and histopathological diagnosis of thyroid and related disease.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Clinical diagnosis</th>
<th>No of cases</th>
<th>FNAC diagnosis</th>
<th>No of cases</th>
<th>Histopathological diagnosis</th>
<th>No of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goiter</td>
<td>19</td>
<td>Nodular goiter</td>
<td>11</td>
<td>Nodular goiter</td>
<td>11</td>
</tr>
<tr>
<td>Papillary carcinoma of thyroid</td>
<td>4</td>
<td>Papillary carcinoma of thyroid</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follicular neoplasm</td>
<td>3</td>
<td>Follicular carcinoma thyroid</td>
<td>2</td>
<td>Follicular adenoma</td>
<td>1</td>
</tr>
<tr>
<td>Thyroglossal cyst</td>
<td>1</td>
<td>Thyroglossal cyst</td>
<td>1</td>
<td>Thyroglossal cyst</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table VIII :</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparison between clinical, FNAC and histopathological diagnosis of salivary gland disease.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Clinical diagnosis</th>
<th>No of cases</th>
<th>FNAC diagnosis</th>
<th>No of cases</th>
<th>Histopathological diagnosis</th>
<th>No of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salivary gland tumour</td>
<td>4</td>
<td>Pleomorphic adenoma</td>
<td>3</td>
<td>Pleomorphic adenoma</td>
<td>3</td>
</tr>
<tr>
<td>Chronic submandibular sialoadenitis</td>
<td>1</td>
<td>Chronic submandibular sialoadenitis</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table IX :</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparison between clinical, FNAC and histopathological diagnosis of salivary gland disease.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Clinical diagnosis</th>
<th>No of cases</th>
<th>FNAC diagnosis</th>
<th>No of cases</th>
<th>Histopathological diagnosis</th>
<th>No of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salivary gland tumour</td>
<td>4</td>
<td>Pleomorphic adenoma</td>
<td>3</td>
<td>Pleomorphic adenoma</td>
<td>3</td>
</tr>
<tr>
<td>Chronic submandibular sialoadenitis</td>
<td>1</td>
<td>Chronic submandibular sialoadenitis</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
multinodular goiter on histopathology and it is comparable with others.\textsuperscript{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 can not demarcate clearly between follicular carcinoma and follicular adenoma. Although highly sensitive 100\% for papillary carcinoma of thyroid. It is comparable with others studies.\textsuperscript{15,16}

Commonest was Cervical lymphadenopathy 48\% of which tubercular lymphadenitis was 11 cases 46\%. This is consistent with the findings of some other studies\textsuperscript{17,18}. In this study the sensitivity was 91\% and specificity 100\% of FNAC for diagnosing tubercular lymphadenopathy is high and consistent with other studies\textsuperscript{8,11}.

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

Metastastic carcinoma was found in 21\% of total cervical lymphadenopathy and sensitivity and specificity for diagnosing such lesion is 100\% which was consistent with other studies\textsuperscript{17,18,20,21,22}.

In salivary gland lesions FNAC is very useful tool for diagnosis as it a nearly 100\% sensitive and specific\textsuperscript{2,3,16}.

The overall sensitivity and specificity of FNAC in relation to histopathology is 90\% and 100\% respectively which were compatible with other study\textsuperscript{2}.

The overall accuracy of FNAC was found in 90\% which is similar to that of other studies\textsuperscript{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\textsuperscript{23}. 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.\textsuperscript{7}

Conclusion:
Keeping the limitations in mind, FNAC can reduce substantially the need of open biopsy for histopathological examination. Last of all I wish to conclude 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”.\textsuperscript{6}

References:
5. Sadlar TW: Langman’s medical embryology, 8\textsuperscript{th} edn, Baltimore, Williams and Wilkins, 1992, pp. 283-295.


Hearing Outcome of Stapes Surgery in NIENT, Bangladesh

Md. Zakaria Sarkar¹, AHM. Ferdows Nur², Utpal Kumar Dutta³, Muhammad Rafiqu Islam⁴, Debabrota Roy⁵, SM Shafi Wahid⁶, Mohammad Ashequr Rahman Bhuiyan⁷

Abstract:

Objective: The aim of this study was to evaluate hearing outcome after stapedotomy in patients with Otosclerosis.

Methods: This cross sectional study was carried out from July 2017 to January 2019 in National Institute of ENT, Unit V.

About 22 patients with Otosclerosis were included in this study. Diagnosis of Otosclerosis was based on the history, medical status with Otoscopy, Tuning fork tests and Audiometric tests. We compiled data on the pre and post operative air-bone gap (ABG) at 0.5, 1, 2 KHZ. The ABG was Calculated using AC and BC thresholds on the same audiogram.

Post operative hearing gain was then Calculated from the ABG before the operation minus the ABG of the last follow up examination.

Results: In this study most of the cases were age group 14-30 years (72.7%), female (54.5%). Most common symptoms was progressive hearing loss, tinnitus (77.8%). The average pre-operative hearing loss in this study was (AC) was 48.31±7.68. The average post opt. hearing (AC) at follow up was 28.95±10.30 with an average hearing gain of 15.40±8.53 dB which was significant. The average pre-operative ABG was 28.99 dB ± 8.10. The average post opt. ABG was analyzed at 1 follow up showed ABG 13.18±8.09 dB which was found to be significant.

Conclusion: Stapedotomy is an effective surgical procedure for the treatment of otosclerosis which leads to improvement in patient’s quality of life. A favorable hearing outcome can be obtained by the combination of experienced hands with minimal surgical trauma and appropriate surgical technique.

Key words: Otosclerosis, hearing outcome, stapes surgery.

Introduction:

Otosclerosis is the most common etiology of conductive hearing loss in 15-50 years old patients with intact tympanic membrane.¹ It is the primary disease of the human temporal bone. It is an autosomal dominant hereditary disease with variable penetrance. Clinically, progressive conductive hearing loss and tinnitus are the main symptoms.²,³ It is confined to otic capsule and can cause sensory-neural or mixed hearing loss as well as conductive hearing loss.⁴
Otosclerosis is present in .5% - 1% of the population and shows bilateral symptoms in 70% - 85% of cases. Otosclerosis is more commonly diagnosed in women (Female: Male ratio of 2:1) and most frequently affects white individuals aged 20-40 years. It is less common in Asians and rare in Africans. The etiology of Otosclerosis has not been fully elucidated, despite numerous studies, however many theories have been suggested to explain it on the basis of genetic, viral, hormonal and other factors. 

Treatment options for Otosclerosis include medications, use of hearing aids and surgery. Medical treatment is indicated in the early active stage of the disease, which usually goes unnoticed, while hearing aids tend to be indicated when patients refuse surgery. The surgical treatment of Otosclerosis is the most commonly used and most effective treatment. Variable complications may occur after stapes surgery, but the most worrisome complication is sensorineural hearing loss (SNHL) which occurs in less than 0.5% of patients.

**Methods:**
All the cases of stapedotomy were done from July 2017 to January 2019 at National Institute of ENT, Unit –V. Diagnosis of Otosclerosis was based on the history, medical condition with Otoscopy, Tuning fork tests and Audiometric tests. We compiled data on the pre and post operative air-bone gap (ABG) at 0.5, 1,2 KHZ. The ABG was Calculated using AC and BC thresholds on the same audiogram.

Post operative hearing gain was then Calculated from the ABG before the operation minus the ABG of the last follow up examination.

**Type of study:** Cross Sectional study
**Study period:** July 2017 to January 2019 (One and half years).
**Study population:** Number of Patients: 22
**Inclusion Criteria:**
Otoscropy : TM intact
Tuning fork tests : Rinne Negative
Audiometric tests:
- BC Level 0 – 25 dB
- AC Level 45 – 65 dB and
- ABG 15 dB or more

**Exclusion Criteria :**
- Hearing Loss > 65 dB.
- Cochlear Otosclerosis
- A questionnaire was made for tinnitus :
  - Complete remission
  - Decreased.
  - Increased.
  - No change of tinnitus

**Objectives:** The aim of this study was to find out the hearing outcome after stapedotomy in patients with Otosclerosis.

**Results:**

**Table I :**
_Age distribution of the study subjects_

<table>
<thead>
<tr>
<th>Age in years</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Mean±SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥30</td>
<td>16</td>
<td>72.7</td>
<td>27.68±7.71</td>
</tr>
<tr>
<td>31-40</td>
<td>5</td>
<td>22.7</td>
<td></td>
</tr>
<tr>
<td>&gt;40</td>
<td>1</td>
<td>4.5</td>
<td></td>
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</tbody>
</table>

**Table II :**
_Preoperative data_

<table>
<thead>
<tr>
<th>Tinnitus</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>16</td>
<td>77.8</td>
</tr>
<tr>
<td>No</td>
<td>6</td>
<td>22.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dizziness</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>4</td>
<td>18.2</td>
</tr>
<tr>
<td>No</td>
<td>18</td>
<td>81.8</td>
</tr>
</tbody>
</table>
Table III:

<table>
<thead>
<tr>
<th>Clinical features</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intact</td>
<td>20</td>
<td>90.9</td>
</tr>
<tr>
<td>Retracted/ thin</td>
<td>2</td>
<td>9.1</td>
</tr>
<tr>
<td>Rinne test (Right)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>2</td>
<td>9.1</td>
</tr>
<tr>
<td>Negative</td>
<td>20</td>
<td>90.9</td>
</tr>
<tr>
<td>Rinne test (Left)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>4</td>
<td>18.2</td>
</tr>
<tr>
<td>Negative</td>
<td>18</td>
<td>81.8</td>
</tr>
<tr>
<td>Weber</td>
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<td></td>
</tr>
<tr>
<td>Laterialized left</td>
<td>17</td>
<td>77.3</td>
</tr>
<tr>
<td>Central</td>
<td>5</td>
<td>22.7</td>
</tr>
<tr>
<td>ABC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equal</td>
<td>18</td>
<td>81.8</td>
</tr>
<tr>
<td>Decreased</td>
<td>4</td>
<td>18.2</td>
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Table IV:

<table>
<thead>
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<th>Mean distribution of pre-operative and post-operative hearing loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-operative</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>AC 48.31±7.68</td>
</tr>
<tr>
<td>BC 18.45±6.57</td>
</tr>
<tr>
<td>ABG 28.99±8.10</td>
</tr>
</tbody>
</table>

Hearing improvement:
90.9% Hearing improvement
9.09% Hearing deterioration

Tinnitus Outcome:

Discussion:

Otosclerosis is a genetically mediated metabolic bone disease that affects only the human otic capsule and ossicles. Its mode of inheritance is autosomal dominance, but both its penetrance and expressivity are variable. Only three patients in this study had probable family history of otosclerosis. It is believed that otosclerosis could be inherited in some other modes (other than dominant alone) and incomplete expression of the gene is playing a vital role in skipping generations.\textsuperscript{15}

The minimum age in this study group was 14 years and maximum was 45 years. The maximum number of patients was in the age group of 14-30 years (72.7%). The age of the patients at the time of surgery ranged from 14 to 45 years, with an average age was 27.68±7.71 years. Mahfudz et al.\textsuperscript{16} reported the age of the patients at the time of surgery ranged from 17 to 55 years, with an average of 40.03 years. Kos et al.\textsuperscript{17} found an age range of 17 to 75 years with an average of 43 years in his series. However Lippy WH et al. found a late age presentation with an average age of 50 years.\textsuperscript{18}

