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Acute Pericarditis and Acute Pleuritis/Empyema Following Submandibular Infection in a COVID-19 Positive Patient - an Autopsy Revealing the Danger Space of the Neck

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Introduction

Acute pericarditis and empyema are life-threatening complications of severe odontogenic infections; reports of these findings from an autopsy perspective are rare. We report an autopsy case demonstrating infection from the mandibular molars to the pericardium and pleura in a patient following Covid-19 infection.

Case Report

A 53-year-old woman with history of Covid-19 presented with submandibular abscess. At the time of admission, her repeat Covid-19 test was again positive. Wound culture of the submandibular abscess grew *Streptococcus anginosus* and anaerobic flora. Imaging showed extensive inflammatory changes of the right masseter and medial and lateral pterygoid muscles, sublingual spaces and lateral surfaces of the face and upper neck and posteriorly overlying the mastoids. There was also a fluid collection in the sublingual space, and extensive phlegmon. Despite the incision and drainage of the abscess and medical treatment, her medical condition deteriorated with a sudden death in a week after admission. An autopsy with histologic analysis was performed.

Autopsy Findings

A surgical incision containing purulent drainage was present in the right submandibular area, and multiple teeth had been extracted including the #31 and 32 molars. Internally, there were large, purulent pleural (right 650 mL, left 525 mL) and pericardial (75 mL) effusions. The lungs showed patchy green discoloration, and the epicardial and pericardial surfaces were covered by a tan, fibrinous exudate.

Histology

Abscess and gram-positive bacteria were identified in the soft tissue surrounding the thyroid. Fibrinous, necrotic exudate with acute inflammation was present on the pleural and pericardial surfaces. Gram positive bacteria were identified within the pericardium. These findings are consistent with acute pleuritis, empyema, and pericarditis.

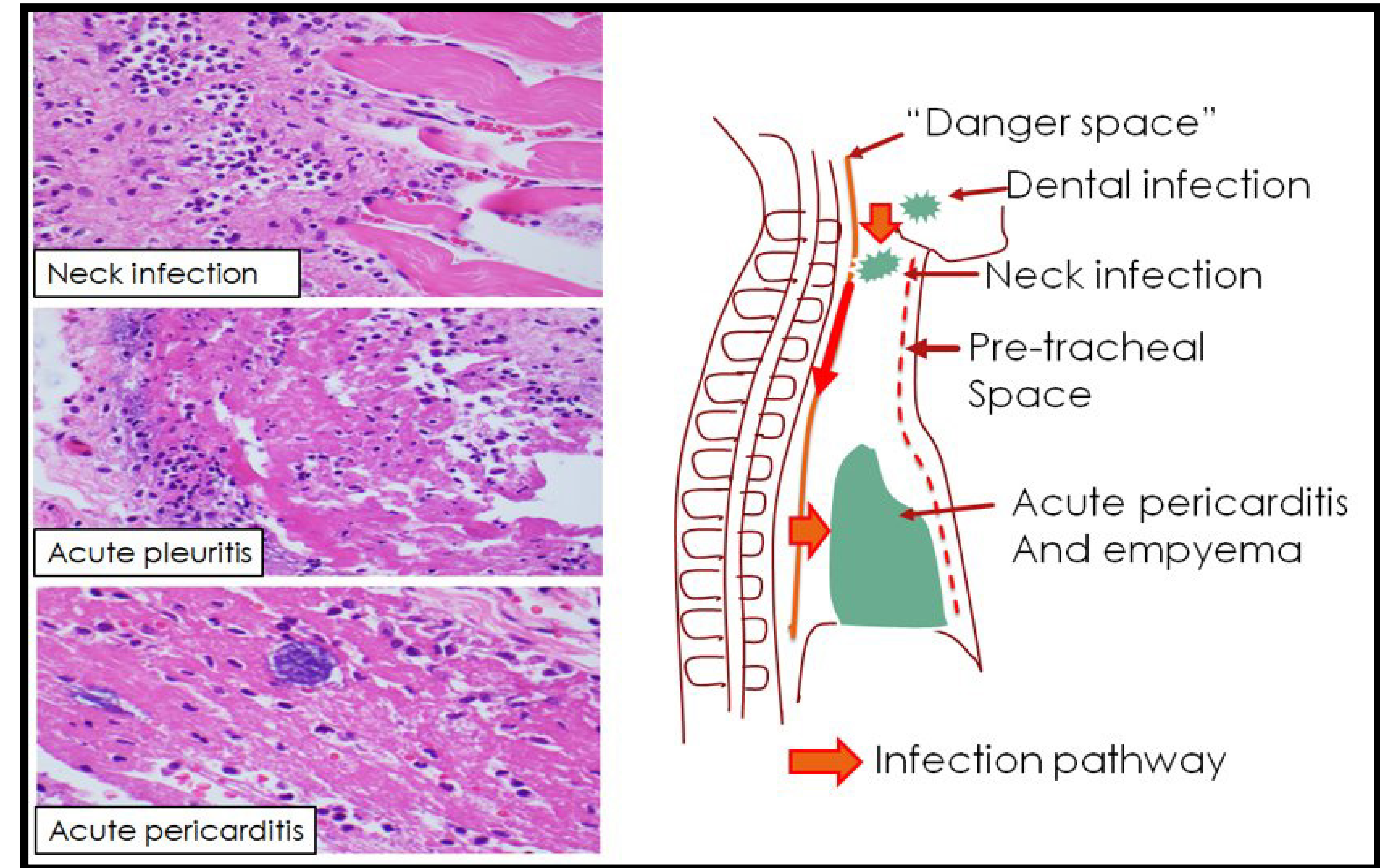


Figure 1. Infection pathway

Discussion

This is the first reported autopsy case describing acute pleuritis with empyema and pericarditis complicating submandibular infection in a patient with history of Covid-19. The mechanism is consistent with descending infection by deep cervical fascia and spaces such as the “danger space” communicating with the mediastinum. Her Covid-19 infection may add an important factor compromising her health and making the neck abscess difficult to treat with the subsequent lethal complications. This case highlights the importance of recognizing life-threatening complications of infections, prompting thorough investigation by clinicians.