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The Clinical Symptoms and Course of Cases of Acute Epiglottitis of the Adult Patients Referred to Ahvaz Imam Khomeini Hospital during a Seven-Year Period (2008-2014)

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Epiglottitis (an inflammation in the structures of supraglottitis that can be life-threatening) is much more common in children. The study aimed to investigate cases of acute epiglottitis in the adult population hospitalized in Ahwaz Imam Khomeini hospital during a seven-year period. In this study the patients over 16 years old were considered as adults. Information about each patient was collected using a questionnaire. Data were analyzed using descriptive statistical methods. A total of 19 patients with epiglottitis have been detected (36.8% female and 63.1%male). The most common clinical sign wasodynophagia(84.21%) and least finding was leukocytosis(5.26%). Also diabetes was the most common underlying condition. No significant difference was seen between women and men in the distribution of the underlying factors (p = 0.21; odd ratio= 0.26; confidence interval (CI) = 0.03 ± 0.2. The average duration of hospitalization was three to nine days and 42.1% of the patients were transferred to ICU. The mortality rate in these patients was only one case. Timely diagnosis along with the quick and proper treatment reduces duration of hospitalization and the need for the intervention of the airway, and mortality.

Key words: Epiglottitis; Adult; Leukocytosis;Supraglottitis.

Epiglottitis is defined as an inflammation in the structures of supraglottitis and is a rare disease that its first case was reported in the adults in the USA in 1940. The increased incidence ofEpiglottitisin adults and its decrease have been observed in children in 1992[1]. So far, most cases of this disease are related to Hong Kong[2].

This condition can occur at any age, but normally is more common in children, and occursmore often in the children than in the adults[3]. Within two decades the incidence of epiglottitis has been rising in the adult population. While this disease in children in nature is known as a clinical condition, in the adult population, it is a rare medical condition. In terms of clinical causes and symptoms of epiglottitis,there is a difference between adults with children[4]. Despite the aggressive treatment that can be done in children, treatment of epiglottitis in adults is often more supportive[5]. Signs and symptoms of this disease can be non-proprietary and without a clear airway involvement. Due to the sudden creation of upper airway obstruction this disease can quickly lead to death. Unfortunately, about 23-31% of the acute epiglottitis in the adult population are not detected[6].

Since the start of the Haemophilus influenza type B vaccine (Hib) the prevalence of epiglottitis in the age group of children has

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decreased, although such a reduction in the age group of the adult population has not been very notable and the adult population still remained at risk of epiglottitis. There are several causes for epiglottitis in the adult population, and any similar symptoms should be carefully followed up and treated[7].

Epiglottitis in adult population often is followed by progressive sore of throat,dysphagia and stiffness of the neck. The patient has often systemic symptoms, and is toxic, feverish and unwell. Airway obstruction due to laryngeal edema can causestridor and prolapse of epiglottis inflamed to larynxcan also cause complete airway blockage and life-threatening. Cut off the patient's breathing and swallowing disorders can causedysphagia and **drooling**.

The main differential diagnoses of epiglottitis include peritonsillar abscess, glandular fever**,** foreign bodies, and severe tonsillitis.

Diagnosis is primarily clinical and must be based on the patient's profile, appearance and condition. If sufficient time is available, it is detectable by a cervical picture of the sufficient quality of the soft tissue that can show the inflamed epiglottis. In some cases, this obstruction may also happen without stridor,and even in some cases this leads to the death of patients. Since the number of pathogens in the adult population is very diverse than in the children, so antibiotic treatment can be difficult. Antibiotic treatment is usually use of ampicillin andcloxacillin[8].

MATERIALS AND METHODS

This cross-sectional descriptive epidemiological study aimed to investigate cases of acute epiglottitis in adults admitted to Ahwaz Imam Khomeini hospital over the course of seven years, (2008-2014), and was conducted in a retrospective method based on an existing data file on patients. In this study the patients who were over 16 years were considered as adults.

