We report two cases of septic pulmonary embolism associated with periodontitis. Chest CT revealed multiple nodular shadows with features characteristic of septic pulmonary embolism in both patients. Both patients had toothache, fever, and chest pain, and showed findings of periodontitis at initial presentation. Antimicrobial agents combined with dental surgery were successful in treatment. While septic pulmonary embolism from the lesions of periodontitis appears to be rare, periodontitis remains important in the differential diagnosis of septic pulmonary embolism.

(CHEST 2002; 121:652–654)

Key words: multiple pulmonary infiltrates; periodontitis; septic pulmonary embolism

Septic pulmonary embolism is a rare disorder usually associated with tricuspid valve endocarditis, septic thrombophlebitis, or infected central lines. Chest CT shows multiple peripheral nodules with clearly identifiable feeding vessels and sometimes evidence of necrosis, or wedge-shaped peripheral lesions abutting the pleura. We describe two cases of septic pulmonary embolism from an unusual source, periodontal disease.

Case Reports

Case 1

A 53-year-old man presented to our hospital with fever and left-sided chest pain. The patient had been well until 3 years previously when he developed a toothache and was treated with ciprofloxacin hydrochloride for several days. During the following 3 years, the patient had recurrent toothaches every 2 to 6 months, each lasting for several days. One week before presentation, the patient noted fever, chills, toothache, and gingival swelling. Two days before presentation, left-sided chest pain began to occur upon deep breathing. No cough or sputum production were evident. No other notable medical history was elicited.

At initial presentation, the patient was febrile (38°C). Physical examinations including lung auscultation disclosed no abnormal findings. A chest radiograph showed multiple small pulmonary infiltrates in both lungs. Chest CT showed multiple scattered nodular lesions, most located subpleurally and measuring approximately 1 cm in diameter, in both lungs fields. Some lesions were wedge shaped and abutted the pleura. Distinct feeding vessels were associated with some lesions (Fig 1). One nodule showed thickening of adjacent pleura. Initial laboratory results revealed no infectious source. The patient was treated initially with levofloxacin and later with minocycline. With this treatment, symptoms including fever and chest pain subsided rapidly. A panoramic radiograph of the teeth showed alveolar bone loss in a horizontal pattern typical of chronic periodontitis, as well as a vertically oriented bone defect involving the root apex of the mandibular right first molar. No infectious source was present except for periodontitis. A diagnosis of periodontal disease was made.

References


Septic Pulmonary Embolism Associated With Periodontal Disease*

Reports of Two Cases and Review of the Literature

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infection with septic pulmonary embolism was made. Later, the patient underwent scaling of the teeth, root planing, and flap surgery.

Case 2

A 67-year-old man was admitted to our hospital with a 4-week history of intermittent fever. The patient had a 10-year history of bronchial asthma treated with pranlukast hydrate, procaterol hydrochloride, and 5 mg/d of oral prednisolone. Nine months before hospital admission, the patient noted toothache and consulted a dentist, who removed a cyst. One month before hospital admission, the patient noted fever, generalized fatigue, and back pain. Cough or sputum production did not develop. Chest radiography showed multiple infiltrates in both lungs. Chest CT displayed eight nodules from 1 to 2 cm in size, all abutting the pleura. Contours varied from round to wedge-shaped. A necrotic center was seen in one nodule (Fig 2), and prominent feeding vessels accompanied many nodules. Low-grade fever persisted intermittently for several days, and the patient was admitted to the hospital.

At the time of hospital admission, no abnormal physical findings were noted in the neck, chest, or abdomen. The teeth were in good condition except for the presence of significant periodontal disease. Laboratory examination showed a C-reactive protein concentration of 13.7 mg/dL, hemoglobin of 13.0 g/dL, and a WBC count of 15,850/μL, including 79.6% neutrophils, 8.5% lymphocytes, 9.6% monocytes, 0.5% eosinophils, and 0.5% basophils. Arterial blood gas analysis revealed the following: pH, 7.45; PaCO2, 36.7 mm Hg; and PaO2, 61.3 mm Hg while breathing room air. Sputum culture findings yielded normal flora. Repeated blood culture findings were negative. A two-dimensional echocardiogram showed no abnormality. A perfusion lung scan with technitium Tc 99m macroaggregated albumin showed areas of slightly decreased perfusion in both lungs. A panoramic radiograph of the teeth revealed vertically oriented bony defects in the posterior region of the mandible and maxilla. Treatment with IV imipenem-cilastatin sodium was initiated at 1 g/d; fever subsided 3 days later. On the eighth hospital day, the patient underwent resection of periodontal granulation tissue and removal of dental calculus. After 2 weeks of antibiotic therapy, the serum C-reactive protein concentration returned to the normal range.

