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Case Report

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Copious Bilateral Descending Empyema Thoracis Secondary to Periodontal Abscess: A Case Report from Rural South-East Ethiopia

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Abstract

Descending thoracic complications arising from odontogenic infections are rare but potentially fatal. We report a case of a 17-year-old male from rural South-East Ethiopia who developed copious bilateral empyema thoracis following a periodontal abscess. Delayed presentation, traditional dental practices, and extensive disease severity contributed to rapid clinical deterioration. Despite prompt surgical drainage and broad-spectrum antibiotics, the patient succumbed to septic shock. This case highlights the importance of early dental care, timely referral, and the challenges of managing severe infections in resource-limited primary hospitals.

Keywords: periodontal abscess; bilateral empyema thoracis; odontogenic infection; descending infection; rural ethiopia

Introduction

Odontogenic infections are common and typically remain localized when promptly treated. However, in rare circumstances, they may spread along deep cervical fascial planes and descend into the thoracic cavity, resulting in life-threatening complications such as mediastinitis and empyema thoracis [1,2]. Bilateral empyema of odontogenic origin is exceedingly uncommon, particularly in young patients [3]. We present a rare and fatal case of copious bilateral descending empyema thoracis secondary to a periodontal abscess, managed in a rural primary hospital in South-East Ethiopia.

Case Presentation

A 17-year-old male from Medawalabu District, East Borena Zone, South-East Ethiopia, with a history of recurrent dental infections, presented with left cheek swelling of seven days' duration. Three weeks prior, he had recurrent toothache and underwent traditional dental extraction by a local healer. Subsequently, he applied unknown herbal medication intra-orally and externally over the left cheek, after which the swelling rapidly worsened.

Three days after onset of cheek swelling, he developed cough, shortness of breath, and chest pain, which progressively worsened. On arrival, he appeared acutely ill. Vital signs were: blood pressure 90/70 mmHg, pulse rate 131 beats/min, respiratory rate 32 breaths/min, temperature 39.6°C, and oxygen saturation 83% on room air.

Physical examination revealed a swollen, tender, indurated mass over the left cheek without signs of upper airway obstruction. Chest examination demonstrated bilaterally reduced air entry.

The patient was immediately resuscitated with intravenous Ringer's lactate, supplemental oxygen, and empiric intravenous ceftriaxone and metronidazole. Laboratory investigations showed leukocytosis (WBC 12,000/μL). Chest X-ray demonstrated bilateral lung opacification with minimal aerated lung fields [2].

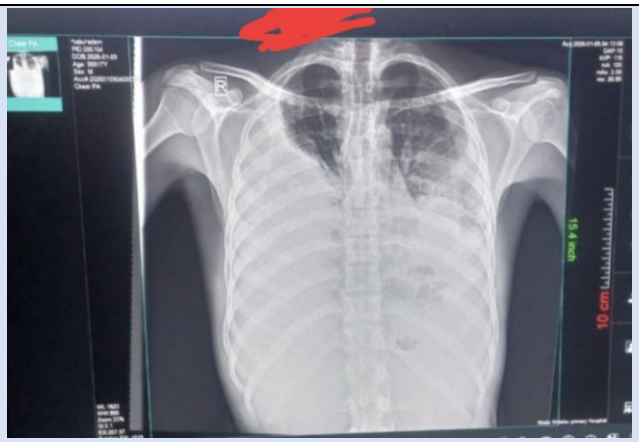

Figure 1: Chest X-ray showing bilateral pleural empyema

The periodontal abscess was drained first, yielding copious offensive pus. Subsequently, bilateral chest tubes were inserted, draining approximately 3,100 mL from the right pleural cavity and 2,400 mL from the left within 24 hours. The pleural fluid was purulent and similarly offensive, strongly suggesting a common odontogenic source. Microscopic examination confirmed bacterial infection, though culture and sensitivity testing were unavailable due to limited diagnostic capacity [4].

Vancomycin was added after drainage. Despite aggressive management, the patient rapidly progressed to septic shock. Urgent referral to an intensive care unit (ICU) was considered; however, the primary hospital had no ICU services, and the nearest referral hospital was located approximately 200 km away. Financial and logistical constraints prevented transfer. The patient died within 24 hours of chest drainage.

Discussion

Odontogenic infections rarely result in thoracic complications, but when they do, outcomes are often catastrophic [1,2]. Infection may descend through retropharyngeal, parapharyngeal, and prevertebral fascial planes, facilitated by gravity and negative intrathoracic pressure [1]. Delayed presentation and local tissue manipulation significantly increase the risk of deep infection spread [1,4].

In this case, traditional dental extraction and herbal application likely disrupted natural tissue barriers, facilitating rapid dissemination of infection [4]. Similar associations between traditional practices and severe odontogenic complications have been reported in low-resource settings.

Unlike many reported cases that progress through mediastinitis, this patient developed extensive bilateral empyema thoracis, an extremely rare presentation [3]. The copious volume of purulent pleural fluid (5.5 liters) and bilateral involvement indicate advanced disease, which is independently associated with high mortality even in tertiary care centers [2,5].

Although the absence of ICU services significantly limited advanced supportive care, it was not the sole cause of death. The combination of delayed presentation, traditional dental practices, and advanced disease severity meant that prognosis was already poor at presentation. This case underscores the importance of early dental intervention, community education, and timely referral, alongside strengthening critical care capacity in rural hospitals [2,5].

Learning Points

- Odontogenic infections can result in fatal thoracic complications if diagnosis and treatment are delayed [1,2].
- Traditional dental practices may predispose patients to deep cervical and thoracic spread of infection [4].
- Copious bilateral empyema thoracis represents advanced disease with poor prognosis [3,5].
- Early referral systems and improved access to critical care are essential in rural settings [2].

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