Age does not significantly affect the success rate of stapes surgery. Kulakova et al.\textsuperscript{19} found that the surgical intervention on the stirrup bone for the treatment of otosclerosis in the patients above 65 years of age is a safe and efficacious method despite marked hearing impairment in this group of patients. Massey et al.\textsuperscript{20} evaluated the outcome of stapedectomy surgery for congenital stapes fixation and found that stapedotomy remains an effective method to achieve significant hearing improvement in the majority of patients for congenital fixation. Age is not detrimental to hearing gain and instead might result in better use of hearing aids in older adults, thus facilitating social hearing recovery.\textsuperscript{21}
This study shows female were predominant than male. The ratio of women and men was 1:2:1. This findings consistent with the study of India, men to women ratio range from 1.2:1 to 1.48.15,22 Another study reported women are affected twice as often as are men2. Mahfudz et al. reported the ratio of women to men was 1.4:1. The success of stapes surgery for otosclerosis is not dependent on sex of the patients.16 The prevalence of otosclerosis is greater in women, with a 2:1 female-to-male distribution.23

The average pre-operative hearing loss in this study with titanium was (AC) was 48.31±7.68. The average post opt. hearing (AC) at follow up was 28.95±10.30 with an average hearing gain of 15.40±8.53 dB which was significant. This was similar to results of Boleas-Aguirre et al.24 who reported the overall improvement in air conduction thresholds and pure-tone average air conduction for all frequencies after 1 year of surgery. Ataide et al.25 did audiometric evaluation after stapedotomy with Fisch titanium prosthesis and showed improvement post operatively. The increased mean hearing gain was also reported by Boleas-Aguirre et al.24

In this study, the average pre-operative ABG was 28.99 dB ± 8.10. The average post operative ABG was analysed at 1 follow up showed ABG of 13.18±8.09 dB which was found significant. This was similar to the study of Vishwakarma et al. where the mean postoperative ABG was 8.2 dB respectively.26 The air-bone gap with titanium in the study of Boleas-Aguirre et al.24 was significantly reduced 1 year after surgery and remained so at 4 years. Preoperative air-bone gap, 34.04 dB; at 1 year, 16.40 dB; at 4 years, 17.3 dB. Ataide et al.25 found out that the mean low-frequency postoperative air-bone gap was 12.9 dB. Twenty-five (75.8%) patients had air-bone gaps of 10 dB and under; 32 (96.9%) patients had gaps of 20 dB and under; and all patients had gaps of 30 dB and under.

In this study shows 77.8% patients had tinnitus. These findings are in accordance with the literature, where tinnitus is described in 40–90% of the cases before surgery and some beneficial effects of the surgery were noted.27-32 Vertiginous episodes were experienced in about one-fifth of the cases before surgery, at early and late follow-up in about 15% of the cases. Literature describes 15–20% of cases reporting some vertigo pre- and postoperatively, with up to 25–30% experiencing obvious vertigo early postoperatively, probably related to the surgical procedure.21,23,25

This study shows the average gain was 15.40±8.53 dB. Therefore, the findings of the study are in well agreement with the findings of the other research works16,26. They found the average gain in air conduction was 27 dB and majority had air conduction gain in the group of 31-40 dB. Ueda H et al also found an average gain of within 30 dB.27

All patients with conductive hearing loss caused by otosclerosis may use hearing aids as an alternative to surgery. If the patient has a significant sensorineural component to the hearing loss, a hearing aid may be required even after successful stapedotomy. A patient with far advanced otosclerosis requires a hearing aid at all times. It may take 4 months before these patients can tolerate and benefit from the hearing aid.

**Conclusion:**

Stapedotomy is an effective surgical procedure for the treatment of otosclerosis which leads to improvement in patient’s quality of life. A favorable hearing outcome can be obtained by the combination of experienced hands with minimal surgical trauma and appropriate surgical technique.
References:


Original Article

Clinicopathological Study of Carcinoma Larynx

Mohammad Nazim Uddin¹, Abu Hena Mohammad Parvez Humayun², Muhammad Bipul Islam³, Md. Masudur Rahaman⁴

Abstract:
Setting: Department of otolaryngology and Head-Neck surgery, Rajshahi Medical College Hospital, Rajshahi.

Methods: 80 patients were included in this study during a period of July 2006 to June 2007. Study based on history, clinical, radiological, laboratory and histopathological examination. The larynx is divided for purpose of tumour classification into three regions- Supraglottic, Glottic and Subglottic.

Results: The age ranges from 25 to 85 years. The overall male to female ratio 93.75:6.25. Laryngeal carcinoma shows significant association with low socioeconomic and education group. The commonest symptoms of laryngeal carcinoma was change of voice 100%(20) in case of glottic carcinoma and 90%(54)in cases of supraglottic carcinoma. Other common symptoms were difficulty of swallowing, respiratory distress, cough, neck swelling, haemoptysis, neck pain. Palpable cervical lymph node was present in 50% (40) cases

Conclusion: Predominant histological type was squamous cell carcinoma 97.5%(78), undifferentiated carcinoma 1.25%(1), adenocarcinoma 1.25%(1). Symptoms of presentation has a significant association with site of involvement. The symptoms of presentation of supraglottic carcinoma occurred more frequently at the advanced stage.

Key words: Carcinoma larynx.

Introduction:
Head-Neck cancer is a major world wide health problem. Regarding the distribution of head and neck cancer, the main bulk of the cancer was formed by larynx.²,³ The larynx is divided for purpose of tumor classification into three regions -Supraglottic, Glottic and Subglottic. The vocal fold epithelium is squamous rather than respiratory and contains no mucous glands.⁵ Glottic carcinoma is favourable type because of early diagnosis and treatment and the area is devoid of lymphatics. Subglottic carcinoma has worse prognosis.⁴ The cause of cancer of the larynx is still unknown.Tobacco and alcohol abuse are the major risk factors for the development of squamous cell carcinoma. Atmospheric pollution is also
positively correlated with squamous cell carcinoma of larynx. The symptoms of carcinoma of larynx are not greatly different from those of any space occupying lesion of the larynx, but certain features make a carcinoma more distinguishable. These include progressive and unremitting dysphonia, dyspnoea and stridor. Swelling of neck may be due to secondary in the neck or due to direct extention of the laryngeal growth. Carcinoma of larynx generally is treated with surgery and/or radiotherapy. Chemotherapy is sometimes used as an adjuvant to radiation or very rarely it is used as palliation in recurrent or residual growth. Treatment especially of patient with early stage (stage I or stage II) is often successful. It depends upon the site of lesion, extent of lesion, presence or absence of nodal & distant metastasis.

Aims and Objectives:
To find out the common presenting symptoms of laryngeal carcinoma.

Methods:
Sample size: 80

Type of study: Cross sectional

Study Period: 
July 2006 to June 2007

Place of study: Department of Otolaryngology and Head-Neck Surgery, Rajshahi Medical College, Rajshahi.

Results:
Data were collected on laryngeal carcinoma from ENT department of Rajshahi Medical College Hospital during a period of 12 months. The total number of cases were 80 (Male:75, Female:5).

<table>
<thead>
<tr>
<th>Table I</th>
<th>Distribution of sites of laryngeal Carcinoma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supraglottic</td>
<td>Glottic</td>
</tr>
<tr>
<td>60(75%)</td>
<td>20(25%)</td>
</tr>
</tbody>
</table>

Supraglottic carcinoma was found most of the cases. The ratio of Supraglottic and glottic carcinoma was 3:1.

<table>
<thead>
<tr>
<th>Table II</th>
<th>Age distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age in year</td>
<td>No. of cases</td>
</tr>
<tr>
<td>0-20</td>
<td>0</td>
</tr>
<tr>
<td>21-40</td>
<td>8</td>
</tr>
<tr>
<td>41-60</td>
<td>48</td>
</tr>
<tr>
<td>61-80</td>
<td>24</td>
</tr>
</tbody>
</table>

About 60% (48) of the patients were among the age group of 41 to 60 years.

<table>
<thead>
<tr>
<th>Table III</th>
<th>Sex distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>93.75%</td>
<td>6.25%</td>
</tr>
</tbody>
</table>

The overall male to female ratio of laryngeal carcinoma was about 19:1.

<table>
<thead>
<tr>
<th>Table IV</th>
<th>Socioeconomic status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socioeconomic status</td>
<td>No. of cases</td>
</tr>
<tr>
<td>Lower</td>
<td>56</td>
</tr>
<tr>
<td>Medium</td>
<td>24</td>
</tr>
<tr>
<td>Higher</td>
<td>0</td>
</tr>
</tbody>
</table>

Among the all cases of laryngeal carcinoma, 56 (70%) cases came from lower socioeconomic group.
Table V:

Personal habit

<table>
<thead>
<tr>
<th>Personal Habit</th>
<th>No. of cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking</td>
<td>50</td>
<td>62.50</td>
</tr>
<tr>
<td>Chewing tobacco</td>
<td>2</td>
<td>2.50</td>
</tr>
<tr>
<td>Smoking &amp; alcohol intake</td>
<td>2</td>
<td>2.50</td>
</tr>
<tr>
<td>Smoking &amp; Betel leaf</td>
<td>24</td>
<td>30</td>
</tr>
<tr>
<td>None</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Smoking was the commonest personal habit (62.5%) associated with laryngeal carcinoma.

Table VI:

Symptoms of laryngeal carcinoma

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>No. of cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change of voice</td>
<td>74</td>
<td>92.50</td>
</tr>
<tr>
<td>Dysphagia</td>
<td>60</td>
<td>75.00</td>
</tr>
<tr>
<td>Respiratory distress</td>
<td>42</td>
<td>52.50</td>
</tr>
<tr>
<td>Cough</td>
<td>33</td>
<td>41.25</td>
</tr>
<tr>
<td>Neck swelling</td>
<td>16</td>
<td>20.00</td>
</tr>
<tr>
<td>Haemoptysis</td>
<td>4</td>
<td>5.00</td>
</tr>
</tbody>
</table>

The commonest presenting symptoms of laryngeal carcinoma is change of quality of voice (92.5%). Dysphagia and Neck swelling as a presenting symptoms in supraglottic carcinoma.

Table VII:

Histological types

<table>
<thead>
<tr>
<th>Histological Types</th>
<th>No. of cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Squamous cell</td>
<td>78</td>
<td>97.50</td>
</tr>
<tr>
<td>Undifferentiated Carcinoma</td>
<td>1</td>
<td>1.25</td>
</tr>
<tr>
<td>Adenocarcinoma</td>
<td>1</td>
<td>1.25</td>
</tr>
</tbody>
</table>

In histologic type most of the cases (97.50%) were squamous cell carcinoma.

Discussion:

In discussion of clinicopathological study of laryngeal carcinoma, the fact and figures mention here may vary a large series, but still then, as the cases were collected for a period of one year from Rajshahi Medical College Hospital, this study may have credentials in reflecting certain facts regarding carcinoma of larynx. Actually there is no national level study in Bangladesh to find out the incidence of laryngeal cancer. But neighbouring country (India) is a high incidence area. 

Eighty patients with different age, sex and socio-economic condition studied in this series. In this series the commonest site of laryngeal carcinoma was supraglottic region 75% (60), the relative frequency of glottic carcinoma was 25% (20) and subglottic carcinoma was uncommon (Table-1). It may be due to poor oral hygiene among the population in this region. The frequency distribution of supraglottic and glottic carcinoma has got wide geographical variation and may be changing with time in the same geographical area. In two different studies in Bangladesh supraglottic were found 67% and 70%. This is consistent with this study. Subglottic carcinoma is a rare condition.

The age range of the patients was 24 years to 85 years (Table -II). In two two different previous studies the age ranges were seen to be 37 years to 82 years, 23 years to 85 years. None of sample was at childhood (<15 year) which is very rare.

The overall male to female ratio was 19.1 in this series (Table- III). In a large scale study in Bangladesh showed that male to female ratio was higher (15.68 during period from 1960 to mid 1970). This result was...
statistically similar to current study. This variation in aspect of age and sex may be due to less exposed to smoke and industrial hazard in this region. In this study 95% (76) of patient had habit of smoking. It has been described in different literature that tobacco and alcohol are clearly associated with increased incidence of laryngeal carcinoma.\textsuperscript{5,6} Significant association is found between laryngeal carcinoma and lower education group 82.5% (74) and lower socioeconomic class (Table- IV).

