Aetiological factors of hoarseness of voice in patients attending in a district level hospital
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Abstract
Background: Information about causes or related factors involving voice change was studied mainly in central tertiary level hospitals previously, not in hospital in peripheral districts in Bangladesh.

Objective: To find out and evaluate the aetiological factors of hoarseness of voice irrespective of age and sex.

Setting: Pabna medical college, a 250 bedded hospital in Bangladesh.

Methods: This was a cross sectional, non-randomized and longitudinal study conducted from 1st August 2011 to July 2017. All the patients with history of hoarseness underwent clinical examination, routine as well as special investigation to find the diagnosis. The final results were analyzed by simple manual analysis with frequency and percentage using SPSS program in 2017.

Results: There were total 200 patients included in the study. Among them the age groups of 21 – 30 years and 31 – 40 years were mainly suffer from hoarseness. Similarly, among 200 patients 144 (72%) were males whereas 56 (28%) were females with male to female ratio of 2.5:1. The most common cause as per the distribution was acute laryngitis with frequency of 34% followed by acid peptic laryngitis, 25.5%, neoplasms of larynx 12%, whereas tuberculosis of larynx, intubation granuloma, trauma was very few.

Conclusion: There was etiological variation in hoarseness ranging from simple laryngitis to malignancies. So it is important not to ignore the hoarseness and precise history, examination and investigations should be done.

Key words: hoarseness, laryngitis;

Introduction
Hoarseness is the term often used by common people to describe changes in their voice quality. Actually the human voice is an extraordinary attainment, which is capable of conveying not only complex thought but also subtle emotion¹. At every child birth the most singularly and universally awaited sign of life is the infant’s cry. The cry signals a fulfilled physiological capability required for the infant’s survival. Probably no other human organ system need work so immediately and effectively after birth². “Although the voice is not visible to the eyes during speech production but its absence or malfunction is obvious”. Hoarseness is the

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term used to describe a change in normal voice quality. It is non-specific term, similar to patient’s complaint of dizziness when describing symptoms from lightheadedness to true vertigo. Hoarseness may imply breathlessness, roughness, voice breaks or unnatural changes in pitch. Term dysphonia is used by laryngologists to describe abnormal voice quality. Complaints of hoarseness may represent serious disease, therefore, should not be ignored. In the words of Chevalier Jackson “Hoarseness is a symptom of utmost significance and calls for a separate consideration as a subject because of the frequency of its occurrence as a distant signal of malignancy and other conditions”.

The causes of hoarseness are determined after obtaining a detailed medical history of the circumstances preceding the onset of hoarseness and performing a thorough physical examination. The latter may include visualization of the vocal cords, possibly indirect laryngoscopy, flexible nasendoscopy or videolaryngoscopy. In the absence of an upper respiratory tract infection, any patient with hoarseness persisting for more than two weeks requires a complete evaluation. When the patient has a history of tobacco use, cancer of the head and neck must be considered and ruled out. Voice abuse is one of the most common causes of hoarseness and can lead to other vocal pathologies such as vocal nodules. Good vocal hygiene can prevent and treat some pathologies, and voice therapy is a cornerstone of management in some cases of hoarseness.

If one has hoarseness for more than 3 weeks, it could be a sign of laryngeal cancer. This is one of the most common symptoms. But many other things can cause a hoarse voice. One of the most common causes is acute laryngitis. This usually happens due to a cold, a chest infection or over use of the voice, such as shouting or screaming. Smoking can also cause hoarseness because it irritates the throat lining (mucous membranes). Other special causes that usually under rated for hoarseness includes acid reflux, post nasal drip, allergies, thyroid problems and laryngeal injury.

Many people develop hoarseness as they get older. Acid reflux is acid leaking from your stomach up into your oesophagus. It can cause hoarseness, as stomach acid comes back up the oesophagus and irritates the larynx. Post nasal drip means mucus dripping from the back of your nose down into your throat. This can happen in cold, allergy or smoking. It produces cough and a hoarse voice.

