



Case Report

Ludwig's Angina Caused by a Migrating Fish Bone

Rong-Feng Chen, Chih-Hao Lu*

Department of Otolaryngology-Head and Neck Surgery, Kaohsiung Armed Forces General Hospital, Kaohsiung, Taiwan

Article info

Article history:

Received: January 4, 2010

Revised: March 29, 2010

Accepted: April 6, 2010

Keywords:

Deep neck infection

Fish bone

Ludwig's angina

Abstract

Ludwig's angina is a rapidly progressive cellulitis involving the bilateral submandibular spaces that may result in death by asphyxia. The etiology is most often odontogenic or periodontal in origin. However, we report here a rare case of Ludwig's angina induced by a migrating fish bone. The patient was a 58-year-old man who visited our emergency department with progressive tender swelling of the right submandibular region, trismus, drooling, and difficulty swallowing, which had lasted for 4 days. Computed tomography of the neck revealed a calcified lesion with abscess formation near the right submandibular region. When a transoral incision was made, a yellowish calcified fish bone, measuring 1.2 cm in length, was found in the abscess space and removed. After pus drainage and antibiotic therapy, the patient was discharged 6 days later. Among elderly patients with poor dental hygiene who are diagnosed with Ludwig's angina, the penetration of a foreign body in the submandibular space may be a possible etiology. An operation to extract the object, involving incision and drainage, is then necessary; antibiotic treatment alone cannot be relied on. (*Tzu Chi Med J* 2010;22(4):206–208)

*Corresponding author. Department of Otolaryngology-Head and Neck Surgery, Kaohsiung Armed Forces General Hospital, 2, Chung-Cheng 1st Road, Kaohsiung, Taiwan.
E-mail address: ndmcironman@hotmail.com

1. Introduction

Ludwig's angina was first described by German surgeon Karl Friedrich Wilhelm von Ludwig in 1836 as a rapidly progressing submaxillary, submandibular, and sublingual necrotizing cellulitis of the floor of the mouth that can have lethal consequences due to airway obstruction (1). The etiology for most cases is odontogenic or periodontal disease, and these cover between 52% and 90% of cases (2–4). However, the condition has also been reported as a complication of sublingual lacerations, sialoadenitis, compound mandibular fractures, and infected malignancy. Here, we report a rare case of Ludwig's angina induced by a migrating fish bone. Computed tomography (CT) scan of the neck was of great assistance in diagnosing the

presence of a fish bone that had migrated. Surgical exploration is mandatory in situations such as this.

2. Case report

A 58-year-old man was diagnosed as suffering from acute pharyngolaryngitis in a local clinic due to a sore throat associated with odynophagia. An oral nonsteroidal anti-inflammatory drug (ibuprofen) was prescribed. Unfortunately, the symptoms aggravated and the patient visited our emergency department because of the development of tender swelling of the right submandibular region, trismus, drooling, and difficulty swallowing. Physical examination and flexible fiberoptic laryngoscopy showed that the base of the right

tongue was swollen and that this extended to the vallecula. CT revealed a calcified lesion with abscess formation near the right submandibular region (Fig. 1). Calculi of the right Wharton's duct was suspected before the operation. On performing a transoral incision, a yellowish calcified fish bone measuring 1.2 cm in length was found in the abscess space (Fig. 2). Postoperative pus drainage and antibiotic therapy were carried out and the patient was discharged 6 days after the operation with follow-up at the outpatient department.

3. Discussion

Ludwig's angina, an aggressive form of deep neck infection, involves the bilateral submandibular and submental space (2). The submandibular space actually

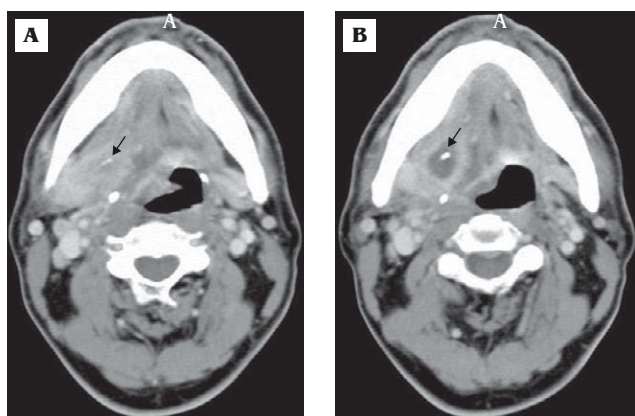


Fig. 1 — Computed tomography scans of the neck with contrast media show a well-defined low-attenuated lesion together with a linear hyperdense lesion over the right submandibular space (arrow).



Fig. 2 — The yellowish calcified fish bone (1.2 cm in length) extracted from the lesion.

consists of two spaces, the submaxillary space, which is inferior to the mylohyoid muscle, and the sublingual space, which is superior to the mylohyoid muscle and is bound superficially by the superficial layer of the deep cervical fascia (5).

The clinical presentations include sore throat, dysphagia, bilateral cervical swelling, neck tenderness, dysphonia, elevation and swelling of the tongue, restricted neck movement, and stridor, which can be highly suggestive of impending airway obstruction (1). Ludwig's angina is a rapidly progressing and potentially fatal disease. Often, the etiology is odontogenic or periodontal in origin (2–4). However, specifically in this case, there was no obvious history of mis-swallowed fish bones that could be tracked. A possible explanation for this might be dulled oral sensation in this patient due to the use of full mouth dentures, poor dental hygiene and a habit of chewing betel quid.

The usual cause of Ludwig's angina is a mixture of aerobic and anaerobic bacteria including predominately normal oral flora such as *Staphylococcus* and *Streptococcus* spp. It is rare for Gram-negative organisms to be implicated as a cause, but Ludwig's angina has been associated with *Neisseria catarrhalis*, *Escherichia coli* and *Pseudomonas* spp. (6,7). *Klebsiella pneumoniae* in one study was identified in over 50% of diabetic patients with Ludwig's angina (1,4). Antimicrobial regimens for the treatment of Ludwig's angina have been recommended and the selected antibiotics should cover a polymicrobial (Gram-positive, Gram-negative, aerobic, and anaerobic) etiology. The combination of antibiotics most frequently used is clindamycin and penicillin, which is the choice recommended in the current literature (2,8). The pus culture from our case revealed a mixed infection of coagulase-negative *Staphylococcus* spp. and *Streptococcus* spp. A combination of incision for drainage and empirical antibiotics (amoxicillin and clavulanic acid) proved to be effective treatment in this case.

A complication of Ludwig's angina is deep neck infection, which is infection of the adjacent fascial planes of the neck and/or spaces with abscess formation and cellulitis (4). CT of the neck is the primary tool of choice in this situation and was successful in our patient, where the scans showed a well-defined low-attenuated lesion of about 3×4 cm over the right submandibular space and a linear hyperdense lesion within it (Fig. 1).

For an elderly patient with poor dental hygiene who is diagnosed with Ludwig's angina, a penetrating foreign body in the submandibular space should be considered as part of the differential diagnosis. Surgery in the form of incision and drainage is essential as antibiotic treatment alone may not elicit a cure. Early recognition of the disease process and

adequate treatment should be able to prevent a lethal outcome due to airway compression and septic dissemination (9).

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