The commonest symptoms were a change in the quality of voice (74) 92.5% (Table-VI). Dysphasia was the second commonest symptoms in this series (60)75% (table-VI). It was significantly more common in supraglottic carcinoma. Respiratory distress was a presenting symptoms in (42) 52.5% cases (Table –VI). Other symptoms are painful condition of neck, lymphadenopathy is a feature of advanced presentation.

References :
Thyroidectomy without drain

Niloy Ananda Shil¹, M. Alamgir Chowdhury², Md. Sirajul Islam³

Abstract:

**Aim:** The aim of the study is to observe the result of thyroidectomy without keeping drain tube.

**Methods:** This is a prospective study of a series of patients who underwent thyroidectomy without drain from January 2017 to December 2019. Presence of any post-operative complications like hematoma, seromas and hemorrhage were recorded.

**Results:** Among 105 patients included in this study only one patient had post-operative hematoma. There was neither hemorrhage nor seroma in other any patients. Proper hemostasis was maintained during surgery of all these cases. Their post-operative recovery was good.

**Conclusion:** Drainage is may not be required after thyroidectomy if proper and adequate hemostasis is ensured.

**Keywords:** Thyroidectomy, hematoma, drain, complications.

**Introduction:**

Thyroidectomy is a common surgery. The first documented partial thyroidectomy was carried out by Mr. Pierre Joseph Desault in 1791 in France. Drainage in thyroidectomy was a common practice in the past. It is due to reduce the complications like acute airway obstruction caused by hemorrhage or postoperative hematoma or seroma.¹,² But, many problems of using drainage in thyroidectomy have been reported without significant benefits.³

So, using drainage in thyroidectomy operation has become controversial.⁴,⁵ Some randomized controlled trials⁶-¹⁵ and two meta-analysis⁴,⁵ have been performed to solve this controversy. These trials could not identify a statistical difference in the rates of neck hematomas, seromas between groups using drains or not.

**Methods:**

**Type of study:** Prospective study

**Period of study:** From January 2017 to December 2019, (3 years).

**Study design:** Our study of non-drainage thyroidectomy comprises of 105 patients admitted over 3 years period from January 2017 to December 2019. Patients with pre-operative diagnosis of benign or malignant

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conditions were admitted for elective thyroidectomy. Cases with high vascularity and thyroidectomy with neck dissection were excluded. Hemithyroidectomy was performed to patients with benign conditions and total thyroidectomy for malignancy. All the events were including indications for surgery, post-operative complications like seroma, hematoma, hemorrhage were recorded properly for all the patients. The post-operative recovery and outcomes were analyzed.

**Results:**
From January, 2017 to December, 2019, about 105 thyroidectomies were performed including total thyroidectomy and hemithyroidectomy. The mean age for above patients was 49 [range 18-70]. The male to female ratio was 1:4. The patient’s characteristics included gender, age, hormonal status and histopathological results. The age chart is presented in Table 1 and rest of the characteristics are presented in Table II.

**Table I:**

<table>
<thead>
<tr>
<th>Age Limit (years)</th>
<th>Number of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>0</td>
</tr>
<tr>
<td>11-20</td>
<td>3</td>
</tr>
<tr>
<td>21-30</td>
<td>43</td>
</tr>
<tr>
<td>31-40</td>
<td>29</td>
</tr>
<tr>
<td>41-50</td>
<td>6</td>
</tr>
<tr>
<td>51-60</td>
<td>12</td>
</tr>
<tr>
<td>61-70</td>
<td>12</td>
</tr>
</tbody>
</table>

Lowest: 18 years, Highest: 70 years, Average: 49

**Table II:**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>49 [18-70]</td>
</tr>
<tr>
<td>Gender: Male/Female</td>
<td>21/84</td>
</tr>
<tr>
<td>Benign</td>
<td>33%</td>
</tr>
<tr>
<td>Malignant</td>
<td>67%</td>
</tr>
<tr>
<td>Toxic</td>
<td>3%</td>
</tr>
<tr>
<td>Nontoxic</td>
<td>97%</td>
</tr>
</tbody>
</table>

Only one patient had (0.9 %) presented hematoma in the zero post-operative day. Symptoms included sudden increase in neck volume and mild dyspnea. The patient was treated by bandage. A second surgical intervention was not needed for any of the patients.

**Discussion:**
In this study, among 105 cases, age of majority 43(41%) was in 3rd decade (21-30). Highest age were 70 years and lowest 18 years, average age was 49 years. These findings correlate with others.9,10

Among all the cases, there were 21 males and 84 were females, male female ratio was 1:4 which is similar with other studies.12-14 Among them benign case was 33% and malignant case was 67%. Hemithyroidectomy was done in 31% cases and total thyroidectomy was done in 69% cases. Some benign nodule but big sized involving the whole thyroid gland undergone total thyroidectomy. Total thyroidectomy was done in all the malignant cases. Same results were found in some series.15-16

This study presents our experience regarding the results of thyroidectomy without drain. Use of drainage after thyroidectomy surgery was a common practice among surgeons despite its limited benefits. The life threatening complications like suffocating hematoma or hemorrhage
appears very rarely. Risk increases in case of intrathoracic goiter as well as in grave’s disease. Hematoma may appear in 2-6 hours after surgery. Despite many prospective randomized studies and meta analysis, using drainage after thyroid surgery remains controversial.

Using drainage in thyroidectomy operation has many disadvantages like it leaves a scar on the chest, that makes psychological impact on patients both male and female, and is not cosmetically good. Also the presence of a drain in the chest gives discomfort feeling to the patients. Surgeons generally use drain if there is a large dead space, a concern for bleeding, an oozing thyroid bed, or if any other unusual concern about postoperative accumulation of blood or fluid beneath the skin flaps. Though drain does not prevent hematoma, presence of blood in the drain in the immediate post operative period may ensure early diagnosis of significant hemorrhage. Sometimes blockage of this drain may cause hematoma. Such hematoma around the trachea compromise the airway. Also, site of drainage become a potential target for infections. So, if a complication arises, it must be treated by immediately reopening the wound.

Nowadays, using drainage in thyroidectomy became very selective and most of them are performed without a drain because of it’s less advantages and more disadvantages. Proper hemostasis and adequate surgical techniques are enough to avoid hemorrhage and hematoma formation. Drain should be inserted in highly vascular thyroid and thyroiditis with neck distention.

Conclusion:
According to international literatures and articles, use of drain in thyroidectomy has no significant benefits in decreasing the rate of post-operative complications. Concluding drainage is not required after thyroidectomy if proper and adequate hemostasis is ensured.

References:


A Clinical Study on Etiological Factors and Management of Epistaxis at a Tertiary Level Hospital


Abstract:
Background: Epistaxis is a common otolaryngological emergency worldwide affecting up to 60% of the population in their lifetime. This study was conducted to describe the etiological profile and treatment outcome of epistaxis at Dhaka Medical College Hospital, a tertiary care hospital in BANGLADESH.

Objective: The study is carried out with an objective to evaluate on etiological profile and management of epistaxis.

Methods: This cross sectional study was conducted among the emergency and admitted patient with epistaxis at Dhaka Medical College Hospital from 1st November 2013 to 30th April 2014.

Results: During the period under study, a total 104 patients were studied. The etiology of the cause of epistaxis was grouped into traumatic and non-traumatic. Among them 46 (44.23%) patient were in traumatic epistaxis and 58 (55.77%) patient were in non traumatic epistaxis. Male were affected more frequently than female in this study. There were 74 (71.15%) male and 30 (28.85%) females with a male female ratio of 2.47:1 Majority of the patients in this study were in 2nd decade (21.15%) followed by 6th decade (19.23%) and 3rd decade (17.31%). Among the 104 patients with epistaxis 78 (75%) were urban habitat and 26 (25%) were rural habitat. Significantly more patients were from urban resident. Regarding etiology and sex distribution there were no significant differences between urban and rural habitat. The present study shows that the most common cause of epistaxis was trauma (44.23%) followed by idiopathic (25%) and hypertension (17.31%). Local pain (41.31%), nasal obstruction (13.04%),

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Introduction:

Epistaxis, active bleeding from the nose, is a common ear, nose and throat emergency and can be severe or even fatal. The causes can be from local or systemic illness. Epistaxis is classified as anterior or posterior on the basis of the primary bleeding site. Haemorrhage is most commonly anterior, originating from the nasal septum. A common source of anterior epistaxis is the kiesselbach’s plexus, an anastomotic network of vessels on the anterior portion of the nasal septum.¹

Epistaxis occurs in up to 60% of general population at some point in their life time. About 6% of these people will seek medical attention.² Usually it is spontaneous and stops by itself or may be controlled with home remedies. However at times it could be massive and may be fatal.³,⁴

The etiology of epistaxis is divided into local and systemic causes. Local causes: Inflammatory-infectious (rhinitis, rhinosinusitis), traumatic (digital, fractures, nasal surgeries), anatomic (Septal deviation and perforation), foreign body, chemical or Climatic agents, and nasal tumors (nasopharyngeal angiofibroma, nasal polyposis, inverted papilloma, carcinoma). Systemic causes: The arterial hypertension in the most frequently associated clinical factor, blood dyscrasias, drugs (acetylsalicylic acid, anticoagulants, non hormonal anti-inflammatory, antibiotics), neoplasms etc. It is important to find the bleeding site and define its etiology (local or systemic) for indication of the best treatment. The severe epistaxis, associated to prevailing factors such as systemic arterial hypertension and coagulopathy may need a surgical approach in the cases refractory to conservative treatment, such as cauterization and nasal splint.⁵ Traumatic epistaxis is more common in younger individual (under age 35 years) and is most often due to digital trauma, facial injury, or a foreign body in the nasal cavity.⁶,⁷

Non-traumatic epistaxis is more
characteristic of older patients (over age 50 years) and may be due to organ failure, neoplastic conditions, inflammation or environmental factors (temperature, humidity, altitude). Epistaxis that occurs in children younger than 10 years usually is mild and originates in the anterior nose, whereas epistaxis that occurs in individuals older than 50 years is more likely to be severe and to originate posteriorly. Epistaxis and arterial hypertension are frequent in the population, but an association is still controversial, it occurs in patients with severe epistaxis and the pressure levels are higher when compared to other patients in emergency services. In some studies the arterial hypertension would determine structural alterations of the nasal vessels similar to those verified in the cerebral circulation and retinal examination. The loss of the elastic layer and of contractile properties of the arteries in the elderly would explain a more severe bleeding than that of younger people with arterial hypertension: the dilation of the vessels would represent some degree of degeneration of the vessels wall that would favour bleeding. The association of epistaxis, hypertension and hypertrophy of the left ventricular would be a consequence of the long duration of hypertension. The association with blood dyscrasia is more frequent with the use of non- hormonal anti inflammatory, drugs that alter the metabolism of the arachidonic acid and the function of the platelets which leads to bleeding. In hemophilia, Von willebrand’s disease and thrombocytopenia there occurs intermittent nasal bleeding due to the abnormal coagulation function; epistaxis is the most common symptom in approximately 60% of the patient with Von willebrand’s disease.

The nasal trauma (digital, fractures and cranoencephalic traumatism) may cause epistaxis; the high prevalence in younger men probably regards the higher exposure to trauma in sports, traffic and urban violence. Every case of epistaxis should be thoroughly examined and a possible haemorrhagic diathesis should be excluded as soon as possible. The patient should be carefully questioned about previous use of drugs for other diseases and about recent trauma to the nose. The wide uses of anticoagulants sometimes cause epistaxis in those using them. The initial otorhinolaryngological examination should be very thorough with the aim of finding the bleeding point at any cost. The treatment of epistaxis requires a systematic and methodical approach, and options vary according to the cause, location, and severity of the hemorrhage. Both conservative and surgical treatments modalities have been used in the treatment of epistaxis. Most of the underlying causes of epistaxis are preventable. A clearer understanding of the cause, treatment and outcomes of the patients is essential for establishment of preventive strategies as well as treatment guidelines.

