

CASE REPORT

Delay in Ludwig Angina Diagnosis is Fatal

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ABSTRAK

'Ludwig Angina' adalah penyakit yang merbahaya. Sekiranya penyakit tersebut tidak dikesan dari peringkat awal ataupun dirawat, kadar kematian adalah sebanyak 50%. Kami ingin memaparkan satu kes klinikal yang melibatkan seorang pesakit lelaki yang berumur 43 tahun yang mempunyai simptom dan tanda-tanda 'Ludwig angina' selama dua hari. Beliau telah menjalani prosedur cabutan gigi sebelum itu. Walaupun pesakit menunjukkan simptom dan tanda-tanda yang klasik untuk 'Ludwig angina', diagnosa tersebut tidak dapat dikesan pada rawatan yang pertama. Penyakit 'Ludwig angina' hanya boleh dikesan sekiranya doktor mempunyai indeks kecurigaan yang tinggi terhadap penyakit tersebut. Penangguhan dalam pegasanan penyakit tersebut akan menyebabkan saluran pernafasan tersumbat kerana kebengkakan pada saluran pernafasan.

Kata kunci: angina, jangkitan kulit, berkelemayuh, Ludwig

ABSTRACT

Ludwig angina is a fulminant condition that is potentially lethal. If left unrecognized or untreated, this condition carries a mortality rate of up to 50%. We illustrate a case of 43-year-old male who presented with signs and symptoms of Ludwig angina over a period of two days. The patient had history of tooth extraction prior to the onset of symptoms. Despite typical clinical presentation, Ludwig angina was not considered during the first visit to medical. Ludwig angina is a clinical diagnosis that requires high index of suspicion. Delay in the diagnosis increase the risk of airway obstruction due to its rapidly spreading oedema of the upper airway.

Keywords: angina, cellulitis, gangrenous, Ludwig

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INTRODUCTION

Ludwig angina is a life threatening, diffuse gangrenous cellulitis of the floor of the mouth. The disease was first reported by Wilhelm Friedrich von Ludwig in 1836. Majority of Ludwig angina is caused by odontogenic infection (Quinn 1999). The floor of mouth is divided by mylohyoid muscle into sublingual space superiorly and submandibular space, inferiorly. The root of teeth has direct access to the submandibular space. Infection or abscess over the submandibular space rapidly spreads to the adjacent structures such as anterior neck, retropharyngeal space, anterior mediastinum and pharyngomaxillary space (Lemonick 2002). Other causes include peritonsillar or parapharyngeal abscesses, mandibular fractures, oral lacerations or submandibular sialadenitis, and oral malignancy (Fischmann et al. 1985). The most commonly cultured organisms include *Staphylococcus aureus*, *Streptococcus viridans* and *Bacteroides* species (Spitalnic et al. 1995). The common symptoms of Ludwig angina include dysphagia, neck swelling, and pain; other symptoms include dysphonia, drooling, tongue swelling, pain in the floor of the mouth, and sore throat. Possible complications which arise from Ludwig angina include airway obstruction and septic shock. Historically, Ludwig angina carries a mortality rate of 50%. The appropriate use of antibiotics and early surgical drainage, reduced mortality rate to less than 10% (Britt et al. 2000).

CASE REPORT

A 43-year-old Malay male with no pre-existing medical illness presented to Emergency Department on 31st October 2015 with swelling over the jaw and neck for one day duration. The swelling was started at the right jaw and rapidly spread to the submandibular and submental region. It was associated with throbbing pain, odynophagia and dysphagia. On further questioning, patient had tooth extraction one day prior to onset of the symptoms. There was no history of recent trauma. Patient visited a general practitioner prior to his presentation to Emergency Department and was given oral antibiotics.

On examination, the patient was alert and conscious. His vital signs were: blood pressure of 135/87 mmHg, heart rate of 120 beats/minute, 37.3°C temperature, 96% oxygen saturation under room air and respiratory rate of 20/minute. On inspection, there was a diffuse swelling noted over bilateral submandibular (Figure 1)



Figure 1: Photograph showing swelling of the submental and submandibular region of the patient.



Figure 2: Photograph showing the side view of diffuse submental and submandibular swelling of patient.

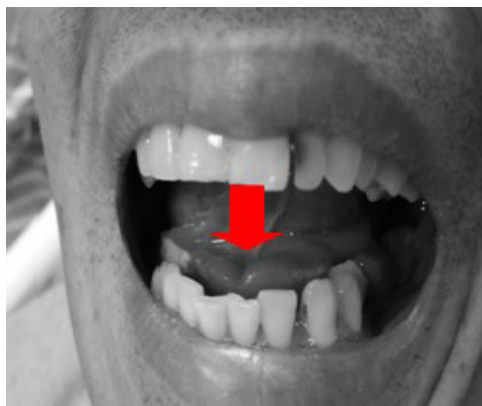


Figure 3: Arrow showing presence of elevated mouth floor of the patient.

and submental regions (Figure 2). The overlying skin was erythematous. On palpation, it was tender, firm in consistency with ill defined borders. Oral cavity showed elevated mouth floor (Figure 3) and pus discharge noted over the socket of the lower left second molar teeth. Uvula was unable for visualisation. Neck examination showed centrally located trachea with no lymphadenopathy. His lungs were clear on auscultation. No abnormality was detected on cardiovascular examination. There was no stridor.

