LETTER TO THE EDITOR

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Necrotizing Pneumonitis Due to Fistulation From the Esophageal Diverticulum

To the Editor: Necrotizing pneumonia requires considering several reasons for its development involving both the pathogen and the causes of the pneumonia. We present the case of a woman in whom aspiration pneumonia was suspected because of a history of dysphagia that had started a year earlier. *Mycobacterium tuberculosis* and fungal infection were ruled out by sputum culture before aspiration pneumonia was considered. Cineradiography of the esophagus and a computed tomography (CT) scan of the chest showed fistulation of a traction diverticulum communicating with the pleura; the adjacent pneumonia in the vertex of the right lung was also visible.

The patient was a 51-year-old woman with no pathological history of note, who had been operated on for disc hernias on 2 occasions: a bone graft at C3 in 2000 and placement of a metal plate at C7 in 2002. The patient was admitted to our department in August 2005 with dyspnea, a temperature of 39°C that had started 2 weeks earlier, and moderate respiratory insufficiency (PaO_2, 52 mm Hg at rest). Several analytical tests were performed. Blood tests showed a leukocyte count of 1.9 10^9/L with left shift; anemia (hemoglobin, 92 g/L); and an erythrocyte sedimentation rate of 105 mm/h. Urine tests with sediment were normal and a chest x-ray revealed no indication of disease. The patient was initially diagnosed with febrile syndrome of unknown origin and tests were performed for atypical germs (*Chlamydia*, *Legionella*, and *Brucella* species, and *Coxiella burnetii*), cytoplasmic and perinuclear antineutrophil cytoplasmic antibodies, a battery of autoantibodies, serum tumor markers, and acid-fast bacilli and fungi in sputum. All results were negative.

The patient was questioned again while in hospital and it was revealed that she had a history of dysphagia for solids, accompanied by regurgitation, which had started a year earlier. A CT scan of the chest was performed 10 days after admission to rule out bronchiolitis and, surprisingly, revealed the existence of necrotizing pneumonia in the right upper lobe, in contact with the pleura, and with multiple cavitations. Barium cineradiography of the esophagus was then performed and revealed a traction diverticulum in the hypopharynx, in direct contact with the metal plate in the cervical column, above the cricopharyngeal muscle, thus ruling out the possibility of a Zenker diverticulum, with a fistula between the lower part and the mediastinum (Figure 1). A CT scan of the chest and neck performed the following day to evaluate the fistula showed it to be in contact with the pleura at the right upper lobe, where the pneumonia was located (Figure 2). There were also other fistulas to the perivertebral spaces, between the paraspinal muscles, with several fistulas branching toward the epiglottis.

Because the patient was allergic to beta-lactam antibiotics, the necrotizing pneumonia was treated with levofloxacin and clindamycin in order to cover a broad spectrum of aerobic and anaerobic bacteria. The fever remitted after a few days and, after 2 weeks, a chest x-ray showed the pneumonia to have practically disappeared; the leukocyte count was normal by that time. The patient was subsequently referred for digestive surgery to undergo resection of the esophageal diverticulum and removal of the fistula protruding toward the lung. She was discharged with no symptoms and with closure of the perforation of the diverticulum confirmed by x-ray.