The results of this study will provide to evaluate the main associated prevailing factors in patients with epistaxis and its treatment.

Rational of the Study:
The epistaxis is are of the most frequent otorhinolaryngologic emergencies in the medical practice, with prevalence of about 10 and 12% generally associated to prevailing factors such as systemic arterial hypertension, trauma and coagulopathy . Identification of etiological profiles is one of the most important parts for management of epistaxis.

Aims and Objectives of the study

General Objective:
To observe the common causes of epistaxis
Specific Objectives:
1. To observe the frequency of different factors causes epistaxis.
2. To see the site of epistaxis.
3. To evaluate the effective management of epistaxis.
4. To observe the different demographic factors related to epistaxis.

Materials and Methods:
Study design: This study was a cross-sectional observational study.

Place of study: The study was conducted at the Dept. of Otolaryngology and Head-Neck Surgery, Dhaka Medical College Hospital, Dhaka

Period of Study: The study was carried out from 1st November 2013 to 30th April 2014.

Sources of Materials: All the Patients of epistaxis who were admitted or attended in the department of otolaryngology and Head-Neck Surgery, Dhaka Medical College Hospital, Dhaka during the study period constituted the study population.

Sampling technique: Purposive sampling technique was used for collecting samples. A total number of 104 patients with epistaxis were included consecutively in this study.

Inclusion criteria: All Patients of epistaxis who will be admitted or attended in the department of otolaryngology and Head-Neck Surgery Dhaka medical College Hospital, Dhaka.

Exclusion criteria: Patients who are physically or mentally retarded. Patients unwilling to comply with study protocol.

Instrument: Standard, predetermined data collection sheet.

Data analysis: Data was processed and analyzed using computer software SPSS (Statistical Package for Social Sciences).

Data collection: After taking informed consent of the subject, data was collected by the investigator through a structured questionnaire to collect the relevant information from the selected patient and clinical examination with certain investigations. In case of children, information were taken from patients/guardians. One data sheet was used for each respondent for collection of data. The findings were recorded in the data sheet.

Ethical consideration: Proper explanation of the study was given to the parents. Written informed consent was taken. The right and health of the participants were safe guarded. The freedom of the participants was ensured and they were allowed to withdraw themselves from the study anytime they want. The confidentiality of subjects and findings were ensured. The interest and benefits of the study was explained. The adequate facilities to manage any risk or adverse condition developed by the participants during the study were ensured.

Results:

Table-I:
Age distribution of patients (n=104)

<table>
<thead>
<tr>
<th>Age (yrs)</th>
<th>No. of patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>6</td>
<td>5.77</td>
</tr>
<tr>
<td>11-20</td>
<td>22</td>
<td>21.15</td>
</tr>
<tr>
<td>21-30</td>
<td>18</td>
<td>17.31</td>
</tr>
<tr>
<td>31-40</td>
<td>14</td>
<td>13.46</td>
</tr>
<tr>
<td>41-50</td>
<td>12</td>
<td>11.54</td>
</tr>
<tr>
<td>51-60</td>
<td>20</td>
<td>19.23</td>
</tr>
<tr>
<td>60+</td>
<td>12</td>
<td>11.54</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>104</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

Majority of the patients in this study were in 2nd decade (21.15%) followed by 6th decade (19.23%) and 3rd decade (17.31%). (Table-I)
In this study among the patients with epistaxis were 71.15% male and 28.85% were female.

Thus male to female ratio was 2.47:1. (Fig-1)

Sex distribution of patients

![Sex distribution of patients](image)

**Fig. 1: Pie chart showing sex distribution of patient**

Distribution of patients according to occupation

Most of the patients with epistaxis in this series were students (26.92%), followed by industrial workers, house hold workers and service holder. (Fig-2)

![Distribution of patients according to occupation](image)

**Fig.-2: Distribution of patients according to occupation (n=104)**

There was no significant difference in the proportions of traumatic and non traumatic etiological group among the patient with epistaxis. (Table II)

### Table II:

<table>
<thead>
<tr>
<th>Etiological factors of Epistaxis (n=104)</th>
<th>Type</th>
<th>No of causes</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Traumatic</td>
<td>46</td>
<td>44.23</td>
</tr>
<tr>
<td></td>
<td>Nose pricking</td>
<td>13</td>
<td>12.50</td>
</tr>
<tr>
<td></td>
<td>Nose blow</td>
<td>4</td>
<td>3.84</td>
</tr>
<tr>
<td></td>
<td>F. B. infection</td>
<td>6</td>
<td>5.77</td>
</tr>
<tr>
<td></td>
<td>RTA</td>
<td>10</td>
<td>9.62</td>
</tr>
<tr>
<td></td>
<td>Iatrogenic</td>
<td>8</td>
<td>7.69</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>5</td>
<td>4.81</td>
</tr>
<tr>
<td></td>
<td>Non traumatic</td>
<td>58</td>
<td>55.77</td>
</tr>
<tr>
<td></td>
<td>Spontaneous</td>
<td>26</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>(Idiopathic)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hypertension</td>
<td>18</td>
<td>17.31</td>
</tr>
<tr>
<td></td>
<td>Bleeding disorders</td>
<td>6</td>
<td>5.77</td>
</tr>
<tr>
<td></td>
<td>Nasal tumours</td>
<td>5</td>
<td>4.81</td>
</tr>
<tr>
<td></td>
<td>(Neoplastic)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>3</td>
<td>2.88</td>
</tr>
</tbody>
</table>

### Table III:

**Presentation of a patient with epistaxis**

<table>
<thead>
<tr>
<th>Presentation</th>
<th>No of cases</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traumatic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nasal pain</td>
<td>19</td>
<td>41.31</td>
</tr>
<tr>
<td>Nasal obstruction</td>
<td>6</td>
<td>13.04</td>
</tr>
<tr>
<td>Loss of consciousness</td>
<td>1</td>
<td>2.17</td>
</tr>
<tr>
<td>Nasal deformity</td>
<td>8</td>
<td>17.39</td>
</tr>
<tr>
<td>Other injury</td>
<td>6</td>
<td>13.04</td>
</tr>
<tr>
<td>Shock</td>
<td>2</td>
<td>4.35</td>
</tr>
<tr>
<td>Others</td>
<td>4</td>
<td>8.70</td>
</tr>
<tr>
<td>Total</td>
<td>46</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non traumatic</th>
<th>No of cases</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>4</td>
<td>6.90</td>
</tr>
<tr>
<td>Nasal obstruction</td>
<td>7</td>
<td>12.07</td>
</tr>
<tr>
<td>Hypertension</td>
<td>24</td>
<td>41.37</td>
</tr>
<tr>
<td>Loss of consciousness</td>
<td>2</td>
<td>3.45</td>
</tr>
<tr>
<td>Anaemia</td>
<td>10</td>
<td>17.24</td>
</tr>
<tr>
<td>Jaundice</td>
<td>2</td>
<td>3.45</td>
</tr>
<tr>
<td>Oedema</td>
<td>2</td>
<td>3.45</td>
</tr>
<tr>
<td>Shock</td>
<td>3</td>
<td>5.17</td>
</tr>
<tr>
<td>Others</td>
<td>4</td>
<td>6.90</td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
<td>100.00</td>
</tr>
</tbody>
</table>

A Clinical Study on Etiological Factors and Management of Epistaxis

Rashedul Islam et al
Nasal pain (41.31%), nasal deformity (17.39%), nasal obstruction (13.04%) associated other maxillofacial injury (13.04%) was more frequent in traumatic Patient. Hypertension was more frequent in non-traumatic epistaxis. (Table-III)

**Table-IV**

*Sites of different etiological types of epistaxis*

<table>
<thead>
<tr>
<th>Sites</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Traumatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anterior epistaxis</td>
<td>32</td>
<td>69.56</td>
</tr>
<tr>
<td>Posterior epistaxis</td>
<td>2</td>
<td>4.35</td>
</tr>
<tr>
<td>Diffuse epistaxis</td>
<td>12</td>
<td>26.09</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>46</td>
<td>100</td>
</tr>
<tr>
<td><strong>Non traumatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anterior epistaxis</td>
<td>15</td>
<td>25.86</td>
</tr>
<tr>
<td>Posterior epistaxis</td>
<td>27</td>
<td>46.55</td>
</tr>
<tr>
<td>Diffuse epistaxis</td>
<td>16</td>
<td>27.59</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>58</td>
<td>100</td>
</tr>
</tbody>
</table>

Significantly anterior epistaxis is common among the traumatic epistaxis (69.57%). Posterior epistaxis is common in non-traumatic epistaxis (46.55%). (Table-IV)

**Table V**

*Distribution of patient according to site of bleeding (n=104)*

<table>
<thead>
<tr>
<th>Site of bleeding</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Septum</td>
<td>42</td>
<td>40.38</td>
</tr>
<tr>
<td>Lateral wall</td>
<td>32</td>
<td>30.75</td>
</tr>
<tr>
<td>Floor</td>
<td>23</td>
<td>22.15</td>
</tr>
<tr>
<td>Unknown</td>
<td>7</td>
<td>6.72</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>104</td>
<td>100</td>
</tr>
</tbody>
</table>

Majority of the patient (40.38%) in this series presented with septal bleeding. (Table-V)

**Table VI**

*Different methods applied for the control of epistaxis (n=104)*

<table>
<thead>
<tr>
<th>Methods</th>
<th>No of patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct method</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressure</td>
<td>9</td>
<td>8.65</td>
</tr>
<tr>
<td>Cauterization</td>
<td></td>
<td>1.92</td>
</tr>
<tr>
<td>Indirect method</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANS pack</td>
<td>86</td>
<td>82.69</td>
</tr>
<tr>
<td>PNS pack</td>
<td>3</td>
<td>2.89</td>
</tr>
<tr>
<td>Surgery</td>
<td>4</td>
<td>3.85</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>104</td>
<td>100</td>
</tr>
</tbody>
</table>

Control of bleeding by the direct method was possible in 9 (8.65%) patients. Anterior nasal packing was given in 86 (82.69%) patient and Posterior nasal packing was given in 3 (2.89%). Definite Surgery needed among 4 (3.85%) patient, mostly due to neoplastic cause of bleeding. (Table-VI)

**Discussion:**

During the period under study, a total 104 patients were studied. The main etiology of the cause of epistaxis was grouped into traumatic and non-traumatic epistaxis patient group. Among them 46 (44.23%) patient were in traumatic and 58 (55.77%) patient were in non traumatic epistaxis patient group. Male were affected more frequently than female in this study. There were 74 (71.15%) male and 30 (28.85%) females with a male female ratio of 2.47:1.

In different studies, it was shown that epistaxis affected more male than female. \(^2,12,16,19,21,23,26,33\) In some studies where no significant sex difference exists,\(^27,28\) In after the 50 years in geriatric age no significant deference between sex as reported, the ratio is close to 1:1.\(^14,17\) It is possible that the female pre-menopausal state may provide a significant protection from this disease.
A mechanism for this is unknown, but may be secondary to a direct effect of oestrogen on the nasal mucosa or vasculature, or the healing of vessels in this region. Alternatively, this observation may simply be a reflection of protection the pre-menopausal state provides against cardiovascular disease in general. In this study, age distribution vary widely, the youngest patient was 4 years of age and the oldest was 92 years old. Mean age of the patients in this series was 40 years, which is in accordance with other study 35.06 years.

