plasm.\textsuperscript{5} Rapid change in radiographic appearance might be a clue to a mycotic aneurysm.\textsuperscript{5} The cardiac shadow may appear triangular (the shadow of Laubry and Bordet) due to rotation of the heart by the dilated pulmonary artery.\textsuperscript{3} On fluoroscopy, one might see a pulsation known as Pezzi’s sign or the “hilar dance.”\textsuperscript{2} Echocardiography may sometimes detect a PAA.\textsuperscript{6} While angiography has been the gold standard of diagnosis, CT and magnetic resonance imaging have recently become important alternatives.\textsuperscript{9} With CT, it may be necessary to time the injection of contrast medium to fill the pulmonary vessels at the moment they are imaged. A pulmonary artery aneurysm may exhibit slow emptying of contrast medium because of the loss of elastic tissue.\textsuperscript{7}

Corrective procedures for PAAs have included resection, lobectomy, aneurysmorrhaphy, or banding.\textsuperscript{1} Embolotherapy with particulate matter or balloons is an option if the lesion is peripheral.\textsuperscript{1}

The prognosis of PAA is not clear. Some estimate that up to one third of patients with PAA die of rupture.\textsuperscript{9} Others point out that the natural history is hard to determine, since one may not know the age of an aneurysm at the time of detection.\textsuperscript{10} Some PAAs have gone on to rupture year after year without rupture.\textsuperscript{10} Mycotic PAAs secondary to pneumonia have presented with rupture during the acute infection\textsuperscript{9} and as an incidental finding approximately 5 decades after the presumed infectious insult.\textsuperscript{5} Hemoptyisis usually indicates an unstable aneurysm.\textsuperscript{1}

The case reported here shows how the diagnosis of PAA easily may be overlooked. In this case, pneumonia was the only clue associated with PAA, and conventional imaging supported the diagnosis of a solid mass. While PAAs have on occasion been mistaken for a soft mass,\textsuperscript{1,2,4,5} the case reported here is unusual in that even CT failed to reveal the vascular origin of the mass. The most important factor in diagnosis may be a high degree of suspicion. In the postantibiotic era, when major causes of PAAs such as tuberculosis and syphilis are less common, it is still important to remember PAA in the differential diagnosis of a lung mass.

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REFERENCES


Nephrobronchial Fistula and Lung Abscess Resulting From Nephrolithiasis and Pyelonephritis*

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There are multiple etiologies reported as causes of lung abscess; however, this differential rarely includes intra-abdominal abnormalities other than extension of a hepatic process. We describe a patient who was found to have a lung abscess and empyema resulting from the development of a nephrobronchial fistula secondary to nephrolithiasis and pyelonephritis. The patient had no urinary symptoms or known abdominal infection and the etiology of lung abscess was only incidentally discovered after chest CT revealed extension of pleural fluid below the diaphragm.

(CHEST 1995; 108:1166-68)

Key words: lung abscess; nephrobronchial fistula; pyelonephritis

Lung abscess and empyema are unusual complications of nephrolithiasis and pyelonephritis. Reviews of lung abscess, including a comprehensive analysis by Perlman and colleagues,\textsuperscript{1} frequently do not even mention urologic or renal disease as predisposing factors. We report a case of a patient who presented with fever and a productive cough and was found to have a lung abscess and empyema secondary to a nephrobronchial fistula from asymptomatic nephrolithiasis with pyelonephritis.

CASE REPORT

The patient was a 45-year-old healthy woman who noted the onset of a dry cough and temperatures to 39.4°C 2 months prior to hospital admission. These symptoms resolved spontaneously but recurred 1 month prior to hospital admission; the patient had a cough productive of thick brown sputum and night sweats. An outpatient chest radiograph (CXR) showed right lower lobe consolidation and the patient was treated with 14 days of ciprofloxacin. Sputum production resolved, but the fevers persisted and she was

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CXR=chest radiograph

Selected Reports

1166
admitted to the hospital for further treatment.

