OBJECTIVES

- To report a case of Ludwig’s angina secondary to odontogenic infection leading to descending necrotizing mediastinitis
- To discuss its signs and symptoms, pathophysiology, diagnostic work-up and management

INTRODUCTION

Descending necrotizing mediastinitis (DNM) is a rare but fatal complication of head and neck infections. The main reasons for high mortality include delay in diagnosis and inappropriate surgical management. Diagnosis is often difficult and a delay in surgical intervention ensues due to a period of initial clinical improvement on antimicrobial therapy (1,2).

Among the reported cases of DNM, 60% to 70% are of odontogenic origin, particularly when the mandibular second of third molars are involved (2,3). Odontogenic infections may first progress to bilateral gangrenous swelling in the submandibular space, a condition known as Ludwig’s angina, which is in itself, a potentially fatal condition due to airway obstruction. After the development of penicillin in the 1950’s, mortality rates began to decline from a previous 60% (3,4).

CASE REPORT

We present a case of a 29-year-old male with no known comorbid conditions, who presented with one-week history of toothache and sought consult due to difficulty swallowing.

Incision and drainage of the submental area yielded purulent material which was sent for culture and sensitivity studies. The patient was placed on stand-by intubation / tracheostomy in case of an airway compromise. The patient initially demonstrated a steady course of clinical improvement while on broad-spectrum intravenous antibiotic therapy.

REFERENCES


Figure 3. Initial neck soft tissue lateral and posteroanterior radiographic views reveal soft tissue swelling in the submental and submandibular areas bilaterally (A&B) with straightening of the cervical spine (B). Initial PA view of the chest was unremarkable.

Figure 4. Repeat PA and lateral decubitus chest radiographs done on the 4th hospital day after the patient complained of dyspnea and chest pain, revealed pleural effusion on the left, deviation of the tracheal air column to the right (A&B).Thoracocentesis was done on the left lung where one liter or purulent material was obtained.

The patient underwent emergency neck exploration with drainage of abscess, full thoracotomy, decortication, anterior mediastinotomy, decolest and chest tube insertion. Intraoperative findings revealed: 75 cc of purulent, foul-smelling material from the pretracheal space, left carotid sheath, and bilateral paratracheal spaces and another 2 liters of purulent, foul-smelling material from the left hemithorax. Cultures came back positive for methicillin-resistant Staphylococcus aureus (MRSA). Post-operatively, mechanical ventilation was provided together with due course of intravenous antibiotics until the patient was stable. He was eventually discharged after a month of steady improvement.

Figure 5. A) Pathological pathways of extension of deep facial infections of the head and neck. From Odontic Infections by Chow, Anthony, ND, Infectious Disease & Antimicrobial Agents. Copyright 2017 by Elsevier Technologies. B) Criteria for the diagnosis of DNM from an odontogenic focus by Estrella, et al.

Clinically, the patient presents with dysphasia, drooling, muffled voice, trismus and in worse cases, airway obstruction. Diagnosis of the condition is mainly clinical, with CT imaging and MRI helping to determine the location and extent of infection. (1,2,3)

Necrotizing mediastinitis often necessitates an open thoracotomy for adequate drainage and decolestion of abscess, and clearing of fibrin formation within affected spaces. (4,5,6)

Clinicians must be cognizant of signs of complications even in immunocompetent patients with Ludwig’s angina as it still carries the potential for lethal complications such as mediastinitis. Early recognition, adequate antimicrobial therapy with possible surgical intervention and judicious supportive medical therapy continue to improve patient survival. (4,5,6).