Initial blood investigations showed elevated total white count with predominant neutrophilia indicative of ongoing bacterial infection. C-reactive protein was also elevated. Renal profile was normal.

Based on the clinical presentations, diagnosis of Ludwig angina was made. The patient was started on parenteral antibiotics and analgesia. He was then referred to Otorhinolaryngology, Maxillofacial and Anaesthesiology team. Otorhinolaryngology team conducted flexible video laryngoscopy

in Emergency Department and showed no signs of laryngeal oedema and patent airway. Contrasted CT neck was done and showed multiloculated collection at the midline of mouth tracking until the anterior aspect of the hyoid bone involving bilateral submandibular and submental region (Figure 4 and 5). Patient was electively intubated in operation theatre using awake fibreoptic laryngoscopy in anticipation of difficult airway. Intraoperatively, bilateral submandibular and submental incisions were made for drainage and copious irrigation, followed by extraction of retained root 45 and 16. Lastly, corrugated drain was inserted at the submandibular region. The patient was extubated on day 3 post operation and was discharged well on day 7 of admission.

DISCUSSION

Ludwig angina is a rapidly progressing, life threatening condition. It is almost synonymous to difficult airway due to their likelihood to cause oedema and distortion of upper airway.



Figure 4: Coronal view of contrasted CT neck. Arrow showed multiloculated abscess over the submental and submandibular region.

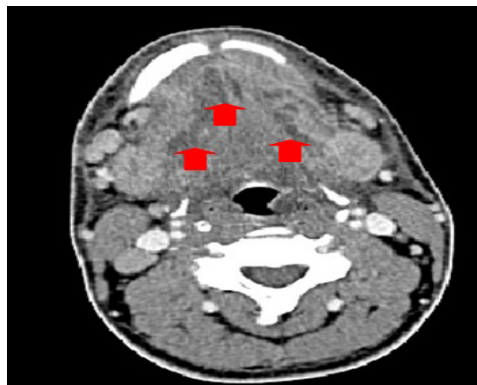


Figure 5: Coronal view of contrasted CT neck. Multiple arrow showed multiloculated abscess over the submental and submandibular region.

Therefore, early recognition of the disease has a huge impact on the outcome of the patient. In this case, the patient presented with classical clinical presentation of Ludwig angina. However, the diagnosis was not considered during his first visit to general practitioner. He was treated for gingivitis and only given oral antibiotics. Early referral to the hospital was not done in this setting. Unlike the rest of the odontogenic infection, Ludwig angina cannot be treated in outpatient basis in the acute phase with only oral antibiotics. This is because patient may rapidly progress to airway obstruction due to posterior displacement of tongue and elevated mouth floor. The reduced frequency of this infection made the diagnosis of Ludwig angina more challenging especially for the average practitioner. A history of rapidly spreading submandibular swelling with recent history of tooth extraction should always alert us on the possibility of Ludwig angina. This can be further confirmed by careful examination of oral cavity. There are four cardinal

signs associated with Ludwig angina. This includes bilateral involvement of more than one compartment, gangrene with serosanguineous inoculation; involvement of the muscle, connective tissues, and fasciae except for glandular structures; and spread by continuity. Presence of cardinal signs indicates the necessity to secure airway before further diagnostic test such as computed topography scan of neck to be carried out. In this case, the patient showed bilateral involvement of sublingual and submandibular regions during his initial presentation to Emergency Department. In this case, the patient did not have any signs of respiratory distress or signs of upper airway obstruction. Yet patient was immediately sent to operation theatre to secure his airway in view of the presence of cardinal sign.

The mainstay for the management of Ludwig angina is use of appropriate antibiotics, airway protection techniques, and formal surgical drainage. The paradigm of management changes over the years from early aggressive management

to conservative medical treatment. Study by Kurien et al. reported a 13 years review on cases of Ludwig angina that showed the mortality rate for both the groups to be about 10% (Kurien et al. 1997). However, only selected patients with normal oxygen saturation and respiratory rate on room air and with no evidence of significant airway compromise on fiberoptic examination, are recommended to be managed conservatively (Hasan et al. 2011). This remains controversial. Treatment option should be considered based on the availability of monitoring facility, local practice and condition of the patient.

CONCLUSION

Ludwig angina is a potentially deadly condition if unrecognized in the early stage. Rare occurrence of the disease has made its diagnosis challenging to primary care practitioner. High index of suspicion is very important in considering the diagnosis of Ludwig angina. The role of Emergency Department in managing patient with Ludwig angina includes prompt recognition of disease, early initiation of antibiotic and early involvement of respective team for definitive treatment.

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