The patient had no history of prior medical problems, aspiration, travel, or unusual exposures. A clerical worker, she was married with two children, and reported no history of tobacco, alcohol, or illicit drug use. Review of systems was remarkable for a 2.25-kg weight loss, fatigue, and mild dyspnea on exertion. Physical examination revealed a healthy-appearing woman in no acute distress. Her respiratory rate was 22, temperature was 37.1, and heart rate was 104. There was good dentition with a normal oropharynx, benign results from cardiovascular and abdominal examination, and no skin rash. Decreased breath sounds were noted in the right lung base with associated dullness to percussion. The hospital admission CXR showed a large air-fluid level in the right hemithorax with elevation of the hemidiaphragm and a rounded opacity in the right upper quadrant suspicious for gallstones. The WBC was 26,000 with a hemoglobin of 10.4 g/dL, iron studies were consistent with anemia of chronic disease, and results of serum chemistry studies were normal. Hospital admission urinalysis showed 3+ leukocyte esterase with 20 WBCs per high-power field and microscopic hematuria.

Chest CT revealed a large pulmonary abscess with thickened walls, internal septations, and an air-fluid level. As the scan extended inferiorly, the abscess was noted to communicate with a multiloculated fluid collection that crossed the diaphragm and extended into the retroperitoneum surrounding a markedly dilated right renal pelvis and calyces that contained a partially fragmented staghorn calculus. The dilated right kidney extended from the liver margin to the iliac crest. Figures 1 through 3 illustrate the findings on the admission CT.

The patient was started on a regimen of broad-spectrum antibiotics and had placement of a 12F pigtail catheter into the retroperitoneal fluid collection. Contrast via the retroperitoneal drain showed free communication with the right lower lobe bronchus and a pleural drain was also placed. The fever and leukocytosis resolved, and 1 week after hospital admission, the patient underwent a right nephrectomy and empyema drainage. Histologic examination of the kidney showed xanthogranulomatous pyelonephritis with nephrolithiasis. Streptococcus viridans grew from urine cultures obtained at hospital admission. The patient was discharged from the hospital in good condition 5 days postoperatively.

**Discussion**

Although rarely discussed as an etiology of lung abscess, empyema, or pneumonia, a review of the literature from 1900 through 1994 reports 23 cases of bronchial fistulas associated with perinephric abscess. Of 264 patients with perinephric abscess described by Nesbit and Dick, 6.4% had associated pulmonary abnormalities; however, only 2% had evidence of a nephrobronchial fistula. All of these patients had a history of pelvic or renal abscess or presented with complaints of flank or abdominal pain, sometimes in combination with a productive cough and fever, and were incidentally found to have elevation of the ipsilateral hemidiaphragm and a pneumonic process on hospital admission CT.

Caberwal and colleagues described a patient who was treated for a chronic lung abscess for 4 years before the

![Figure 1](http://journal.publications.chestnet.org/pdfaccess.ashx?url=/data/journals/chest/21722/)  
**Figure 1.** Hospital admission CXR following expectoration of purulent material. The air-fluid level confirms the connection with the airway. A staghorn calculus is visible in the right lower part of the radiograph.

![Figure 2](http://journal.publications.chestnet.org/pdfaccess.ashx?url=/data/journals/chest/21722/)  
**Figure 2.** Chest CT demonstrating a large abscess cavity in the right lower lobe communicating with the retroperitoneal space at the level of the diaphragm.

![Figure 3](http://journal.publications.chestnet.org/pdfaccess.ashx?url=/data/journals/chest/21722/)  
**Figure 3.** Abdominal CT demonstrating the staghorn calculus with multiloculated abscesses involving the right kidney and retroperitoneum. Higher levels demonstrate direct extension of the abscess from the retroperitoneal collection into the lung cavity.
nephrobronchial fistula resulting from his prior pelvic abscess and abdominal operations was discovered. In our patient, symptoms were limited to fever and respiratory complaints without any urinary symptoms, flank pain, or history of abdominopelvic abscess or surgery. The actual cause of the patient’s lung abscess was unknown until demonstrated by chest CT.