Majority of the patients in this study were in 2nd decade (21.15%) followed by 6th decade (19.23%) and 3rd decade (17.31%). According to another study, the maximum number of patient were in 3rd decade (26.61), followed by 4th and 2nd decade. There is a pronounced bimodal distribution in the age of onset of epistaxis were reported from north America, Europe and in this subcontinent.

The higher prevalence in younger males is most probably related to more exposure to trauma on account of active involvement in out-door activities; sports, traveling and interpersonal violence, whereas, in the older group vascular pathology and hypertension are responsible in the majority. Some authors portray epistaxis as a disease of the young, whereas others have noted epistaxis to be more common in the elderly. The study, Shaheen shows an increase frequency between the age of 15-25 years and later from 45 to 65 years with no evidence of sex predilection. At Dehradun in India reported most of their patients to be older than 40 years (63.64%) with a mean age of 47.8 years which correlates with other reports which showed that epistaxis is a geriatric problem.

Among the 104 patients with epistaxis 78 (75%) were urban habitat and 26 (25%) were rural habitat. Significantly more patients were from urban resident.

Regarding etiology and sex distribution there were no significant differences between urban and rural habitat. In another study in Iraq, there were 72(84.7%) patients were urban inhabitant, and the remainder 13 patients (15.20%) were rural inhabitant. In India, majority of the patients were from urban area 68 (77.27%). This may due to the difficulties in transportation in addition to that most patients from rural areas are managed by local health centers and not referred to the hospital especially if one remember that, in general nose bleed in the young person either are easy to treat or stop spontaneously.

The etiological profile of epistaxis has been reported to vary with age and anatomical location.

Among the study patient, 46 (44.23%) patient were in traumatic epistaxis patient group and 58 (55.77%) patient were in non-traumatic epistaxis patient group. The present study shows that the most common cause of epistaxis was trauma (44.23%) followed by idiopathic (25%) and hypertension (17.31%) which is consistent with other studies in developing countries.

This trauma varied from minor injury such as digital trauma to varying degrees of nasal injury from road traffic injury. The nose being a prominent feature on the face is highly susceptible in craniofacial injury. Most of our patients with epistaxis from trauma were actually victims of road traffic injury. Trauma being the most common cause of epistaxis can partly explain the frequency of this problem in males. This group is the adventurous group in our community. They are often on the road in search of economic well-being thereby making them prone to such accidents. High incidence of traumatic
epistaxis resulting from road traffic crashes in our study calls for urgent preventive measures targeting at reducing the occurrence of road traffic accidents in order to reduce the incidence of epistaxis in this region.

Hypertension being the third commonest cause in this report (17.31%) shows epistaxis as evidence of poor blood pressure control. This is in keeping with an earlier report from Nigeria of some patients who had epistaxis when their hypertension was not controlled due to cessation of antihypertensive drug therapy. In India recorded hypertension as the second commonest cause of epistaxis after idiopathic causes, in Thailand reported hypertension to be the commonest cause of epistaxis followed by idiopathic causes. The need for regular blood pressure check and compliance to antihypertensive medications must be emphasized. Epistaxis and arterial hypertension are frequent in the population, more evident in patients with severe epistaxis, with prevalence of 24% to 64%.

Local pain (41.31%), nasal obstruction (13.04%), nasal deformity (17.39%) associated other injury (13.04%) was more frequent in traumatic patient. Significant raise of blood pressure (Systolic BP >160 mm Hg and diastolic BP> 100 mm Hg) were found in 58 (55.77%) non-traumatic patient. Severity of the nasal bleeding was mild to severe degree in both the groups. Significantly anterior epistaxis is common among the traumatic epistaxis group (69.57%) and posterior epistaxis in non-traumatic epistaxis group (46.55%).

About 27.59% patient the exact site was not detected as there was diffuse bleeding. In case of nasal bleeding, bleeding from septum 42 (40.38%), from lateral wall 32 (30.76%) and from floor of the nose 23 (22.15%). Control of bleeding by the direct method was possible in 11 (10.57%) patients. Anterior nasal packing was given in 86 (82.69%) patients and post nasal packing was given in 3 (2.89%) patients. Nasal packing has the advantage of easy placement and removal; there was no need for an anesthetist or theatre space for that treatment. It is also affordable to the patients. Anterior nasal packing with gauze was the most frequent modality of treatment in this study. The few patients that had posterior nasal packing were mainly patients with hypertension, massive trauma and recurrent bleeding. Posterior nasal packing was performed using gauze pack (triangular shape) inserted in the nasopharynx.

Complications of nasal packing include septal hematoma, sinusitis, syncope during insertion of nasal pack, pressure necrosis of the alae nasi, toxic shock syndrome. Most of our patients did not suffer this due to adequate precautions such as technique of insertion of the pack, use of antibiotics and nasal decongestant were administered.

In this study, surgical treatment was done only in 3.85% of patients who presented with bleeding intranasal tumor. Similar finding was also reported in Nigeria and in Tanzenia. There was no mortality in this study.

Limitation of the study:
Considering significant outcome of the study, it had tried to overcome the limitations as far as possible. Beyond the scope, following limitations were encountered in the study.

Regarding demographic profile of the patient:
1. Most of the patient could not properly tell the exact age of them. Most of the elderly
and people of rural habitat express their age more than their true age.

2. Habitats of sub-urban area were considered rural and habitat of industrial area was considered as urban.

**Regarding presentation of the patient:**
1. Proper history was sometimes difficult to take.
2. Clinical examination found difficult due to lack of proper instruments (naso-endoscope) and the patient compliances.

**Conclusion:**
Epistaxis is a common otolaryngological emergency and is often due to lesions within or around the nose and systemic conditions. A high incidence in young adults was reported with preponderance of males over females. Occurrence of different types of epistaxis was strongly related with the certain demographic factors like age, sex and habitat of the patient. This study supports the credibility of conservative management procedure in the treatment of epistaxis. Simple nasal packing is the commonly practice conservative method with high success.

Hence, this approach should be the preferred option in the management of epistaxis especially in developing countries.

**References:**


Case Report

Pulse Oximetry is Essential in Home Management of Elderly COVID-19 Patients

Md. Abdullah Al Harun¹, Mohammad Murad Hossain², Mohammad Anwarul Bari³, Nazmul Ahsan Siddiqi Rubel⁴, Mohammad Enamul Karim⁵, Nadia Siddiquee⁶, Mohammad Delwar Hossain⁷, Farhana Sultana⁸, Ahmmad Taous⁹, AKM Monwarul Islam¹⁰, Salma Khatun¹¹, AHM Afzalul Haque¹², Mohammad Mahbub-Ul Haque¹³, KM Mamun Murshed¹⁴, Syed Atiquullah¹⁵, Abu Mohammad Ekramul Hoque¹⁶, Mohammad Abdullah¹⁷

Abstract

Background: Coronavirus disease 2019 (COVID-19) caused by Severe Acute Respiratory Syndrome Corona Virus-2 (SARS-CoV-2) is in Pandemic form and has affected people of 215 countries. It produces symptoms like fever, cough, shortness of breath, sore throat, headache, loss of taste, smell or appetite and many other rare symptoms. But the most important symptom is shortness of breath due to hypoxia. In a normal individual oxygen saturation (SpO₂) is at least 95% and patient feels shortness of breath when SpO₂ falls below 90% with some exception. SARS-CoV-2, a newly emergent coronavirus has the peculiarity to produce silent hypoxia, meaning SpO₂< 90% or less like 80%, 70%, 60% without shortness of breath. Silent hypoxia can be diagnosed by monitoring SpO₂ with pulse oximeter. For management of COVID-19, early symptoms like fever & cough, SpO₂ should be monitored by pulse oximeter, followed by immediate correction of hypoxia by O₂ supplementation and prophylactic oral or injectable anticoagulant to prevent thromboembolism and thus death rate can be reduced.

Case summary: A 72-year-old man presented with the complaints of fever and headache followed by cough, fatigue, anorexia, loss of taste and appetite in next few days but no shortness of breath. The patient was clinically diagnosed as a case of COVID-19 & positive result of Real time-Polymerase Chain Reaction (RT-PCR) test confirmed the diagnosis. From the first day, SpO₂ was regularly monitored with pulse oximeter and SpO₂ on day 1, it was 96-98%. On day 8, SpO₂ fell to 89-93%, pulse 96/min, respiratory rate>30/min, temperature 101°F, taste sensation was reduced. According to signs and symptoms, the patient was diagnosed as COVID-19 with severe pneumonia. Management was started at home with continuous monitoring, lying in prone position for 5-6 hours/day, supplemental oxygenation to maintain level of SpO₂ between 94-96%, injectable anticoagulant enoxaparin to prevent venous thromboembolism (VTE) and disseminated intravascular coagulation (DIC) was given. Prophylactic antibiotics and symptomatic treatment were also given.

Results: According to this case report, patient’s SpO₂ was monitored by pulse oximeter on first day; on day 08, SpO₂ fell to 89-93% & on day 10, further dropped to 85-88% which

**Details of the authors and contributors included at the end of the article.

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indicated severe pneumonia but there was no complaint of breathlessness as it was silent hypoxia. Sometimes the patient spent 30 minutes or more in toilet and SpO<sub>2</sub> used to fall to 82-83% without any subjective shortness of breath but with only mild heaviness of chest and cough. Therefore SpO<sub>2</sub> monitoring by pulse oximeter is essential in early diagnosis of silent hypoxia. Correction of hypoxia by supplemental oxygenation and prevention of VTE and DIC by using anticoagulant was the mainstay of treatment and patient had significant improvement on day 14. The patient was managed completely at home except X-ray being done in a hospital.

**Conclusion:** Fall of SpO<sub>2</sub> in COVID-19 i.e. hypoxia (usually present as shortness of breath) or silent hypoxia can be diagnosed early by pulse oximeter or smart phone pulse oximetry apps. Early management by isolation, supplemental oxygenation and oral/injectable anticoagulation can prevent further events like Acute Respiratory Distress Syndrome (ARDS), respiratory failure followed by multiple organ failure (that may cause death). The authors advocate further clinical trial and research.

**Keywords:** Pulse oximetry, Home management, COVID-19, Silent hypoxia, Oral anticoagulant.

**Introduction:**
Today June 15, 2020, completed 100 days of attack by Severe Acute Respiratory Syndrome Corona Virus-2 (SARS-CoV-2) in Bangladesh. SARS-CoV-2 virus causes Coronavirus disease 2019 (COVID-19) have turned into a pandemic. 1<sup>st</sup> case of COVID-19 was recognized on December 2019 in Wuhan, the capital of Hubei, China<sup>1-4</sup>. Three cases of COVID-19 was <sup>1</sup>st recognized on March 08, 2020 and reported by the epidemiology institute, IEDCR in Bangladesh. Till today 90,619 people have been affected and 1,209 died in Bangladesh and 80,64,416 persons have been affected whereas 4,37,207 died in 215 affected countries of the world<sup>5</sup>.

Affected cases are confirmed by Real time-Polymerase Chain Reaction (RT-PCR) test was done for SARS-CoV-2 (COVID-19) and positive result confirmed the diagnosis. There may be many cases having COVID-19 like clinical symptoms without going for RT-PCR test, so total number of COVID-19 cases may be more. COVID-19 infected patients develop only mild (40%) or moderate (40%) symptoms and approximately 15% develop severe disease that requires oxygen (O<sub>2</sub>) supplementation and 5% have critical diseases with complications such as respiratory failure, ARDS, sepsis and septic shock, thromboembolism and/or multiple organ failure including acute kidney injury and cardiac injury. Most of the SARS-CoV-2 infected patients are men (73%)<sup>2</sup>. Older age, smoking, co-morbidities such as diabetes, hypertension, cardiac disease, chronic lung disease are the risk factors for severe disease<sup>4,6,7</sup>. Severe coronavirus disease is commonly complicated with coagulopathy and DIC may exist in the majority of death<sup>8,9</sup>.