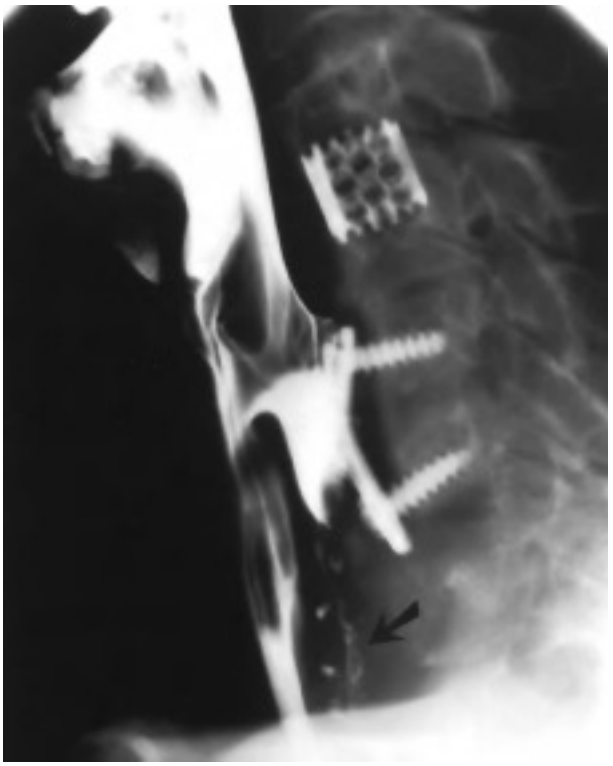

Figure 1. Lateral projection of pharyngoesophageal transit. Image of the diverticulum in the posterior wall of the hypopharynx, in contact with the plate fixing the cervical vertebrae (C6, C7). A fistula can be seen extending from the retroesophageal space to the upper mediastinum (arrow).

Necrotizing pneumonia is characterized by x-ray images of an alveolar pattern and cavitation. It can be caused by various pathogens, usually due to their marked ability to necrotize tissue. These include *M tuberculosis,* fungi, *Staphylococcus aureus*, gram-negative bacteria, and anaerobic bacteria. It is currently accepted that these pathogens can cause ischemia from thrombosis in the vessels adjacent to the focus of the pneumonia,[1] thus causing necrosis. The initial high fever of our patient, with a normal chest x-ray and respiratory insufficiency, masked a developing pneumonia that was not initially seen in the chest x-ray. The clinical history of dysphagia that had been present for a year indicated the possibility of aspiration pneumonia; consequent tests showed an esophageal traction diverticulum with the posterior section in contact with a metal plate that had been placed 2 years earlier to treat a cervical hernia. There are cases in the literature of complications of surgery to the cervical column that include esophageal diverticula, such as that described by Salam and Cable.[2] Our case, however, is the first report of a fistula in an esophageal diverticulum that communicated with the mediastinum and pleura. The association between esophageal diseases and the lungs, such as Zenker diverticula, aclasis, tumors, damage caused during intubation, or gastric reflux, normally

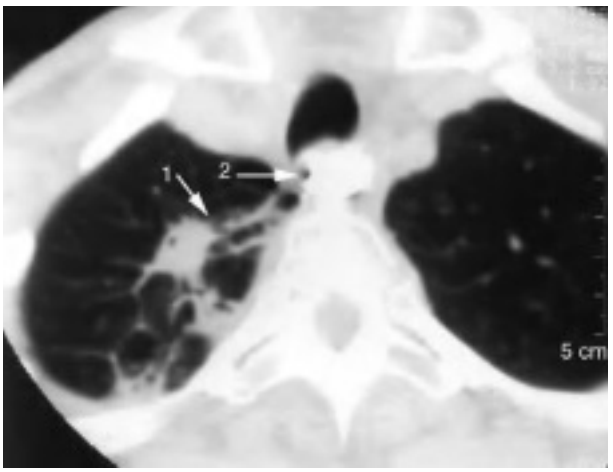

Figure 2. Barium computed tomography scan of the pulmonary vertices showing pleuropulmonary involvement of the right upper lobe (arrow 1), in contact with the distal end of the fistula, in the retrotracheal area of the upper mediastinum (arrow 2).

involves aspiration or fistulation between the esophagus and the trachea[3-5] and can lead to chronic cough, microaspiration, empyema, mediastinitis, and necrotizing pneumonia. The case we report is unique because the cause of the disease involved complication of cervical surgery with a metal plate, which caused contact inflammation of the posterior wall of the esophagus and led to development of a hypopharyngeal traction diverticulum. The long-term clinical history of dysphagia indicated that the diverticulum became perforated and that several fistulas then developed in the area, one of which reached the mediastinum and, later, the pleura of the lung vertex, with subsequent development of pneumonia in the right upper lobe. It is surprising that the patient did not present mediastinitis: as shown in the barium CT scan, the fistula induced local inflammation manifested as a coin lesion in the mediastinum, spreading to the pleura in the region of the right lung vertex.

This unique case highlights the need to investigate the presence of symptoms of esophageal diseases in connection with pneumonia of unknown origin. While aspiration is the most frequent mechanism, a simple barium scan of esophageal transit can reveal rare causes such as in the case of our patient.

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