Various organisms, including tuberculosis, have been cultured from the sputum, urine, and kidney specimens in patients with nephrobronchial fistulas. However, Escherichia coli and Proteus species account for approximately one third of the cases. Xanthogranulomatous pyelonephritis has previously been reported in association with lung abscess owing to its invasive nature. The preference for extension of inflammation superiorly through the diaphragm was described by Evans and coworkers who noted that the lines of fusion of the renal fascial planes tend to direct the exudate within the retroperitoneal compartment. These patients typically respond well to drainage and antibiotic therapy, but often require nephrectomy as did our patient. This report emphasizes the need to consider renal abnormality as a predisposing factor for lung abscess and empyema, even in the absence of abdominal pain or urinary symptoms.

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Painless Ischemia Provoked by Mental Stress in the Coronary Care Unit*

Scott W. Sharkey, MD; Nancy B. Aberg, RN; Leona Trost, RN; and Wendy S. Shear, MD

A 30-year-old man suffered a cardiac arrest after setting fire to his home. Continuous ST segment electrocardiographic monitoring in the Coronary Care Unit detected painless ST segment depression during an interview with a police officer. At angiography, the patient proved to have severe three-vessel coronary artery disease. This case demonstrates the clinical

t value of continuous ST segment monitoring in the ICU. In addition, the case illustrates that mental stress is a potential trigger for acute myocardial ischemia in the ICU.

(CHEST 1995; 108:1168-69)

Key words: electrocardiogram; mental stress; myocardial ischemia

It is well known that patients with coronary artery disease frequently experience episodes of painless ST segment depression. Elegant physiologic studies have documented that this ST segment depression is an electrocardiographic marker for myocardial ischemia. Because of advances in computer technology, continuous recording of the ST segment in multiple electrocardiographic leads is readily available in the ICU. We recently observed and recorded an episode of profound painless myocardial ischemia in a 30-year-old man. The episode of myocardial ischemia was clearly precipitated by mental stress.

Case Report

A 30-year-old man was admitted to the coronary care unit (CCU) for observation following a possible cardiac arrest. On the day of admission, the patient was involved in a domestic dispute during which he set fire to his kitchen. As the patient was being arrested by police officers, he suddenly developed a "seizure" and lost consciousness. The fire department crew attached a semiautomatic defibrillator to the patient. The device recommended defibrillation. Two consecutive shocks of 200 J each were delivered to the patient who then suddenly awoke and was transported to the emergency department. On arrival, the patient was awake, alert, in sinus rhythm, and without overt evidence of cardiac disease. His only risk factor for coronary artery disease was a known elevated cholesterol level. The carbon monoxide level was normal. The urine toxicology screen was negative for cocaine and other drugs. The recording of the cardiac rhythm which triggered pre-hospital defibrillation was stored in the computer of the semiautomatic defibrillator and unavailable for review. Given the circumstances, the admitting physicians considered the possibility of a feigned seizure. Nonetheless, the patient was admitted to the CCU for observation. Serial ECGs and creatine kinase enzyme measurements showed no evidence for acute myocardial infarction. The baseline ECG did show ST segment depression (less than 1.0 mm) in the inferior leads. The patient’s heart rate, rhythm, and ST segments were monitored continuously in electrocardiographic leads 2, 3, and V3 (HP Model 56 Component Monitoring System; Hewlett-Packard; Andover, Mass).

The next morning at approximately 10:45 AM the patient was interviewed by a detective from the arson squad. During the interview, at 10:51 AM, the monitoring system issued an alarm for ST segment depression occurring in limb leads 2 and 3 (Fig 1). A standard 12-lead ECG recorded at 11:33 AM confirmed the presence of significant ST segment depression in several leads. A graphic presentation of heart rate and ST segment deviation in lead 2 prior to and during the interview is shown in Figure 2. Despite immediate questioning, the patient denied any symptoms of angina pectoris. A coronary angiogram was performed the same day which revealed severe three-vessel coronary artery disease with anterior wall hypokinesia. The use of an IV beta-blocker was considered but not implemented. The patient underwent successful coronary artery bypass grafting the next day. Subsequently, the information stored in the computer of the semiautomatic defibrillator was recorded on paper. The patient’s prehospital rhythm was clearly ventricular fibrillation. After discharge, lipid analysis was as follows: total

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