Evaluation of the results of direct laryngoscopy of patients with larynx and hypopharynx signs and lesions in ENT specialized medical centers of Birjand city

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Received: April 19, 2017   Revised: May 20, 2017   Accepted: May 30, 2017

Abstract

Introduction: Laryngeal and hypopharyngeal lesions are among common head-and-neck diseases. Evaluating them with direct laryngoscope provides information about the kinds and regions of the lesions, which along with the clinical signs helps to diagnose and determine the treatment plans. The aim of this study is to evaluate the frequency distribution of different types of laryngeal and hypopharyngeal lesions via direct laryngoscopy of the patients referred to the medical centers of Birjand city.

Methods: This cross-sectional study was performed on 165 patients referred to all ENT specialized medical centers of Birjand city who, according to the primary clinical diagnosis, were in need of direct laryngoscopy. Patients with bronchial or lower lesions were omitted from the study. The necessary information including age, sex, residence, primary complaint, risk factors, type and region of the lesion was collected with the patient’s consent. Data were analyzed in SPSS 18 software using Kruskal-Wallis and Chi-Square tests. The significance level was set at P<0.05.

Results: The mean age of the participants was 43.76±23.66 years, and 53.3% were male. The most frequent primary complaint was dysphonia, the most frequent types of lesion were foreign object and neoplasm, the most involved regions were glottis and hypopharynx, and the most frequent risk factors were opium and smoking. The results showed a significant correlation between the type of lesions and the variables of age, residence, risk factors and region of lesions.

Conclusions: The results showed that dysphonia was the most frequent primary complaint. The majority of neoplastic lesions, which had a significant correlation with smoking, opium consumption and bad nutritional habits, were seen in men, indicating the necessity to inform people about the primary signs of these lesions in order to diagnose timely and decrease tobacco use.

Key Words: Laryngoscopy; Laryngeal Neoplasms; Hypopharyngeal Neoplasms
Introduction

Laryngeal and hypopharyngeal lesions are amongst common diseases of head and neck and upper airway, which appear with different symptoms (1). These lesions include benign and malignant lesions and foreign objects, the appearance of which varies depending on the type and region of the lesion (2, 3). With a wide geographical distribution, the malignant laryngeal cancers are among the most common types of cancer comprising 7.1% of the known cancers (4, 5).

As the most common malignancy of the upper airway routes in adults, squamous cell carcinoma of larynx and hypopharynx account for 30 to 40 percent of all cancers of the head-and-neck region and 1 to 5.2 percent of all cancers (6). This type of malignancy is responsible for more than 90% of all malignant neoplasms of larynx and is of a higher prevalence in men than women so much so that it is typically known as the disease of adult malesmokers (5, 7). Hypopharynx squamous cell carcinoma is less prevalent in comparison to other regions of head and neck (8). Diagnosis of the lesion in the context is an important step to the treatment of head-and-neck cancers. Moreover, some benign lesions need to have a biopsy too (9). One of the diagnostic procedures for these lesions is laryngoscopy which is an easy way with few complications and is accessible to most medical centers. Even in rare cases such as Laryngeal Paraganglioma, useful clinical results could be obtained with laryngoscopy (10). Direct laryngoscopy confirms the diagnosis and stage of the disease in the context before treatment plan initiates (11). Examining the lesions of larynx and hypopharynx with direct laryngoscopy provides both the possibility of touching, biopsy and surgical interventions and the adequate information about the type, region, and expansion of lesions. Along with these advantages, there are disadvantages such as the difficulty of endurance by the patient, inadequate vision in some regions like pyriform sinus and infraglottis, spasms, reduced movement of the vocal cords, and dependence on equipment for magnifying and simultaneous imaging when using direct laryngoscopy. However, the results obtained from this procedure, besides the clinical symptoms of the patient, will contribute considerably to the diagnosis and ultimate determination of the treatment plan; and even in some cases, diagnosis and treatment can be performed simultaneously (1). In terms of examining the prevalence of different types of lesions in the region of head and neck, larynx and hypopharynx, several studies have been performed on the relevant patients and in different parts of the country (1, 8, 12). Given the significance of proper diagnosis and treatment of lesions of the larynx and hypopharynx and even the criticalness of the diagnosis and treatment of some of them and the lack of precise and detailed statistical information in this regard in Birjand, we were prompted to examine different types of laryngeal and hypopharyngeal lesions in the patients referred to the treatment centers of Birjand city by using direct laryngoscopy as a valuable and useful endoscopic technique of diagnosis and treatment.