Base of diagnosis wasto seethe swollen epiglottis and erythematosis. Patients suspected to epiglottitis were asked for a simple lateral neck photo that if swelling of the soft tissues and thumb sign (inflation of the epiglottis) and vallecular sign (vallecularspace reduction) were seen, then epiglottitis was diagnosed and for verifying the diagnosis the patients under went an indirect laryngoscopy and a fiberoptic laryngoscopy. In some cases, for rejecting other differential diagnosis such as peritonsillar abscess, glandular fever, and severe tonsillitis the CT scan was asked.

A questionnaire containing personal information as well as information related to the disease, including (symptoms of the disease,the blood culture, the underlying disease and so on, was assigned to each person. Then the corresponding information was analyzed using relevant statistical methods.

RESULTS

In this study all patients who were suspected to be epiglottitis, referred to Imam Khomeini hospital during 2008-2014, were investigated.

Out of 19 patients suffering from epiglottitis, 12 patients were male (36.8%) and seven patients were female (63.1%). In these people the maximum age was 65 years and the minimum age was 16 years. These patients had an average age of 37.68 years and a standard deviation of 12.66 years. Among the males maximum age was 51 years, and the minimum age was 28 years. Among the females maximum age was 65 years, and the minimum age was 16 years.

The most common clinical sign wasodynophagia with a frequency of 84.21% and other clinical symptoms observed in these patients

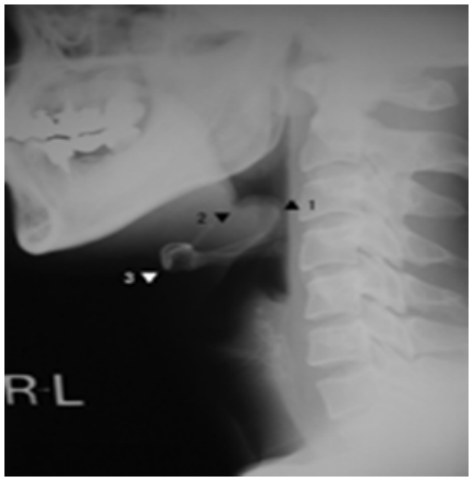

Photo 1. Swelling of epiglottitis and reduction in vallecularspace in patient suffering from epiglottitis

were dysphagia (73.68%), throat sore (73.64%), dyspnea (47.36%), hoarsens (42.1%), drooling and dysphonia (26.31%), strider, trismus, lymphadenopathy**,** respiratorydistressand neck spasm and tenderness of the anterior region of the neck (10.5%), respectively (Figure2).

The average body temperature of patients at the time of hospitalization was 37.71° c.

In reviewing paraclinical findings leukocytosis was seen with a frequency of 26.5% that was less than clinical symptoms.

In these patients, the most common underlying condition observed was diabetes with afrequency of 15.7%. Furthermore, hyperlipidemia and hypertension with a frequency of 10.5%was observed in these people, as well. There was no significant relationship between the underlying disease and gender (male and female) (P=0.21).

Length of hospitalization in these patients was from three through nine days that 42.1% of patients were admitted to the ICU; in addition, length of hospitalization in the ICU has been from two through four days. In this study, two patients (10.5%) had a need for the airway.

Seasonal incidence of the disease in the summer, winter, spring and fall was (36.8%), (31.5%), (10.5%) and (21.05%), respectively. The mortality rate among the patients was related a woman 65 years old.