Psychological factors may be a predisposing, precipitating or perpetuating agent in cases of voice disorder. Sudden loss of voice may be caused by conversion reaction. Muscle tension dysphonia is a common cause of hoarseness. It may also co-exist with other voice disorder. This condition results from an imbalance of the synergist and antagonist muscles affecting vocal fold position. Puberophonia is a condition in male where normal change of the pitch of voice at puberty is hampered or delayed. Patient may have double voice. Presbylaryngis is age related change in the voice where the vocal becomes stiffened, bowed and atrophic-looking. But these physiological and psychological voice changing factors were not included in this series.

The well-known risk factors for voice disorders are female, age (40-59yrs), vocal abuse, high vocal demand, extraesophageal reflux, chemical exposures, smoking, frequent cold / sinus infection. Women are more prone to develop functional voice disorders because of vulnerabilities such as stress, anxiety, depression and coping with negative emotions. Professional voice users like singers, teachers, actors, politicians, announcers, call centres/ telephone workers are more at risk of developing occupational voice disorders.
Methods
This is a cross sectional, non-randomized and longitudinal study conducted from August 2011 to July 2017 in department of otorhinolaryngology of Pabna Medical College Hospital, Bangladesh. All the patients who presented with history of hoarseness were included in the study. The detailed history, clinical examination, routine as well as special investigation (flexible nasopharyngolaryngoscopy and direct laryngoscopy) was performed to find the diagnosis. In this hospital there was no facility of video laryngoscopy or flexible nasopharyngoscopy. So the patients were sent to Dhaka or Rajshahi for this endoscopic procedure.

Physiological, psychological, surgical conditions (i.e. thyroidectomy) or conditions outside the neck (i.e. RLN palsy due to lung or thoracic oesophageal malignancy) was excluded from study.

The final results were analyzed by SPSS 11.5 software.

Results
There were total 200 patients included in the study. Among them the age groups of 21 – 30 years and 31 – 40 years were mainly suffer from hoarseness as shown in table 1.

Similarly, among 200 patients 144 (72%) were males whereas 56 (28%) were females with male to female ratio of approximately 2.5:1 as shown in table 2. The table 3 showed the distribution of hoarseness as per etiology. Among them, the most common cause was acid peptic laryngitis with frequency of 37.8% whereas tuberculosis of larynx, papillary carcinoma of thyroid and papilloma of vocal cord accounts for only 0.4% each.

Table II
Sex distribution of patients (n=200)

| Sex    | Number of patients (%) |
|--------|------------------------|
| Male   | 144 (72%)              |
| Female | 56 (28%)               |

Table III
Clinical features

| Sl. no | Presentation                  | No. of cases |
|--------|------------------------------|--------------|
| 1      | Change of voice               | 200          |
| 2      | Cough                        | 33           |
| 3      | Fever                        | 44           |
| 4      | Vocal fatigue                | 18           |
| 5      | Irritation/Sore throat       | 36           |
| 6      | Weight loss                  | 22           |
| 7      | Painful vocalization         | 10           |
| 8      | Dysphagia                    | 8            |
| 9      | Neck mass                    | 4            |
| 10     | Painful Swallowing           | 7            |
| 11     | URTI                         | 21           |
| 12     | Heart burn/vomiting          | 70           |
| 13     | Respiratory distress         | 11           |
| 14     | Haemoptysis                  | 3            |
| 15     | Stridor                      | 3            |
Table V

*Occupation of the patients*

| Name of the occupation | No of patients (n=200) | Percentage (%) |
|------------------------|------------------------|---------------|
| Teacher                | 08                     | 04            |
| Student                | 40                     | 20            |
| Manual labour          | 24                     | 12            |
| Housewife              | 36                     | 18            |
| Service                | 24                     | 12            |
| Singer                 | 04                     | 02            |
| Others                 | 48                     | 24            |