Methods

This study was performed on the patients referred to the specialized ENT centers in Birjand city (Vali-e-Asr Hospital, Imam Reza Hospital, and private clinics), who were in need of diagnostic endoscopy of the larynx and hypopharynx based on the initial diagnosis in the years of 2011-2012. The primary diagnostic procedure was direct laryngoscopy, which given the case, was performed on an outpatient basis with local anesthesia or hospitalization with general anesthesia. However, in the case of the spread of the lesions to lower regions, esophagus or trachea were also examined. However, when the lesion was primarily in the bronchus or lower points, the patient was referred to a relevant specialist to continue the specialized treatment, and then s/he was excluded from the study. Biopsies were taken from the lesions and examined pathologically. Overall, 165 patients were included in the study and relevant data including age, gender, residence, original complaints of the patients, risk factors, and region and type of lesion were collected after acquiring the consent of the patients. This study was confirmed with the ethics code of IR.BUMS.REC.1394.176 on 1.11.2016 from the Ethics Committee of Birjand University of Medical Sciences. Quantitative variables are shown as mean ± standard deviation and qualitative variables as frequency (percentage). Data were analyzed in SPSS software (version 18) using Kruskal-Wallis and chi-square tests. The significance level was considered at P<0.05.
Results

Of the 165 patients with a mean age of 43.76 ± 23.66, 88 patients (53.3%) were men and 77 patients (46.7%) were female. Also, 85 patients (51.5%) were residents of cities and 80 patients (48.5%) lived in rural areas. Results of the patients’ original complaints showed that dysphonia was the most common primary symptom, while otalgia had the lowest frequency (Chart 1). The frequency distribution of the studied patients on the basis of the region of the lesions indicated that the highest frequency was in glottis and hypopharynx (Table 1). The most common types of lesion in this study were foreign object, neoplasm, and vocal cord nodules and the least common type of lesion was posterior laryngitis (Table 1). The most common risk factor among the studied patients was opium abuse and smoking (Table 1).

Chart 1: Frequency distribution of participants according to initial complaints

Table 1: Frequency distribution of patients according to lesion location, lesion type, and risk factors

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesion location</td>
<td></td>
</tr>
<tr>
<td>Hypopharynx</td>
<td>49 (29.7)</td>
</tr>
<tr>
<td>Esophagus</td>
<td>26 (15.8)</td>
</tr>
<tr>
<td>Larynx*</td>
<td>28 (17)</td>
</tr>
<tr>
<td>Supraglottic</td>
<td>90 (54.5)</td>
</tr>
<tr>
<td>Glottic</td>
<td>63 (38.2)</td>
</tr>
<tr>
<td>Infraglottic</td>
<td>6 (3.6)</td>
</tr>
<tr>
<td>transglottic</td>
<td>51 (30.9)</td>
</tr>
<tr>
<td>Neoplasm</td>
<td>48 (29.1)</td>
</tr>
<tr>
<td>Lesion type</td>
<td></td>
</tr>
<tr>
<td>Vocal cord nodule</td>
<td>35 (21.2)</td>
</tr>
<tr>
<td>Inflammation and edema</td>
<td>13 (7.9)</td>
</tr>
<tr>
<td>Vocal cord paralysis</td>
<td>15 (9.1)</td>
</tr>
<tr>
<td>Posterior laryngitis</td>
<td>3 (1.8)</td>
</tr>
<tr>
<td>Risk factors</td>
<td></td>
</tr>
<tr>
<td>Opium</td>
<td>43 (26.1)</td>
</tr>
<tr>
<td>Smoking</td>
<td>33 (20)</td>
</tr>
<tr>
<td>Bad food habits</td>
<td>29 (17.5)</td>
</tr>
<tr>
<td>Hot food</td>
<td>22 (13.3)</td>
</tr>
<tr>
<td>Spicy food</td>
<td>7 (4.2)</td>
</tr>
<tr>
<td>Acid reflux into the esophagus</td>
<td>22 (13.3)</td>
</tr>
<tr>
<td>Vocal abuse</td>
<td>18 (10.9)</td>
</tr>
</tbody>
</table>