Discussion

Neither patient reported here showed cough or sputum production at initial presentation, arguing against acquisition of infection via the respiratory tract. Both patients had chest pain or back pain presumably related to pleural inflammation. In both cases, chest CT was very useful in the diagnosis of septic pulmonary embolism. Bilateral peripheral nodules with identifiable feeding vessels or, alternatively, subpleural wedge-shaped densities with or without necrosis are reported to be highly suggestive of septic pulmonary emboli. Lesions were treated successfully with antimicrobial agents, clearly indicating an infectious cause. Jaffe and Koschmann reported that most cases of septic pulmonary emboli originate from right-sided bacterial endocarditis or septic thrombophlebitis from such sources as the tonsil, the jugular region, pelvic infection, or infected indwelling catheters. A recognizable predisposing factor usually is evident in cases of septic pulmonary emboli. Antecedent dental symptoms, findings of periodontal disease, and the absence of any other infectious source implicated the gingiva as the source for pulmonary infection in our patients.

Chronic periodontitis is a relatively common condition. As supragingival plaque accumulates and matures, gingival inflammation is initiated. If inflammation is allowed to persist chronically, connective tissue and

Figure 1. Chest CT in case 1 showing a wedge-shaped subpleural lesion with the apex directed toward the hilum, and also a nodular density with a distinct feeding vessel.

Figure 2. Chest CT in case 2 revealing a 1-cm nodule with a necrotic center.
bone destruction results. Although dental foci can be a source of bacterial endocarditis,4 hemogenous spread of infection apparently is rare in periodontal disease.5 A review of the literature disclosed three previous reported cases of septic pulmonary embolism associated with periodontal disease.5–7 All patients reported, including ours, were middle-aged or elderly men. Blood culture findings were negative in three of four cases in which cultures were obtained. No patient was in serious condition, in contrast to the typical severe illness seen when septic pulmonary embolism originates from bacterial endocarditis or septic thrombophlebitis. None of the patients with periodontal sources were immuno-compromised except for case 2, who received oral prednisolone for treatment of bronchial asthma. Three of five patients had a toothache at the time of initial presentation. All were treated successfully with antimicrobial agents in addition to periodontal surgery.

Dental infection should be considered as a possible source of septic pulmonary emboli. In particular, gingival infection should be treated effectively.

REFERENCES

Choriocarcinoma in the Pulmonary Artery Treated With Emergency Pulmonary Embolectomy*

Shun-ichi Watanabe, MD; Shinji Shimokawa, MD; Koh-ichi Sakasegawa, MD; Hiroshi Masuda, MD; Ryuzo Sakata, MD; and Michiyo Higashi, MD

A 42-year-old woman with choriocarcinoma required emergency pulmonary embolectomy under cardiopulmonary bypass. After diagnosis of choriocarcinoma was confirmed by examination of tumor emboli specimens, the patient was treated and had complete remission by chemotherapy over a 6-month period. Although rare, choriocarcinoma should be considered in the differential diagnosis of fertile women presenting with pulmonary embolism. (CHEST 2002; 121:654–656)

Key words: cardiopulmonary bypass; choriocarcinoma; emergency; pulmonary artery; pulmonary embolectomy; pulmonary embolism

Abbreviations: hCG = human chorionic gonadotropin; MPA = main pulmonary artery; RPA = right pulmonary artery

Due to their rarity, tumors of the pulmonary arteries are often incorrectly diagnosed as more common diseases, such as pulmonary thromboembolism, and are thus seldom diagnosed during a patient’s lifetime. We report a patient with a choriocarcinoma mimicking pulmonary embolism, who required emergency pulmonary embolectomy and had a complete remission with adequate chemotherapy thereafter.

Case Report

A 42-year-old woman presented with exertional dyspnea in August 1999. The patient had three children, the youngest being 4 years old, and she had two previous spontaneous abortions. The chest radiographs showed a bilateral diffuse infiltrative shadow. She was treated for interstitial pneumonia; however, her symptoms became worse. On December 16, pulmonary thromboembolism was suspected and she was urgently admitted to our hospital. On hospital admission, she was orthopneic and could not be placed in a left decubitus position. Arterial blood gas levels under oxygen mask inhalation (5 L/min) were as follows: pH, 7.49; Po2, 44 mm Hg; and Pco2, 26 mm Hg. The chest enhanced CT showed a filling defect from the main pulmonary artery (MPA) to the right pulmonary artery (RPA) [Fig 1]. On the same day, she was transferred to the operating room and underwent emergency pulmonary embolectomy. The periodontal surgery team was informed of her treatment plan. The team performed endodontology under cardiopulmonary bypass, and the patient was treated successfully.

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FIGURE 1. The chest enhanced CT showed a filling defect from the pulmonary trunk to the RPA.