Common symptoms of COVID-19 diseases are fever, cough, fatigue, anorexia, shortness of breath, myalgias. Other non-specific symptoms such as sore throat, nasal congestion, headache, diarrhoea, nausea and vomiting, loss of taste, appetite & smell may present in some cases<sup>2,4</sup>. Shortness of breath occurs due to hypoxia which means SpO<sub>2</sub> < 90% but with COVID-19 disease SpO<sub>2</sub> reduced below normal level may be down to 70%, 60% or 50% but patient had
no feeling of breathlessness.\textsuperscript{10,11} He can continue his own job without any breathing problem which makes the patient more vulnerable.

\textit{SpO}\textsubscript{2} is an essential element in the management and understanding of patient's care which measures how much haemoglobin is currently bound to oxygen compared to how much haemoglobin remains unbound.\textsuperscript{12} A pulse oximeter is a noninvasive medical device placed over a person's finger to monitor blood oxygen saturation.\textsuperscript{13,14} It is routinely used in operation theatre, Intensive Care Unit (ICU) and postoperative ward in hospital. Investigation results other than RT-PCR test like normal or low total count of WBC, lymphopenia, neutrophil lymphocyte ratio, high C-Reactive Protein (CRP), low procalcitonin, significant elevation of D-Dimer & S. Ferritin level, associated with bilateral pneumonia in CXR or ground glass opacities (GGO) and Crazy paving appearance in CT scan of chest suggest presence of COVID-19 during this pandemic situation.\textsuperscript{15}

Till today \textit{O}\textsubscript{2} supplementation to correct hypoxia and prevention of VTE and DIC by using anticoagulant is the mainstay of treatment for COVID-19. Other advice like lying in prone position, mild breathing exercise, adequate nutrition & symptomatic treatment like antibiotics to prevent secondary infections, paracetamol for fever, montelukast and other medications are used during management. For home management of COVID-19 patients, proper caring by relatives or a professional nurse and required medication should be confirmed.\textsuperscript{6}

This case study focuses on early diagnosis of hypoxia without shortness of breath by pulse oximeter which monitors \textit{SpO}\textsubscript{2}, also can be monitored by pulse oximetry apps installed on smart mobile phones. When \textit{SpO}\textsubscript{2} is 94% or less, \textit{O}\textsubscript{2} supplementation should be given to maintain \textit{SpO}\textsubscript{2} above 94%\textsuperscript{4} and oral anticoagulant apixaban/rivaroxaban or injectable Low Molecular Weight Heparin (LMWH) Enoxaparin may be given to prevent VTE or DIC in home management.

\textbf{Case Presentation:}

A 72-year-old man, father of the first author staying with him at the same home developed symptoms like fever and headache on May 21, 2020 [day 1 of COVID-19 (D-1)]. First author developed symptoms of COVID-19 on May 13, 2020 and confirmed by RT-PCR test on May 16, 2020. The first author was isolated in a room with attached toilet and for contact tracing RT-PCR test was done to patient (father of 1st author), patient’s wife (mother of 1st author) and 6th author (wife of 1st author) on May 21, 2020 and all RT-PCR test result became positive. As RT-PCR test is a confirmatory test, patient was diagnosed as a case of COVID-19.

The patient is hypertensive controlled on drug and according to risk factors for COVID-19 advised by World Health Organization (WHO) patient’s age being more than 60 years, had co-morbidity like hypertension, so the patient was in risk group and monitored from D-1. Pulse oximeter was arranged at home to monitor \textit{SpO}\textsubscript{2} which was 96-98%. From D-1 patient’s \textit{SpO}\textsubscript{2}, temperature, pulse, respiratory rate & taste sensation was routinely monitored 3 times a day. Patient gradually developed cough, fatigue, anorexia, nausea, nasal congestion, loss of appetite & taste which gradually deteriorated. He had no sign of shortness of breath, sore throat, diarrhoea or loss of smell (Table I).
From May 26, 2020 (D-6) SpO$_2$ fell to 93-96% and gradually deteriorated. On May 28, 2020 (D-8) SpO$_2$ fell to 89-93%, respiratory rate>$30$/min, pulse 96/min, temperature 101°F and taste sensation was reduced. According to sign and symptoms, patient was clinically diagnosed as COVID-19 with severe pneumonia. Immediate management was started at home with supplemental oxygenation from O$_2$ cylinder with nasal cannulas to maintain the SpO$_2$ between 94-96%.

Laboratory investigations that C-reactive protein (CRP) raised up to 210 mg/L, White Blood Cells (WBC) 7.60 K/µL, neutrophil 70%, lymphocyte 25%, ESR 85 mm in 1$^{st}$ hour, S.Creatinine 1.13 mg/dl, alanine aminotransferase (ALT) 29U/L, S. Potassium (K$^+$) 2.9 mmol/L, S. Sodium (Na$^+$) 139 mmol/L, chloride (Cl$^{-}$) 106 mmol/L & TCO$_2$ -21 mmol/L, D-dimer 0.35 µg/ml, Troponin-I <0.01 ng/ml, Dengue Ab IgM negative & Dengue Ab IgG positive. Pathological samples were collected from home on same day by Authentic Diagnostic and Consultation Ltd, with report was sent by email & facebook messenger and CXR done from Shaheed Suhrawardy Medical College Hospital (ShSMCH) showed consolidation in the mid zone of right lung. Investigation reports are shown in (Table II). Follow up laboratory investigations were done on D-11, D-16, D-20 and CXR was done on D-12 & D-20.

Other than O$_2$ supplementation, injectable anticoagulant enoxaparin (60mg) was given subcutaneously once daily on alternative side of umbilicus which continued for next 10 days. To prevent secondary bacterial infection, Tab co-amoxiclav 625mg was given 8 hourly, Potassium Chloride to correct S. Potassium imbalance, Acetylcysteine (to decrease the viscosity of thick mucous & cough from respiratory tract) and salbutamol inhaler with spacer for bronchodilation upto

Presence of symptoms (D 1 to D 21). D 7- D12 all symptoms were present( Shaded area).
Table - II:

<table>
<thead>
<tr>
<th>Investigation</th>
<th>Unit</th>
<th>May 21 (D-1)</th>
<th>May 28 (D-8)</th>
<th>May 31 (D-11)</th>
<th>June 5 (D-16)</th>
<th>June 9 (D-20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RT-PCR test for SARSCOV2</td>
<td>Positive</td>
<td>Negative</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CRP mg/L</td>
<td>_</td>
<td>210</td>
<td>240</td>
<td>90</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Neutrophil %</td>
<td>_</td>
<td>70</td>
<td>80</td>
<td>70</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Lymphocyte %</td>
<td>_</td>
<td>25</td>
<td>16</td>
<td>19</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>WBC K/µL</td>
<td>_</td>
<td>7.60</td>
<td>8.00</td>
<td>7.56</td>
<td>8.60</td>
<td></td>
</tr>
<tr>
<td>ESR mm in 1st hour</td>
<td>_</td>
<td>85</td>
<td>100</td>
<td>112</td>
<td>112</td>
<td></td>
</tr>
<tr>
<td>D-Dimer µg/ml</td>
<td>_</td>
<td>0.45</td>
<td>1.6</td>
<td>0.46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S. Ferritin ng/ml</td>
<td>_</td>
<td>647</td>
<td>616</td>
<td>455</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Na+ mmol/L</td>
<td>_</td>
<td>139</td>
<td>137</td>
<td>140</td>
<td></td>
<td></td>
</tr>
<tr>
<td>K+ mmol/L</td>
<td>_</td>
<td>2.9</td>
<td>3.3</td>
<td>3.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cl- mmol/L</td>
<td>_</td>
<td>106</td>
<td>106</td>
<td>109</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TCO₂ mmol/L</td>
<td>_</td>
<td>21</td>
<td>20</td>
<td>22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RBS mmol/dL</td>
<td>_</td>
<td>7.2</td>
<td>_</td>
<td>_</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S. Creatine mg/dl</td>
<td>_</td>
<td>1.13</td>
<td>_</td>
<td>_</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ALT U/L</td>
<td>_</td>
<td>29</td>
<td>_</td>
<td>_</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INR</td>
<td>_</td>
<td>_</td>
<td>_</td>
<td>_</td>
<td>1.21</td>
<td></td>
</tr>
<tr>
<td>Troponin-I ng/ml</td>
<td>_</td>
<td>_</td>
<td>_</td>
<td>_</td>
<td>&lt;0.01</td>
<td></td>
</tr>
<tr>
<td>Dengue AblgM Positive/Negative</td>
<td>_</td>
<td>Negative</td>
<td>_</td>
<td>_</td>
<td>_</td>
<td></td>
</tr>
<tr>
<td>Dengue AblgG Positive/Negative</td>
<td>_</td>
<td>Positive</td>
<td>_</td>
<td>_</td>
<td>_</td>
<td></td>
</tr>
<tr>
<td>Urine R/M/E Pus cell/HPF</td>
<td>_</td>
<td>5-7</td>
<td>_</td>
<td>_</td>
<td>_</td>
<td></td>
</tr>
</tbody>
</table>

D = Number of Day of COVID-19

June 6, 2020 (D-16). During continuous supplemental oxygenation most of the time patient used non rebreather mask except during taking food & sleep. At that time patient used nasal cannulas. On May 30, 2020 (D-10) SpO₂ fell to 85-87% and from next day (D-11) SpO₂ gradually improved. On June 5, 2020 (D-16), the patient’s condition was stable and demand of O₂ supplementation gradually reduced. Patient needed only 1 liter per minute (L/min) O₂ to maintain saturation 94-96%. O₂ supplementation from May 28, 2020 to June 10, 2020 shown in Table III.

On June 1, 2020 (D-12) CXR showed resolving consolidation in the mid zone of right lung with bilateral basal pneumonitis compared to previous one. On June 5, 2020 (D-16), temperature 98° F, pulse- <80 beat/min, respiratory rate <20/min, taste sensation reverse to normal & investigations showed CRP- 90.0 mg/L, WBC- 7.56 K/µl, neutrophil-70%, lymphocyte- 19%, ESR 112 mm in 1st hour, D-dimer 1.60 µg/ml, S. Ferritin-616 ng/ml and S. electrolytes within normal level. On June 9, 2020 (Day-20) patient felt symptoms free with SpO₂ 96-98%, P-74/min, respiratory rate - <20/min, temperature - normal, taste sensation reverted to normal.
Table III:
**O₂ Supplementation to maintain SpO₂ > 94% during hypoxia (Target SpO₂ was 94-96%)**

<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>SpO₂ Without O₂</th>
<th>Average SpO₂</th>
<th>Supplied amount of O₂ (L/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 27, 2020</td>
<td>7</td>
<td>93-95%</td>
<td>No need</td>
<td>No need</td>
</tr>
<tr>
<td>May 28, 2020</td>
<td>8</td>
<td>89-93%</td>
<td>94-96%</td>
<td>Not used</td>
</tr>
<tr>
<td>May 29, 2020</td>
<td>9</td>
<td>88-91%</td>
<td>94-96%</td>
<td>2</td>
</tr>
<tr>
<td>May 30, 2020</td>
<td>10</td>
<td>85-88%</td>
<td>94-96%</td>
<td>3.5</td>
</tr>
<tr>
<td>May 31, 2020</td>
<td>11</td>
<td>87-89%</td>
<td>94-96%</td>
<td>3</td>
</tr>
<tr>
<td>June 01, 2020</td>
<td>12</td>
<td>89-92%</td>
<td>94-96%</td>
<td>3</td>
</tr>
<tr>
<td>June 02, 2020</td>
<td>13</td>
<td>91-94%</td>
<td>94-96%</td>
<td>2</td>
</tr>
<tr>
<td>June 03, 2020</td>
<td>14</td>
<td>92-94%</td>
<td>94-96%</td>
<td>2</td>
</tr>
<tr>
<td>June 04, 2020</td>
<td>15</td>
<td>92-95%</td>
<td>95-97%</td>
<td>1.5</td>
</tr>
<tr>
<td>June 05, 2020</td>
<td>16</td>
<td>93-96%</td>
<td>95-98%</td>
<td>1</td>
</tr>
<tr>
<td>June 06, 2020</td>
<td>17</td>
<td>94-97%</td>
<td>95-98%</td>
<td>1 (50% day &amp; bedtime)</td>
</tr>
<tr>
<td>June 07, 2020</td>
<td>18</td>
<td>94-97%</td>
<td>95-98%</td>
<td>1 (bedtime)</td>
</tr>
<tr>
<td>June 08, 2020</td>
<td>19</td>
<td>94-97%</td>
<td>95-99%</td>
<td>1 (bedtime)</td>
</tr>
<tr>
<td>June 09, 2020</td>
<td>20</td>
<td>95-98%</td>
<td>96-99%</td>
<td>1 (50% of bedtime)</td>
</tr>
<tr>
<td>June 21, 2020</td>
<td>21</td>
<td>96-98%</td>
<td>No need</td>
<td>No need</td>
</tr>
</tbody>
</table>

SpO₂ = oxygen saturation in blood, L/min = liter per minute, NRB = non rebreather mask

On RT-PCR test COVID-19 result came negative, CXR became normal and laboratory investigation reports within normal limit, except ESR & S. Ferritin (Table II).

