



## Ludwig's Angina – A Crisis in a Libyan Patient

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### ARTICLE INFO ABSTRACT

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Ludwig's angina is a severe variant of diffuse cellulitis. It has an acute onset and it spreads rapidly in a bilateral direction involving the sub-lingual, sub-mental and sub-mandibular spaces. Delay in diagnosis or in treatment can be fatal in such patients.

We report a Libyan male patient with Ludwig's angina, who was treated successfully with parenteral antibiotics.

#### Keywords:

*Ludwig's angina, Libyan, odontogenic infection*

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### 1. Introduction

Wilhelm Friedrich von Ludwig, a German physician reported a rapidly progressive gangrenous cellulitis and edema of soft tissues in the neck and floor of the mouth. He described it in 1836 and hence, the term "Ludwig's angina" was coined after his name <sup>[1]</sup>. Before the development of antibiotics, more than half of patients with Ludwig's angina (LDA) had lost their lives. The mortality was attributed to soft-tissue swelling, elevation and posterior displacement of the tongue leading to

obstruction of the airway and asphyxia. The present mortality rate of LDA is approximately 8%. This reduction is attributed to the use of antibiotics in combination with advances in imaging and surgical procedures <sup>[2,3]</sup>.

The primary site of infection in LDA is the submandibular space. Most commonly cultured organisms include *Staphylococcus aureus*, *Streptococcus viridans* and *Bacteroides species* <sup>[2,4]</sup>.

We report LDA occurring in a Libyan male patient due to an infected mandibular second molar.



## **2. Case Report:**

A 21-year old male patient of Libyan origin reported to the outpatient department in the Faculty of Dentistry, Sebha University with a chief complaint of restricted mouth opening associated with pain and swelling in relation to the lower jaw and neck since two days. His past medical and dental history was non-contributory.

On examination, his body temperature was 102°F and the other vital signs were normal. Extra-oral examination revealed a bilateral, non-fluctuant, indurated swelling involving the sublingual and submandibular region (Figure 1, 2). The mouth opening was restricted to 2 cm (inter-incisal distance). Intra-oral examination revealed a grossly decayed mandibular left second molar with pus drainage (Figure 3). The floor of the mouth was elevated above the occlusal plane (Figure 4) and was tender on palpation.

An immediate diagnosis of Ludwig's angina was made and the patient was admitted in the Sebha General Hospital for further management. The blood investigations revealed an increase in ESR and mild eosinophilia. He was treated with intravenous administration of antibiotics (1000mg Cefotaxime and 80mg Gentamycin – twice a day along with 500mg Metronidazole – thrice a day for 5 days) and a tapered dose of dexamethasone (8mg-4mg twice a day). He responded to the antibiotic therapy and the extraction of decayed lower second molar was performed after a week. He recovered completely without any further complications.

## **3. Discussion:**

LDA is a well-known entity, yet a rarely encountered surgical emergency. It has the potential to be life threatening if not managed with aggression [4]. Von Ludwig reported a symmetric induration in the floor

of the mouth and the neck associated with difficulties in speech, deglutition and respiration [5].

LDA is more commonly seen in ages of 20 to 60 years and 3 to 4 times more common in otherwise healthy males [5]. Our patient is also an apparently healthy 21-year old male patient of Libyan origin.

Odontogenic infection, especially from mandibular second and third molars is the main etiological factor in upto 90% of reported LDA cases [2,5]. Similar to literature, our patient also had a grossly decayed mandibular second molar as the infectious source.

Clinical symptoms include pain, restricted neck mobility, dysphagia, dysphonia (hot potato mouth), odynophagia, drooling and trismus. Airway compromise may force the patient to adopt a semi-erect position. The symptoms may progress rapidly and present with tachycardia, fever, dyspnoea, stridor and even laryngospasm [5]. Our patient presented with pain, swelling and trismus.

Many reviews suggest the administration of intravenous penicillin G, clindamycin or metronidazole till the results of bacterial culture and antibiogram are awaited. Intravenous steroids are administered to avoid the need of airway management [2]. Our patient responded promptly with intravenous antibiotic therapy of cefotaxime, gentamicin and metronidazole along with tapered doses of dexamethasone.

Airway management is critical in success of treating LDA and the patients should be categorized whether they have a stable airway or a severe airway compromise using fiber-optic laryngoscopy. If severe compromise, surgical tracheostomy or fiber-optic assisted intubation is the



choice <sup>[4]</sup>. Our patient had a stable airway and did not need any surgical intervention.

37% of patients reported by Larawin et al, 70% of child patients reported by Kurien et al and 72% of patients reported by Greenberg et al responded to conservative medical management after diagnosis <sup>[4]</sup>. Similarly, our patient too responded to medication and supportive care in the hospital.

Soft-tissue neck radiographs could be used to identify narrowing of airway and can be utilized as initial screening in patients with LDA <sup>[5]</sup>. Early imaging with CT scan or MRI is important for analysing the infections in the deeper spaces of neck. Ultrasound could be used to differentiate edema due to cellulitis from collections of abscess. Plain chest radiographs are used to identify signs of extension into mediastinum like mediastinitis and pleural effusion <sup>[4]</sup>.

#### **4. Conclusion:**

LDA is a diffuse, rapidly spreading cellulitis but its incidence is declining due to advanced dental care. Serial assessment of clinical airway, radiological investigations, initiation of antibiotic therapy and supportive care is vital in handling such emergencies, whenever it presents in clinical practice.

#### **References:**

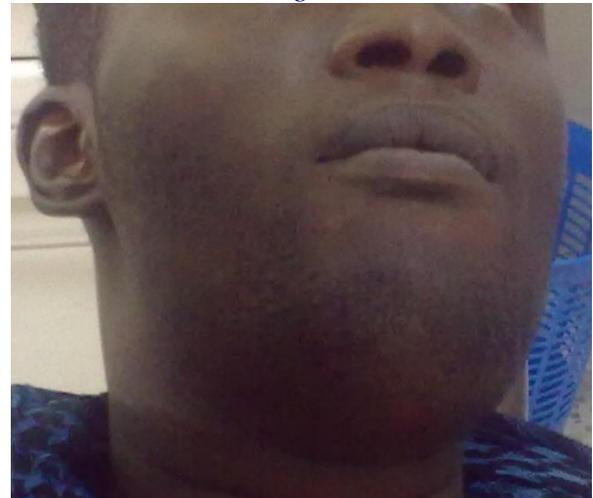
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#### **Figures with Legends:**

*Figure 1: Extra-oral clinical picture showing a diffuse swelling in the submental and submandibular region.*



*Figure 2: Extra-oral clinical picture showing the swelling in the submandibular region*





Figure 3: Clinical picture depicting reduced mouth opening



Figure 4: Clinical picture showing elevated floor of the mouth and grossly decayed mandibular second molar.