* Some patients had more than one involvement in their larynx.
The results showed that there is a significant relationship between the type of lesion and the variables of age, place of residence, risk factors, and the lesion region, but no significant relationship was found between type of lesion and gender. The most common type of lesion in hypopharynx and esophagus was foreign object and in the larynx, it was vocal cord nodules (Table 2). The number of patients with neoplasm was highest in the larynx such that the frequency distribution of the neoplasm lesion was 22.9% in supraglottis, 27.1% in glottis, 2.1% in infraglottis, and 8.3% intraglottis. Based on the findings of this study, the consumption of opium in rural residents was higher than in the urban population (36.2% vs. 16.5%), with the difference being statistically significant (p=0.004). However, the place of residence did not show a significant relationship with other risk factors. Furthermore, smoking among men with 34.1% frequency was significantly higher than in women with 3.9% frequency (p<0.0001). Gender had no significant relationship with other risk factors.

Discussion

In this study, among the primary complaints of the patients at the time of admittance, dysphonia was the most common primary complaint with 58.8%. The most common symptoms were dysphagia with 35.8%, feeling a lump in the throat with 29.1%, and odynophagia with 26.7%. Comparison of the symptoms in this study was closely consistent with the study by Ghahremani et al, in which the investigation of 146 patients showed that dysphonia was the most common complaint (77%), while the most common symptoms were dysphagia (38%), respiratory distress (36%), and feeling a lump in the throat (27%) (1). The study by Myziara et al on 108 cases of larynx cancer reported dysphonia with 85.2% frequency to be the most common symptom (13). In the study by Hashemi et al, which was performed with the aim of investigating the effects of foreign objects in upper respiratory tract, dysphagia was the most common complaint (12). In the report of the second largest source of browsing data from 1985 to 1992, as a comprehensive document of hospital data by Hoffmann et al, which was performed on a large sample of patients with hypopharynx cancer, the highest distribution of the patients’ symptoms were dysphagia (48%), throat mass (45%), sore throat (43%), hoarseness (35.6%) and otalgia (17.5%). This distribution is somewhat similar to the results of the present study, and the existing differences are due to their exclusive investigation from hypopharynx cancer, which usually causes no respiratory symptoms. Thus, in this report, dysphonia has not been subject to the common symptoms of patients (14).

Foreign object, based on the results of this study, was the most frequent type of lesion followed by neoplasms, vocal cord nodules and their paralysis, respectively. These results of the frequency of neoplasms are similar to those of the study by Ghahremani et al, in which the highest finding, and SCC was also the most common neoplasm. However, in their study, foreign objects were not covered (1). Some

<table>
<thead>
<tr>
<th>Variable</th>
<th>Lesion type</th>
<th>Neoplasm</th>
<th>Vocal nodule</th>
<th>cord</th>
<th>Other</th>
<th>Significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (year)</td>
<td>29.73±26.38</td>
<td>60.44±13.73</td>
<td>37.71±12.36</td>
<td>47.84±24.34</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>Male</td>
<td>29 (33)</td>
<td>28 (31.8)</td>
<td>15 (17)</td>
<td>16 (18.2)</td>
<td>0.509</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>22 (28.6)</td>
<td>20 (26)</td>
<td>20 (26)</td>
<td>15 (19.5)</td>
<td>0.24</td>
</tr>
<tr>
<td>Residence</td>
<td>Urban</td>
<td>33 (83.8)</td>
<td>18 (21.2)</td>
<td>21 (24.7)</td>
<td>13 (15.3)</td>
<td>0.008</td>
</tr>
<tr>
<td>Risk factors</td>
<td>Rural</td>
<td>18 (22.5)</td>
<td>30 (37.5)</td>
<td>14 (17.5)</td>
<td>18 (22.5)</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Table 2: Correlation between lesion type and other variables in the study
The data of this study was the most common site for men than in women. Opium and alcohol consumption has been known smoking as a stronger risk factor for larynx cancers so that the intensity, duration and type of smoking and the amount of the alcohol consumed, have a direct correlation with laryngeal cancer. Also, alcohol consumption has been known an important factor in the etiology of the supraglottic larynx cancer compared to Glottis type (5, 22-25). In this study, although there was no significant relationship between the type of lesion and gender, the ratio of neoplasms in men was higher than women, which could be due to greater smoking in men, as smoking in men is significantly higher than in women. Opium and smoking were found the most prevalent factors in men, and there was no significant relationship between the type of lesion and the risk factors.