During management, monitoring of SpO₂ for 24 hours was difficult to maintain. During toilet use, patient refused to take O₂ and after coming from toilet, SpO₂ used to go down to 82-83% for few minutes due to absence of O₂ supply which had to immediately corrected by higher flow of oxygen than earlier. Ecchymosis developed associated with mild pain in the injection site of paraumbilical region (Fig: II) due to Enoxaparin which was gradually diminished.

**Fig-1: Patient lying in prone position (5-6 hours/day), continuous oxygenation from oxygen cylinder and monitoring with pulse oximeter.**
CoV-2 virus is at exponentially rising state across the globe. Bangladesh is also facing this highly transmissible zoonotic disease with community transmission across the country. In Bangladesh it was declared as pandemic on April 16, 2020. Patients of COVID-19 develops clinical symptoms like fever (83-99%), cough (59-82%), fatigue (44-70%), shortness of breath (31-40%), anorexia (40-84%), myalgias (11-35%). Rarely, patient may also present with sore throat, nasal congestion, malaise, headache, diarrhoea, nausea and vomiting, loss of smell, taste or appetite. Out of these symptoms most dangerous is shortness of breath (31-40%) and approximately 15% of total cases develop severe diseases and need O₂ supplementation. Patients with severe disease develops shortness of breath and hypoxia about one week after onset of early symptoms. Age more than 60 years, habit of smoking and underlying co-morbidities such as diabetes, hypertension, cardiac disease, chronic renal disease, cerebrovascular disease, chronic lung disease, immunosuppression and cancer may have been associated with higher mortality.

In this pandemic situation, arrangement of hospital admission for all COVID-19 patients may not be possible. In a normal healthy individual SpO₂ should be 95% or above and normally he feels breathlessness or respiratory distress when SpO₂<90%. But in COVID-19, due to SARS-CoV-2 infection, SpO₂ falls down very slowly and body adopts with that saturation, so patient does not feel breathlessness down to 70%, 60%, 50% or even lower. Such unusual clinical picture has emerged in some patients with SARS-CoV-2 virus infection, developed hypoxia that is out of proportion of the patient’s symptoms. This has been called silent hypoxia. It is also termed as happy hypoxia because the
patient feels well with very low SpO₂. But suddenly he present with shortness of breath along with severe hypoxia which causes acute respiratory failure followed by multiple organ failure which may cause death. So, at home early SpO₂ monitoring can contribute in management of COVID-19, reduce mortality and reduce the burden on hospital capacity in this pandemic situation.

The patient’s condition was being assessed and management was started at early stage, but the disease process continued to progress and severe pneumonia developed on May 28, 2020 (Day 8). Patient was monitored with pulse oximeter to maintain SpO₂ within 94-96% and O₂ supplementation at home was ensured from Bangladesh ENT Hospital Ltd.

Ensuring O₂ supply is the main challenge in home management of COVID-19 patient as well as in isolation ward. O₂ supplementation can be ensured from O₂ cylinder or O₂ concentrator. Concentrator can produce O₂ from atmospheric air may be up to 10 L/min. For O₂ delivery, patients can use nasal cannula, face mask or non rebreather mask (NRB). These are low flow O₂ delivery devices in which nasal cannula supply up to 6 L/min (FiO₂ up to 50%), by simple mask up to 10 L/min (FiO₂ up to 60%) and NRB delivered O₂ up to 15 L/min (FiO₂ up to 100%)15. To maintain targeted SpO₂, NRB should be preferred. So authors’ advice to use NRB most of the time for O₂ delivery and nasal cannulas should be used during taking food and sleep also for patients who produce repeated productive cough.

Other than pulse oximeter, patient’s condition was monitored with total count of WBC and ratio of neutrophil to lymphocyte. Decreased number of lymphocytes or the ratio of neutrophil to lymphocyte more than 3.5 is prognostically poor sign. Rapid and significantly elevated CRP indicates possibility of secondary infection. D-dimer is a biomarker of fibrin formation and degradation which might help in early recognition of these high risk patients and also predict outcome.15 D-dimer and Ferritin are elevated in severe cases of pneumonia, which is a potential risk factor for poor prognosis.14

When SpO₂ falls below 94%, prophylactic injectable anticoagulant LMWH enoxaparin was given from the first day of severe pneumonia to prevent VTE & DIC which prevent further damage of lungs parenchyma. Enoxaparin given in right and left side of umbilicus on alternative days, causes ecchymosis, pain & indurations at the site of injection. Another direct oral anticoagulant (DOAC) tablet rivaroxaban 10mg daily which was started on June 7, 2020 (Day-18) for next 10 days. Elevated D-dimer indicates increased risk of abnormal blood clotting and its level above 1µg/ml was a strong and independent risk factor for death in these patients.20-24 Patient with D-dimer more than six times of the upper limit of normal level comprise in a higher proportion of severe cases.24 Early anticoagulation is necessary to prevent propagation of microthrombi at disease presentation and anticoagulation may be associated with decreased mortality.25 Injectable LMWH enoxaparin is the best choice of anticoagulant for hospital admitted patients due to its anti inflammatory action.26 DOAC drugs are oral selective Factor Xa inhibitors and decreases thrombin generation and blood clot formation.18,27 The advantages of DOAC drugs like apixaban/rivaroxaban are: they can be given as fixed doses, do not require monitoring, rapid onset of action, high oral bioavailability when being taken with food, low cost & self medication.18 In comparison LMWH enoxaparin, apixaban/ rivaqoxaban has no anti-inflammatory action
and using with antiviral drugs cause high rise of plasma level of apixaban/rivaroxaban which increases haemorrhagic risk, so it should not be used with antiviral drugs.\textsuperscript{28,29}

The incidence of VTE is low in Asian population and therefore routine VTE is not frequently used.\textsuperscript{24} As DOAC drugs like apixaban/rivaroxaban can given in oral fixed doses, do not require monitoring, rapid onset of action, cost effective the authors suggest those as prophylactic anticoagulant when SpO\textsubscript{2} starts to fall down both in home & hospital isolation ward management. The authors advocate further research & trial on it.

Other drugs were taken like co-amoxiclav to prevent secondary bacterial infection, paracetamol to reduce body temperature, famotidine as antiulcerant, sulbutamol inhaler for bronchodilatation, montelukast, antihistamine, acetylcysteine and domperidone according to symptoms.

In case of home management, main challenges in providing proper care are risk of the caregivers being infected by the virus, monitoring of vital parameters, ensuring continuous oxygen supply, laboratory investigations, X-ray and subcutaneous injection of LMWH enoxaparin. The reported case of home management of COVID-19 was managed successfully in presence of 1\textsuperscript{st} & 6\textsuperscript{th} author except X-ray which was done in ShSMCH but SpO\textsubscript{2} was maintained to 94-96\% level by continuous supplemental oxygen during transportation on June 1, 2020.

From the above discussion it is clear that the patient having silent hypoxia which can be early diagnosed by monitoring of SpO\textsubscript{2} with pulse oximeter. Early management of COVID-19 with maintenance of oxygen saturation within 94-96\% and anticoagulant prevent complication of disease.

As in a pandemic situation lack of hospital bed availability and patients with anorexia, diarrhoea, nausea, vomiting, loss of smell & taste sensation, weakness with change of regular diet and environment grossly affects the improvement of patient. So, elderly COVID-19 patients are being better managed at home other than hospital (if possible).

**Recommendations from the authors:**

From the experience of home management of an elderly COVID-19 patient and after reviewing the related literatures, the authors have some recommendation which can be considered by the policy makers as well as by the physician for management of COVID-19.

1. Patients who develop most common diagnostic symptoms of COVID-19 like fever (83-99\%) and cough (59-82\%), their SpO\textsubscript{2} must be monitored routinely to diagnose silent hypoxia without symptoms of shortness of breath (31-40\%).

2. Pulse oximeter is essential for monitoring of SpO\textsubscript{2} level in COVID-19 which is the main tool for diagnosis and management of silent hypoxia.

3. Pulse oximetry apps in mobile phone which already exist in some higher end smart mobile phone can help in early diagnosis of silent hypoxia.\textsuperscript{13}

4. Oral anticoagulant apixaban/rivaroxaban can be started when SpO\textsubscript{2} gradually deteriorating from its baseline (normal at least 95\%) as prophylaxis to prevent VTE and DIC. Previous bleeding disorder should be excluded and concomitant treatment with antiviral drugs should be avoided.

5. Home management is equally effective like management in hospital isolation ward if SpO\textsubscript{2} can be monitored by pulse oximeter.
oximeter, O₂ supply ensured, medications, home service of laboratory investigation & CXR can be ensured. In this pandemic situation proper implementation of home management can save a lot of lives as availability of hospital bed is limited. These recommendations need further research and trial to establish the observation of the authors.

Conclusion:
The symptoms caused by COVID-19 range from mild upper respiratory symptoms to multiple organ failure complicated by severe hypercoagulability state. These complications ultimately cause death. To reduce death early diagnosis of silent hypoxia is strongly recommended by the authors. Pulse oximeter can diagnose hypoxia by measuring SpO₂ with or without breathlessness. Pulse oximetry apps in smart mobile phone can be a good alternative of pulse oximeter. Patients with older age, habit of smoking & co-morbidities are in risk group for severe diseases of COVID-19. So, our recommendation is that, in this pandemic situation when elder patient feels fever, it should be clinically diagnosed as COVID-19 without waiting for RT-PCR test result and SpO₂ should be monitored 3 times a day to diagnose hypoxia. First oral anticoagulant apixaban/ ravoxaban may be started as prophylaxis to prevent VTE & DIC if there is no history of bleeding disorder & patient not taking any antiviral drugs. The author’s observation needs further research & trial which may contribute in management guideline of COVID-19.

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1. Bangladesh ENT Hospital Ltd for supply O₂ cylinder for continuous supplemental oxygenation and pulse oximeter for SpO₂ monitoring.
2. Authentic diagnostic and consultation centre for home investigation services.
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References


Case Report

Bilateral Langerhans Cells Histiocytosis in the Temporal Bone: A case report

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Abstract:
Langerhans cells histiocytosis (LCH) or histiocytosis-X is a rare group of diseases that includes three overlapping diseases of Hand-Schuller-Christian disease (HSC), Letterer-Siwe disease (LS) and Eosinophilic granuloma (EG). It results from clonal proliferation of histiocytes having similar morphology and immunophenotype to Langerhans cells in skin and mucosa. Though head and neck manifestation is common, isolated simultaneous bilateral temporal bone Langerhans Cell Histiocytosis is an extremely rare presentation. Having same otological manifestations, high resolution CT scan is advocated for early identification and differentiation of LCH from other common conditions such as mastoiditis, otitis externa, chronic suppurative otitis media. Diagnosis of LCH is confirmed by biopsy and immunohistochemical staining of S-100 protein and/or CD1a antigen. Chemotherapy is the main mode of treatment. The prognosis is worse when presenting age of children is younger than 2 years.