DISCUSSION

The aim of this study was to investigate cases of acute epiglottitis in the adult population, among patients admitted to Ahvaz Imam Khomeini hospital. During the past two decades the incidence of epiglottitis in the adult populationhas been raised. In Iran there is no detailed report about the incidence of or the outbreak of the disease. In this study, during a 15-year investigation 19 patients with epiglottitis were detected that this rate was low compared with a 5-year investigation conducted by TD et al. in 1994 (9). In a study conducted by TD et al., 129 patients with the diagnosis of acute epiglottitis were admitted. Also in retrospective studies by Chang et al. in 2005 (10) and Ng et al. in Hong Kong in 2008 (11), amount of epiglottitis during five-year and seven-year periods were reportedrespectively 80 and 106 cases.. Increased incidence of epiglottitis in Hong Kong in comparison with Iran can be due to a more resident population in Hong Kong. In the mentioned study, 12 people were men (36.8%) and seven persons were women (63.1%); male to female ratio was 1.7 to 1, which is consistent with studies conducted by TD et al, (9), Cheung et al, (10) and Nonoyama Het al,(12). However in a four-year study conducted by Richard in San Francisco the male to female ratio was equal.The average age of patients in this study (37.68) had an average age greater than ones (33.3) in Briem et al.'s study in Iceland in 2005 (13) that a lower average age can be seen compared with an average age (47 years old) in TD's study in 1995(9) and (53 years old) in Nonoyama Het al,'s study (12).In this study the most common symptom observed in patients was odynophagia with a frequency of 84.21%, which was consistent with Wick et al.'s study in 2002 (5). Moreover, in other studies odynophagia has been seen as the most common symptom(table 1).In Chang et al.'s studies in 2005 the most common symptom was throat wound(10)and in Nonoyama Het al,'s study in 2014the most common symptom wasa sore throat (88%)(12), which is inconsistent with our study.In some studies (5) the lowest symptom was related to stridor. In our study, the

Table 1. A comparison between findings and outcomes in adult patients with acute epiglottitis in this study with similar studies

	Our study	Briem *et al.*	Wick *et al.*	Cheung *et al.*	Liang *et al.*
The most common symptom	odynophagia	odynophagia	odynophagia	dysphagia	odynophagia
Average age	37.38	33.3	31.1	47	35.3
Male to female ratio	1.7	1.5	1.9	1	1.45
The lowest symptom		Stridor	Stridor		Stridor
Need for airway intervention	10.50%	39%	9.20%	30%	8.70%
The most important underlying factor	Diabetes	Diabetes	Diabetes	Diabetes	Cigarette
Mortality rate	4.80%	3.80%	4.10%	0%	7.90%

stridor and trismus and lymphadenopathy and respiratory distress and spasms of the neck and tenderness of the anterior region of the neck (10.5%) were less common findings. In this study, the frequency of leukocytosis was less than other clinical findings. In our study, patients were febrile (37.71° c) that was consistent with TD's study (9). Since underlying factors are involved in the incidence and progression of many diseases in this study some underlying illnesses associated with epiglottitis (1 ,12) also were investigated that diabetes was detected as the most common associated diseases; so the results of the study were consistent with Ng et al.'s study in 2007 (10) and Liang et al.'s study in 2005 (14) while in Hebert's study (1998) the most important risk factor was epiglottitis (1). In this study, after reviewing the relationship between gender and the existence of underlying factors, by getting $p<0.05$, it is concluded that there is not any significant statistical relationship between gender and the underlying disease. In a survey conducted by Liang et al. in Taiwan (2005), 8.7% of patients needed to the airway support (14). This amount was lower in patients in our study, while in Cheung et al.'s study (2005) in Hong Kong (10) almost 39% of the patients needed to the airway involvement. In addition, in other studies, such as TD et al. (9) and Briem et al. (13) each respectively 15% and 30% neededto airway intervention. Most patients will need to the airway support (9).

The most common seasonal occurrence of epiglottitis in patients admitted to the study was related to the summer that was consistent with TD et al.'s study (9). The average length of hospitalization in patients studied was six days that was consistent with a study conducted by Briem et al. in 2005 (13); however, 42.1% of patients in this study were transferred to the ICU that was a rate higher compared with Briem's study (13). The drugs used to treat the patients were according to the standard and common global protocol (6). Among the 19 patientsstudied, the mortality rate was only relevant to a 65-year-old woman, which was consistent with Cheung et al.'s studies in 2005 on almost 80 patients. The mortality rate of patients with epiglottitis in a study by Cheung was zero (10). Unfortunately, the lack of correct and timely diagnosis of patients occurs in 23% to 31% of the cases, which this destruction can increase the mortality rate in patients with epiglottitis,as in the study conducted by Rivron et al. in 1991 (15) the mortality rate in six patients with epiglottitis was 33.3% that indicates a frequency more than our study.

CONCLUSION

According to the obtained results it seems that timely diagnosis and the beginning of the treatment reduce the length of hospitalization and need to ICU and the mortality rate and the intervention reduces the airway intervention.

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