Pleural Empyema Secondary to Pyonephrosis

To the Editor: Pleural empyema is rarely extrapulmonary in origin, but when such is the case, the location of the source is of utmost importance in order to fully monitor the process. We report the case of a woman with pyonephrosis secondary to xanthogranulomatous pyelonephritis that first manifested as massive pleural empyema.

A 51-year-old woman came to the emergency department complaining of dyspnea with moderate effort, accompanied by asthenia and pain in the left side. Her medical history included type 2 diabetes mellitus, for which she was taking oral antidiabetic drugs, and iron deficiency, for which she was taking an oral iron supplement. She had also suffered several episodes of kidney stones. The physical examination on auscultation only revealed diminished vesicular sounds in the left hemithorax with bronchial breath sounds indicative of pleural effusion. A complete blood count gave hemoglobin levels of 6.4 g/dL, with a mean corpuscular volume of 68 fL, a white cell count of 26 750/L (95% polymorphonuclear cells), and glucose levels of 220 mg/dL. The chest radiograph revealed a massive pleural effusion on the left side. A thoracocentesis was performed and analysis of the purulent material extracted showed a white blood cell count of 55 000/L (90% polymorphonuclear cells), a pH of 6.04, a glucose concentration of 1 mg/dL, and a lactate dehydrogenase level of 10 266 UI/L. A pleural drain was inserted and a course of treatment with a broad spectrum antibiotic was started. Microbiological cultures of the pleural fluid revealed the presence of gram-negative bacilli (*Proteus mirabilis* and *Escherichia coli*). Several days later, despite treatment, the patient still had fever, general discomfort, and pain in the left side. Computed tomography revealed fistulous communication between a left renal abscess and the ipsilateral pleural cavity (Figures 1 and 2). A left nephrectomy was performed, with resection of the nephropleural fistula. The pathology report noted the presence of chronic xanthogranulomatous pyelonephritis with almost total destruction of the excised kidney, several coral calculi, and abundant purulent material.

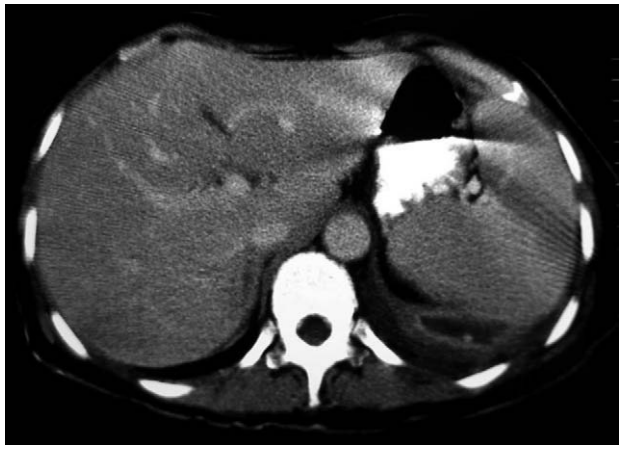

Figure 1. Fistula between the abdominal and pleural cavities.

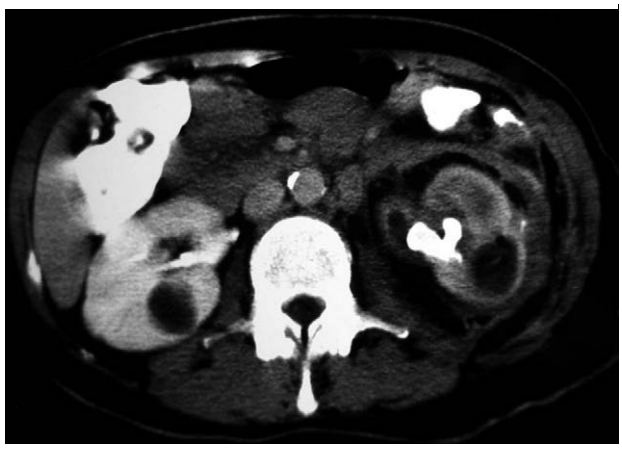

Figure 2. Left renal abscess causing destruction of the parenchyma and coral calculi formation in the renal pelvis.

Pleural empyema is defined as the presence of purulent pleural fluid, positive Gram stain or culture, largely originating from primary pulmonary processes. The cause is extrathoracic[1] in only a small proportion of the cases, although 3% to 5% are known to originate below the diaphragm. Around 70% to 85% of renal processes may produce pulmonary lesions[2] (small atelectases or small pleural effusions) and, despite their relative frequency, they are not mentioned as a trigger in the guidelines of the Spanish Society of Pulmonology and Thoracic Surgery (SEPAR) for the diagnosis and treatment of pleural effusion.[3] Massive empyemas, like the one described here, have been reported in very few cases.[1,4,5] Such large empyemas are difficult to manage, since they are sometimes silent or manifest with thoracic symptoms, as in this case. Only the persistence of infectious symptoms led to the undertaking of radiographs, which revealed the primary cause of the process and resulted in a much more aggressive approach to treatment.

The association of kidney stones and gram-negative bacilli is quite common.[6] However, these pathogens are extremely rare in primary pulmonary processes, and their presence in the pleura should rule out an associated urinary tract infection.[7] Imaging techniques, such as computed tomography, magnetic resonance imaging, or even ultrasound, may be extremely useful for pinpointing the main cause that might otherwise go unnoticed.

The SEPAR guidelines[3] recommend a battery of tests that can suggest a probable diagnosis, although most tests target the thorax and fail to search for other possibilities, such as a focus in a subphrenic, digestive tract, or retroperitoneal location. Therefore, because of the prevalence and particular management of kidney disease, we recommend that this be considered as a cause of effusion and even of empyema in future reviews on the management and treatment of pleural effusion.

José María Hernández Pérez,[a] Pedro Miguel Rodríguez Suárez,[b] and Jordi Freixinet Gilart[b]

[a]Sección de Neumología, Hospital General de La Palma, Breña Alta-La Palma, Santa Cruz de Tenerife, Spain
[b]Servicio de Cirugía Torácica, Hospital Dr. Negrín, Las Palmas de Gran Canaria, Las Palmas, Spain

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