Table VI

*Distribution of patients according to etiology (n=200)*

| Etiological factors               | Number (%) |
|-----------------------------------|------------|
| 1. Inflammatory                    |            |
| Acute laryngitis                  | 68 (34%)   |
| a. Chronic non specific laryngitis |            |
| Acid peptic laryngitis            | 51 (25.5%) |
| Chronic simple laryngitis         | 28 (14%)   |
| Vocal cord nodule                 | 10 (5%)    |
| Reinke’s edema                    | 3 (1.5%)   |
| Vocal cord polyp                  | 6 (3%)     |
| b. Chronic specific laryngitis    |            |
| Tuberculosis of larynx            | 2 (1%)     |
| 2. Neoplastic                     |            |
| Carcinoma larynx                  | 14 (7%)    |
| Carcinoma Hypopharynx             | 8 (4%)     |
| Papillary carcinoma thyroid       | 1 (0.5%)   |
| Papilloma of vocal cord           | 1 (0.5%)   |
| 3. Neurological                   | 5 (2.5%)   |
| 4. Laryngeal trauma               | 1 (0.5%)   |
| 5. Endocrinal                     |            |
| Hypothyroidism                    | 1 (0.5%)   |
| Intubation granuloma              | 1 (0.5%)   |

Discussion

In this series, the frequency of hoarseness in age group ranged from 21 – 40 years was 65% which is similar to study performed by Smit and Leewen et al\textsuperscript{9}, Woodson and Blitzer et al\textsuperscript{10}, Ramazan and Tarazi et al\textsuperscript{11}, but differs from the study performed by Baitha S, Raizada RM et al\textsuperscript{12} in which maximum number of patients with hoarseness falls within 5 -15 years. The maximum number of patients with hoarseness in our study was within productive age group because they were mostly involved in voice abuse and also more concerned regarding their problem.

In our study, the male: female ratio was 2.6:1, like that of study performed by Woodson GE et al\textsuperscript{10}, Baitha S et al\textsuperscript{9,12} Saeed M and Ramazan\textsuperscript{11} Kumar H et al\textsuperscript{13} but in contrast with study performed by Khan FA, Jawaid I\textsuperscript{14} which showed almost equal number of male to female ratio. Such a huge difference between male and female in our study could be because of male dominated society and they involved in smoking, alcoholism, exposure to pollutant and voice abuse whereas female from rural areas are unaware of their health problem.

In this study, the frequency of acid peptic laryngitis was 25.5% which contrast with the study performed by Banjara H and Varsha M et al\textsuperscript{15} which showed only 1.81%. Such higher frequency in this study could be because most of the patients suffer from gastro-esophageal reflux disease.

Likewise, the frequency of acute laryngitis was 34.6% in our study which is comparable to study performed by Baith S et al\textsuperscript{9,16} and Baitha S et al\textsuperscript{12} but contrast with the study performed by Woodson GE et al\textsuperscript{10}.

The frequency of chronic simple laryngitis was 14% in this study which is similar to other studies\textsuperscript{13-16}. The frequency of vocal nodule, Reinke’s edema and vocal polyp was 5%,
1.5% and 3% respectively. Our findings were different from other studies which showed somehow higher or lower frequencies of these diseases\textsuperscript{9, 17}.

In the present series, the frequency of laryngeal tuberculosis was only 1% which was much lower than the study performed by Woodson and Ramazan et al\textsuperscript{10, 11} and Iqbal K et al\textsuperscript{16}. The reason could be because of more prevalence but early diagnosis and treatment of pulmonary tuberculosis in south east Asia\textsuperscript{17}.

The neoplastic and neurological cause reported to be 12% and 2.5% here. The frequencies were lower than other different studies\textsuperscript{9, 12, 18}.

In our study, the frequency of intubation granuloma was 0.5%, only 1 case was found. The results were comparable to study performed by SmiT CE et al\textsuperscript{9} but very lower than the other studies\textsuperscript{18-22}. The lower frequency in our study could be timely elective tracheostomy of needy patients.

The hypothyroidism was 0.5% in our study like that of Mohsin A\textsuperscript{21} and Ramazan HH\textsuperscript{11} but differ from Ahmed and Hussain et al\textsuperscript{22} which showed 83.3%. It could be in our place the prevalence of hypothyroidism is not so high.

Conclusion
There was variation in etiologies in hoarseness ranging from simple laryngitis to malignancies. So it is important not to ignore the hoarseness and precise history, examination and investigations should be done.

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