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In addition, several studies have considered smoking and alcohol as the most important risk factors for larynx cancers so that the intensity, duration and type of smoking and the alcohol consumed, have a direct correlation with laryngeal cancer. Also, alcohol consumption has been known an important factor in the etiology of the supraglottic larynx cancer compared to Glottis type (5, 22-25). In this study, although there was no significant relationship between the type of lesion and gender, the ratio of neoplasms in men was higher than women, which could be due to greater smoking in men, as smoking in men is significantly higher than in women. Opium and smoking were found the most prevalent factors in men, and there was no significant relationship between the type of lesion and the risk factors. It should be noted that the results of studies in different communities have known smoking as the main cause of laryngeal cancer even among women. On the basis of a case-control study in the American society, the relative risk of affliction (of larynx cancer) in women who consumed more than 20 cigarettes per day was 28.2 greater than non-smokers (24). In addition, studies in Italy emphasize the strong relationship between the consumption of alcohol and especially tobacco with larynx cancer in women (26, 27). Also, one of the largest investigations of larynx cancer in women, highlights the importance of smoking and, in a weaker way, alcohol abuse as the increasing risk factors among them.

Nevertheless, it shows notable results in terms of the relation of a dietary plan including vegetables, fresh fruits, and olive oil with larynx cancer so that the chances of developing cancer are significantly lower in cases of individuals with alcohol abuse or smoking (28). The results of other studies carried out in the past years, also, indicate the role of dietary habits and the important link between the type of diet and development of larynx and hypopharynx cancers (23, 29). In this study, we did not evaluate the diet of the patients; however, the examination of the poor dietary habits, including the consumption of hot or spicy foods, showed that the most common type of lesion in the people with poor dietary habits was neoplasm.
The relationship between risk factors including type of occupational activity and exposure to some factors like asbestos, strong mineral acids like sulfuric acid, or the work related to plastic industry on the one hand and development of the larynx and hypopharynx cancers have been examined in a number of studies (30, 31). Bofeta et al (2003) found significant associations between risks of larynx and hypopharynx cancers and industrial businesses related to construction, metals, textiles, ceramics, railroad transport, and food industry. The associations were also partially significant as related to construction, pottery-making, butchery, hairdressing, with jobs in timber and lumber construction as at risk groups (32).

Possible associations between the diets and jobs of the individuals and head and neck lesions and cancers in our studied population are in need of further research. Type of lesion and place of residence were also among the significant issues in the present study, which can be justified by greater opium consumption among rural people than urban residents. This indicates an important point towards the need to providemore information and to develop kind of culture in these areas, as other studies have also emphasized the impact of social and cultural factors in this regard (23, 32).

Conclusions

Based on the findings of this study, dysphonia was the most common initial presentation in the patients, while foreign object and neoplasm were the most frequent lesions, andglottis and hypopharynx were the most involved regions, which indicates the necessity to inform people about the primary symptoms for the early diagnosis of the lesions of this anatomic region. The significant frequency of opium, smoking, and poor dietary habits, as well as the higher incidence of neoplasm in men than in women, in rural areas than urban areas, and the higher proportion of opium consumption among rural residents is a warning concerning the need for serious programs to reduce the consumption of tobacco and to inform people, thus overall, elevate cultural level of the region.

Acknowledgements

In the end, it is necessary to thank all the personnel of ENT of Vali-Asr and Imam Reza Hospitals who helped us complete this project. Also, the authors are grateful to Mr. Hashem Hooshyar who played an important role in the data analysis.

Conflict of interest

The authors declare no conflict of interest.

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