Introduction:
Langerhans cells histiocytosis (LCH) or histiocytosis-X is a rare group of diseases that includes Hand-Schuller-Christian disease (HSC), Letterer-Siwe disease (LS) and Eosinophilic granuloma (EG). It results from clonal proliferation of histiocytes which has similarity in morphology and immunophenotype to Langerhans cells located in the skin and mucosa.¹,² The Writing Group of the Histiocyte Society recommended the term LCH in 1987.³

The incidence of LCH is 5.4 per million.⁴ It may present any age but average onset of age is between 1-3 years with a male predominance.⁵,⁶ Though it may involve any organ, head and neck is affected in about 55-73% cases.⁷

Temporal bone involvement in LCH is variable ranging from 4-61%. Bilateral
involvement is about 25-45% cases.\(^8\) Isolated involvement of temporal bone with SOL otologic presentation may occur. But as a component of multisystem involvement is most common in children. Bilateral simultaneous presentation of LCH in temporal bone is a rare entity. Near about 20 such cases have been reported.\(^9\) Here we report a another case of bilateral Langerhans’ Cells Histiocytosis in the Temporal Bone.

**Case Report:**
A 14 months-old girl presented in Department of Otolaryngology, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh with blood stained discharge from both ear for 4 months and swelling in both external auditory canal for same duration. Otomicroscopic examination revealed sagging of posterior meatal wall with breached surface. But tympanic membrane of both ear was visible after compressing the swelling. Both facial nerves were intact. Before attending our institution she visited in another ENT center where biopsy was taken from the external auditory canal swelling which histopathology revealed inflammatory tissue. She was anaemic but had no other systemic illness like lymphadenopathy, hepatosplenomegaly, exophthalmous, diabetes insipidus. Her haematological testing revealed Hb% 9.8 gm/dl, erythrocyte sedimentation rate (ESR)-35 mm, Platelet – 650x10\(^9\)/L. Computed tomography (CT) scan showed bilateral destruction of cortical temporal bone with erosion of tegmen and sigmoid sinus with soft tissue density in both middle ear and external auditory canal but inner ear appeared normal. Biopsy was taken from the right mastoid by post auricular incision under general anaesthesia. Histopathological examination demonstrated numerous histiocytic cells with grooved and lobulated nuclei. Eosinophils are also present. Histiocytes were immunohistochemically positive for S-100 protein and CD1a which is pathognomonic for LCH. Patient was referred to a paediatric haemat-oncologist. Treatment started with intravenous etoposide and oral prednisolone. Unfortunately after one month of treatment her conditions became fatal and she died. The autopsy could not be performed. Therefore the cause of death remained unclear.

**Fig.1(a),(b),(c):** Shows soft tissue density lesion with punched-out bony destruction of both temporal bone causing destruction of tegmen in right and erosion of left sinus plate
Discussion:
Being a rare disease, LCH is of less Otolaryngological interest. Though head and neck presentations manifestations are common with multisystem involvement, isolated temporal bone involvement is very rare. The early symptoms of LCH involving temporal bone are ear discharge occasionally mixed with blood, otalgia, hearing impairment, dizziness and postauricular swelling. The commonest local sign include granulation tissue or aural polyp in the external auditory canal. In our case the baby girl presented with ear discharge mixed with blood, post auricular swelling and granulation tissue polyp seemed to arise from posterior meatal wall.

Clinical findings in LCH of temporal bone very frequently create confusion with other common otological conditions such as otitis externa, otitis media, cholesteatoma, acute mastoiditis, malignancy of EAC etc. Temporal bone lesion is initially silent and presentation is delayed until it erodes cortical bone or posterior bony meatal wall. So early diagnosis may be missed without high index of suspicion.

The gold standard for identification and monitoring of bony LCH is high resolution computed tomography of temporal bone which elucidates characteristic lytic or punched lesion. MRI is more useful in delineating soft tissue and intracranial extension. In our case CT scan showed soft tissue density lesion with punched-out type bony destruction at bilateral temporal bone. MRI was not done.

But truly no focused clinical and or radiological sign exists to confirm the definitive diagnosis of LCH. Biopsy is always mandatory. Biopsy through transmastoid approach achieves definite tissue collection for examination. Confirmed diagnosis is made on histopathological assessment and immunohistochemical detection of S-100 and or CD1 antigen. In this case initial biopsy from external ear canal polyp revealed inflammatory tissue. This might be due to collection error or false reporting. We collected tissue from mastoid bone through post auricular incision and histopathology revealed eosinophilic granuloma variety of LCH. Immunohistochemical staining of S-100 protein and CD1a confirmed the diagnosis of LCH.

Fig. 2: (a) Low-power hematoxylin and eosin stain demonstrating numerous histiocytic cells with grooved and lobulated nuclei. Eosinophils are also present (x100). (b) Immunohistochemical stain with S-100 positivity (x100). (c) Immunohistochemical stain with CD1a positivity (x200).
No clear guideline for treatment is established for the treatment of LCH due to rarity of disease as well as its variable presentation. Treatment modalities include surgery, radiotherapy, chemotherapy and steroid injection. Every case is individually managed with single or combination modality depending on the extension and severity. Different protocols were applied between 1984 to 2007 in a center of Canada. LCH I protocol (Prednisolone and Vinblastine or Etoposide) was used in most of the cases. In our case same protocol was used. Duration of treatment varies between 6 weeks to 2 years depending upon the severity of the tumor. The worse outcome is reported when presenting age of children is younger than 2 years. In our case presenting age was 1 year.

Conclusion:
Simultaneous bilateral temporal bone Langerhans Cell Histiocytosis is a very rare disease. High resolution CT scan is advocated for early identification and differentiation of LCH from other otological conditions having same presentation. A definitive diagnosis of LCH is confirmed by biopsy and immunohistochemical staining of S-100 protein and or CD1a antigen. The prognosis depends chiefly on age at presentation, involvement of multiple organ systems, organ dysfunction and the patient’s response to chemotherapy.

References:
10. McCaffrey TV, McDonald TJ: Histiocytosis -X of the ear and temporal


Case Report

White papilloma involving both vocal cords: A Case Report
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Abstract:
White papilloma are rare lesions that may occur at any site of mucosa-lined respiratory tract especially in vocal cords. Morphologically it appears villas looking, clinically & microscopically benign in most cases. We report a 70 years old male patient with white papilloma near anterior commissure involving both vocal cords found during indirect laryngoscopy. The lesion was completely resected with a unipolar coagulation device under direct laryngoscopy. Histopathological examination showed papilloma of vocal cords associated with Human papilloma virus (HPV) wart. To our knowledge this is the second reported case concomitant white papilloma with concomitant HPV in the vocal cords.

Key words: White papilloma, Vocal Cord, Direct laryngoscopy.

Introduction:
Papillomas are common benign tumors of the larynx and pharynx, and have been associated with viral infections. Recurrent white papilloma associated with HPV wart are rare lesions at any mucosa-lined location within the vocal cord.1,2 White papilloma have been reported to account for approximately 4.3%-6% of all benign laryngeal lesions. Papilloma can also invade any site of aero-digestive tract and have been associated with viral infection. Although papilloma are benign, they may recur easily. Patient was commonly found with voice change and difficulty in breathing with dyspnea because of airway obstruction and indicated for tracheotomy. Expansion and increase in size of papilloma growth tends to increase morbidity. Considering from this point early diagnosis is very important and need to take some measure for avoid tracheotomy in such patient. Management papilloma remains a problem because of its frequent relapses. Relapses and dissection of the pathology sometimes life threatening.
The purpose of this paper is to report a case of white papilloma of vocal cords. This report describes a 70 years old patient with white papilloma involving anterior commissure of both vocal cords, incidentally found during indirect laryngoscopy. Later on documented by FOL (fiber optic laryngoscopy) followed
by intraoperative identification and resection of papilloma. It was then confirmed by histopathological examination.

**Case report:**
A 70-year-old man presented with the complaints of change of voice and sore throat for last 6 months. He was relatively healthy and had no other significant medical history. Oropharyngeal examination revealed normal. Other ENT examinations was unremarkable including neck palpation. He had no history of dyspnea, dysphagia, odynophagia or any foreign body feeling.

Then he was evaluated by I/L (indirect laryngoscopy) and Fiber optic laryngoscopy (FOL) which revealed a whitish mass near to anterior commissure involving both vocal cords (Fig. 1).

After proper counselling, the patient was prepared for direct laryngoscopy (D/L) and excision. All relevant investigations were done and found within normal limit.

Then the patient underwent direct laryngoscopic examination with excision of mass under general anesthesia. This mass had the appearance of a papilloma measuring about 1x1 cm (Fig. 2) involving both vocal cords near to the anterior commissure. The surgical procedure proceeded uneventfully with no intraoperative or immediate post-operative complications. There was no strenuous coughing or difficulty in breathing after extubation.

HPR (Histopathological Report) revealed vocal cord papilloma (Fig. 3 & 4) associated with HPV (Human Papilloma Virus).
Discussion:
Laryngeal papillomatosis was first described in the medical literature approximately 150 years ago. Since then numerous studies have investigated the epidemiology of the disease and the viral etiology, pathophysiology, clinical presentation, risk factors for aggressive disease, and staging of juvenile laryngeal papillomatosis. Before the advent of laryngoscopy and modern medical and surgical techniques, it is probable that many patients with laryngeal papillomatosis died of their disease without diagnosis. Even there was history of laryngectomy in a child.

Tumors can grow along the respiratory tract and mouth (aero-digestive tract) and predilection the most common in the larynx 97.9%-100%. The growth of papilloma of the nose are often in the histopathologic form of inverted papilloma 47%, fungiformis papilloma 50% and the cylindrical papilloma 3%.

One of the factors causing papillomas is due to a viral infection. Any signs of HPV infection are found in both patients in the form of koilositosis cells, so that convince suspicion is the virus as the etiological factor of disease. This can cause by transmission from mother during delivery 60%. But the gynecological examination from the mother of the patient may not found signs of condyloma. This possibility can occur because the patient’s mother may have recovered from her illness at the time when examination performed (some time later after giving birth).

At first, papilloma is often confused with suspicion of allergic disease, asthma or croupes patients referred with the airway inflammation. But the thoracic X-ray showed no abnormalities. Finally, the direct laryngoscope showed multiple masses in the pharynx and larynx, suggest papillomas.

In case of children papilloma may show remission with increasing age. Microlaryngeal surgery (MLS) was performed to excise the tumor by preserving the normal mucosa. Therefore, it is needed to evaluate the subglottic and trachea due to the extension of laryngeal papilloma.

In this case, papilloma located only over two vocal cords near to the anterior commissure, nowhere else in the aero-digestive tract.

Conclusion:
The natural history of vocal cord papillomatosis is highly variable and unpredictable. Though benign in nature, a white papilloma may be life-threatening when presents with airway obstruction. Tracheostomy should be avoided if patients attend clinic earlier and early diagnosis is established. Surgical excision is the main mode of treatment when airway is compromised. Sometimes the disease may
undergo spontaneous remission, persist in a stable state requiring only periodic follow-up. A meticulous follow-up is recommended for early recognition of local and regional recurrences and malignant transformation.

Conflicts of Interest:
The authors declare that they have no conflicts of interest.

References