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ORIGINAL ARTICLE

Ludwig's Angina: Management of 32 Cases at Tertiary Care Hospital

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ABSTRACT

Background: Ludwig's angina is a rapidly expanding cellulitis involving the floor of mouth and sub mandibular space predominantly due to dental / periodontal infections.
Aim: To determine the management outcomes in the patients of Ludwig's Angina.
Place and duration of study: Department of Otorhinolaryngology Bahawal Victoria Hospital Bahawalpur. Duration was two years from August 2018 to July 2020.
Study design: Hospital based cross sectional descriptive type of study
Methodology: Patients of any age and gender who were clinically diagnosed as Ludwig angina and required hospitalization during the study duration were included in the study. Data regarding age, gender underlying cause, mode of presentation, treatment and complications were collected and analyzed. Patients with mild infection who did not require hospital admission were excluded from the study.
Results: Out of total 32 cases, 20(62.5%) were males and 12(37.5%) were females. Age range was 10 to 70 years. In 28 (87.5%) cases, the cause was dental infection. All patients presented with pain and swelling of sub mandibular region. Four (12.5%) patients were improved with conservative treatment while 28(87.5%) underwent incision and drainage. Two (6.25%) patients needed tracheostomy. One (3.1%) patient developed complication (mediastinitis) and could not revive.
Conclusion: Ludwig's angina is a disease of any age and gender commonly seen among the patients of preexisting dental infection. It can be life threatening if presented late with complication. Early diagnosis and aggressive treatment decrease morbidity and mortality.
Key words: Angina, Ludwing, Cellulitis, Submandibular region.

INTRODUCTION

Ludwig's Angina also named as Angina Ludovici is a diffuse cellulitis of the neck which involves the floor of mouth and submandibular regions bilaterally and can be life threatening due to airway obstruction[1]. A German physician Wilhelm Friedrich Von Ludwig first described and named this condition in 1836[2]. Due to raised incidence of co morbid conditions like diabetes mellitus, the occurrance of Ludwig's Angina and other infections of deep neck spaces is rising. In addotion to the dental infections which are causative factor in majority of cases, other conditions like trauma and osteoradionecrosis after radiotherapy can also cause Ludwic's Angina [3]. Patients of all age groups can be affected, but young adults are the commonest victims[4]. The infection usually starts from one side[5]. Swelling of the tissues then spreads rapidly and endangers the airway. In microbiology of this disease many Gram positive, negative, aerobic and anaerobic microorganisms can be responsible[6]. Presenting complaints in this fatal condition can be neck swelling, pain, and high grade fever, difficulty in swallowing, foul smelly breath, trismus, muffled voice and respiratory difficulty with the history of previous dental infection or procedure. Airway patency is the main concern, and can become life threatening. However it can be handled by using appropriate antibiotics, anti-inflammatory drugs and securing the airway[7]. Un-treated or poorly managed cases lead to complications like, mediastinitis, sepsis, pneumonia, pneumothorax, necrotizing fascitis and death[8]

The rationale of this study is to assess the different treatment options of this potentially life threatening disease with their outcomes.

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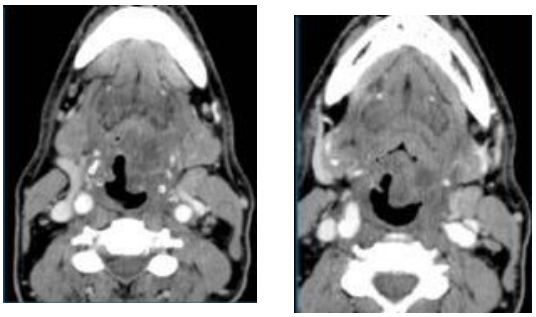

MATERIAL AND METHODS

This cross sectional descriptive study was conducted in the Department of ENT and Head Neck surgery of Quaid e Azam Medical College / Bahawal Victoria Hospital Bahawalpur, which is a tertiary care health institution. The patients of any age and gender who presented between August 2018 to July 2020 in ENT outpatient/casualty department, or referred by dental unit and required hospital admission were included in the study. Patients with mild infection who refused or did not require hospital admission

were excluded from the study. After admission in ward, informed written consent was taken from the patient or guardian. Detailed history was taken, thorough examination and relevant investigations were done. All these patients underwent CT scan for treatment plan which was either conservative or surgical. All these CT scans discussed on tele-radiology with experienced radiologist who helped in decision making. Treatment modality adopted along with its outcome were noted. Data was entered in specially designed Performa. The etiology, associated systemic diseases, symptoms, treatment modalities along with airway management of all the cases included in the study were recorded and the date was analyzed using SPSS.

