

Case Report

## Case Report on Ludwig's Angina

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### ABSTRACT

A 30 year old male patient came to the hospital with the complaints of neck swelling since 4 days, progressive in nature. His neck examination showed laryngeal crepitus and bilateral parotid swelling which was warm, minimal tenderness and firm. Diffuse swelling in the bilateral submandibular region (soft, firm in consistency, mild tenderness) was also found. His ultrasonography of the neck showed subacute chronic thyroiditis, diffuse subcutaneous edema of the neck with bilateral parotitis, left submandibular sialadenitis and cervical lymphadenopathy. He was diagnosed with Ludwig's angina. He was treated with antibiotics Amikacin and Ceftriaxone intravenously for 3 days. He improved symptomatically and was discharged on the third day.

**Keywords:** Ludwig's angina, Antibiotics, Airway obstruction, Submandibular infection.

### INTRODUCTION

Ludwig's angina is a form of severe diffuse cellulitis that presents an acute onset and spreads rapidly, affecting the submandibular, sublingual and submental spaces resulting in a state of emergency. [1] Most common cause of Ludwig's angina is odontogenic. Most specifically the lower second and third molars are implicated because their roots extend below the mylohyoid muscle, and periapical abscess of these teeth result in lingual cortical penetration with an ensuing submandibular infection. The bacterial isolates of Ludwig's angina are varying, but are mostly aerobes and anaerobes, including  $\alpha$ - hemolytic streptococci, staphylococci and bacteroides. Gram negative organisms such as *Neisseria catarrhalis*, *Escherichia coli*, *Pseudomonas aeruginosa* and *Haemophilus influenzae* have also been reported. [2] Symptoms include painful neck swelling, tooth pain, dysphagia, odynophagia, dyspnea, fever and

malaise. The other signs include a tender, firm swelling in the submental and anterior neck without fluctuance, tachypnea, stridor, trismus and drooling. The white blood cell count is high. Airway management is the primary therapeutic concern. Airway control by endotracheal intubation is mandatory. Therapy includes intravenous broad spectrum antibiotics and occasionally drainage of the swelling through a cervical incision with placement of drains. Dental treatment may be needed to treat the initiating tooth infection. Complication such as sepsis and descending necrotizing mediastinitis may occur through the retropharyngeal space and carotid sheath. [3]

### CASE PRESENTATION

A 30 year old male patient came to the hospital with the complaints of neck swelling since 4 days, progressive in nature. He also had the complaints of fever spikes, throat pain and mild breathing discomfort

since one day. On patient interview it was found that he was apparently alright 4 days ago and then he developed swelling below right ear in the size of a small bump. The size was increased over a period of 4 days to involve the region below the jaw. He also reported minimal pain on swallowing. His vitals were as follows: Temp: 97.6 F, BP: 130/80. He is not a known case of diabetes mellitus, hypertension, coronary artery disease and bronchial asthma. His diet and appetite was normal and sleep was disturbed. He was admitted for detailed examination.

On day one his vitals were stable. On physical examination PICCLE (pallor, icterus, cyanosis, clubbing, lymphadenopathy, edema) was negative. His neck examination showed laryngeal crepitus and bilateral parotid swelling which was warm, minimal tenderness, firm and of the size of 4 x 4 cm. Diffuse swelling in the bilateral submandibular region (soft, firm in consistency, mild tenderness) was also found. His ear, nose and oral cavity examination was normal. His oropharynx showed bilateral grade II tonsillar hypertrophy - not congested. His USG of the neck showed subacute chronic thyroiditis, diffuse subcutaneous edema of the neck with bilateral parotitis, left submandibular sialadenitis and cervical lymphadenopathy. His biochemistry, serology and haematology reports were all within the normal limit. The patient was diagnosed with Ludwig's Angina.

He was managed conservatively with IV antibiotics and analgesics for the 3 days of his hospital stay. He was given Inj. Ceftriaxone 1g IV BD, Inj. Amikacin 500 mg IV OD, Inj. Paracetamol 1g BD and Inj. Ranitidine 50mg IV BD for 3 days. The patient's vitals were stable and had no fresh complaints. The patient's swelling was reduced and he had no breathing difficulty on day 2. Patient was symptomatically better and swelling on the bilateral parotid region was significantly decreased and pain was resolved on day 3.

Patient improved symptomatically with neck swelling reduced and taking well orally and was discharged in stable condition with the following medical advice: T. Cefuroxime 500mg BD, T. Ranitidine 150mg BD and T. Ibuprofen/Acetaminophen (400/325 mg) SOS for 5 days. He was asked to review after 5 days and to report to ENT OPD immediately in case of events like neck swelling, breathing difficulty, swallowing difficulty and fever. On follow up after 5 days his swelling was significantly regressed and the patient reported no pain on swallowing and no breathing difficulty.

## DISCUSSION

Ludwig's angina is a rare but rapidly and frequently fatal progressive gangrenous cellulitis and edema of the soft tissues of the neck and floor of the mouth. It was best described by Karl Friedrich Wilhelm von Ludwig in the year 1836. [4] Ludwig's angina is dangerous as it can cause edema and distortion which leads to airway obstruction and breathing difficulty due to elevation and posterior displacement of the tongue. [1]

Ludwig's angina begins as a mild infection and progresses to induration of the upper neck with pain, trismus and tongue elevation. [5] Most common cause of Ludwig's angina is odontogenic. The most common site of origin for Ludwig's angina is second and third submandibular molar. The mylohyoid muscle subdivides the submandibular space into inferior submaxillary space and superior sublingual space resulting in open communication between the spaces. Due to this, if an infection occurs it may spread through tissue spaces, giving Ludwig's Angina its bilateral nature. Infection can also spread to pharyngomaxillary and retropharyngeal spaces. [6]

Airway management is the main point in the treatment of Ludwig's Angina. The goal is to prevent obstruction of airways. Airway management and aggressive use of antibiotics is the mainstay

treatment of Ludwig's Angina. If localised abscesses and/or if medical management has failed to produce adequate results, incision and drainage is opted.

In this patient, his physical examination as well as his USG of the neck confirmed the diagnosis as Ludwig's Angina. No culture testing was carried out and was treated empirically using Ceftriaxone 1g BD and Amikacin 500mg OD intravenously. He was also advised tablet Cefuroxime 500mg BD on discharge. His follow up after 5 days showed marked improvement in his condition with significantly reduced swelling and no breathing difficulty.

Ludwig's angina's main complication is airway obstruction leading to severe breathing difficulty, even leading to death in fatal cases. In this case, the patient was diagnosed with Ludwig's angina early into the disease leading to improved outcome for the patient.

## CONCLUSION

Ludwig's Angina is a disease that if not managed properly can result in severe breathing difficulty and even death in fatal cases. It usually resolves without complications and early diagnosis of Ludwig's Angina is vital for better patient outcome and is treated by aggressive and

early antibiotic administration and airway management.

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## Conflict of Interest:

All authors declare no conflict of interest.

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