RESULTS

The total number of patients included in the study during the study duration were 32 including both male (62.5%) and female (37.5%) patients. The age group ranges from 10-70 years. Twenty four patients (75%) were non-diabetic, while 8 (25%) patients were diabetic. In 28 (87.5%) cases, the cause was dental infection, 1 (3.12%) case was due to quinsy, 1 due to retropharyngeal abscess, while in 2 (6.24%) cases no etiological factor could be found Tab. 1. All the patients presented with pain and swelling of submandibular and submental region. Fever was present in 22(68.75%) cases, trismus in 23(71.87%) and odynophagia or dysphagia was in 19 (59.37%) patients Tab.2. Twenty seven (84.3%) were from low socio economic group, while 5 (15.6%) were from middle class family. All patients received intravenous antibiotics and analgesics. Four (12.5%) patients improved with conservative treatment and in 28(87.5%) patient's incision and drainage was done. Two (6.25%) patients had respiratory difficulty and needed temporary tracheostomy, which was decannulated after few days on complete recovery. One patient (3.12%) developed septicemia, which was improved after few days. One patient (3.12%) developed mediastinitis and was referred to thoracic surgeon but expired there after few days. In 2 patients (6.25%) infection was spread to other neck spaces which was improved after incision and drainage. Only one mortality (3.12%) was observed in this study (Table 3).

Table 1

Cause	n	% age
Dental infection	28	87.5
Peritonsillar abscess	1	3.12
Retropharyngeal abscess	1	3.12
No cause found	2	6.24

Table 2: Mode of presentation

Presentation	n	% age
Pain and swelling of submandibular region	32	100
Fever	22	68.75
Trismus	23	71.87
Odynophagia / Dysphagia	19	29.37

Tab. 3: Complication

Complications	n	% age
Respiratory difficulty	2	6.25
Spread to other neck spaces	2	6.25
Septicemia	1	3.12
Mediastinitis / Death	1	31.12

DISCUSSION

Karl Friedrich Wilhelm Von Ludwig, a German physician in 1836 first mentioned Ludwig angina as a rapidly progressing necrotizing cellulitis of the floor of the mouth which involves submaxillary, submandibular and sublingual spaces with fatal outcome due to airway obstruction[9]. By the irony of fate he died in December 1865 due to some nonspecific neck inflammation, which later on was believed by some as Ludwig's angina[10]. Males are affected more than females. In a study by Braimah[11], males were 82.1% and females were 17.9%. In our study these were 62.5% and 37.5% respectively, which shows male dominance. In our study, 68.7% patients were from age group 2nd to 4th decade while in a study by Fakir[7] and colleagues 62% patients were from this age group, which is near to our study.

Mostly the etiology of Ludwig's angina is odontogenic. Other common causes however are peritonsillar or parapharyngeal abscesses[12]. Other rare causes like application of acid[13] and migrating fish bone[14] have also been reported in the literature. A study by Osunde[15] has shown 80% and Tripathy[16] 81% cases were odontogenic. In our study 28 (87.5%) cases were odontogenic,

This disease mostly affects patients with poor oral hygiene[17] and low socio economic status. In our series, 27 (84.3%) patients were from poor socio economic status and 5 (15.6%) were from middle class group. No patient was from upper socio economic group, while Ansari[18] in his study reported 66.6% patients from poor, 23.3% from middle and 10% from high socio economic status.

Patients having Ludwig's angina usually give the history of swelling of the floor of mouth and neck, pain, elevation of tongue, malaise, fever, breathing and swallowing dificulty[19]. In this study all the patients were with the complaints of pain and swelling of submandibular and submental region (100%). Fever in 22 (68.75%) cases. Trismus in 23 (71.87%) and odynophagia or dysphagia was in 19 (59.37%) patients. Similar presentation was also noted by Ansari[18] in his study.

This disease is usually diagnosed on the basis of history and clinical features, although CT scan with intravenous contrast helps to assess the extent of the infective process especially if the abscess is suspected[20].

Airway protection has been regarded the most important aspect of treatment where necessary[21]. Aggressive intravenous broad-spectrum antibiotics are the mainstay of therapy, although intravenous steroids may help to reduce the swelling and hence risk of airway compromise[22]. In our study all patients were started with broad spectrum antibiotics, analgesics and anti-inflammatory drugs. Four (12.5%) patients improved by conservative treatment, in 28 (87.5%) patients' incision and drainage had to be done while in 2 (6.2%) patients tracheostomy was needed due to respiratory difficulty. While in a study by Tripathy[16], 74% patients needed incision and drainage and 29% needed tracheostomy. Advent of contrast-enhanced CT has helped in earlier identification and with the early and aggressive administration of antibiotics, the complications and mortality has markedly decreased. In our study 6 (18.7%) patients developed complications, while in Braimah's study[11] the complication rate was 35.7%, which is much higher than

our study. In this study only one patient (3.1%) died, same mortality ratio (3.3%) was observed in a study by Ansari[18].

Contrast enhanced axial CT images through floor of mouth showing enlarged left tonsil and thickened epiglottis due to multiple low density areas suggesting phlegmatic changes causing narrowing of oropharyngeal air column .

CONCLUSION

Management of Ludwig's angina is always a challenging task, because most of the patients belong to low socio economic status and are malnourished with poor orodental hygiene. Prompt and detailed clinical evaluation and diagnosis, early aggressive antibiotic therapy, drainage of abscess where necessary, airway management and treatment of underlying cause like diabetes mellitus and tooth infection all promote good outcome of the disease.

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