Pleuritic pain and fever

JV Mendez, E Castro, M Dorao, S Pedraza

A 29-year-old woman with recurrent urinary infection and flank pain, presented with a four-day history of left pleuritic pain and fever of 38°C. Chemical analysis demonstrated microcytic anaemia and leukocytosis. The urine analysis showed pyuria and proteinuria.

Figure 1 A posterior-anterior radiograph of the thorax reveals a left pleural effusion without evidence of an effect on the lung parenchyma

Figure 2 (A) Computed tomography (CT) after intravenous contrast administration, shows an homogeneous, water-density collection (asterisk) with wall enhancement, in the left subphrenic space, adjacent to the superior pole of the kidney and anterior pole of the spleen (S). (B) In a lower slice, a diffusely enlarged left kidney is seen, with the normal parenchyma replaced by multiple low-attenuation masses. The renal pelvis is small and contains a central calculus

Questions

1 Suggest three differential diagnoses?
2 With these radiologic features, what is the most likely diagnosis?
Pleural effusion and fever

**Pulmonary pathology**
- pulmonary embolism with infarct
- parapneumonic effusions

**Pleural pathology**
- infection: tuberculosis, virus
- neoplastic: metastasis, bronchogenic cancer, mesothelioma
- drugs: methysergide and lupus-like drug group
- others: systemic lupus erythematosus and rheumatoid arthritis

**Abdominal pathology**
- pancreatitis
- subphrenic abscess
- others: hepatic cirrhosis, chronic renal failure

### Box

**Answers**

**QUESTION 1**

Faced with a left pleuritic pain with pleural effusion, we should consider three main aetiologic groups (box).

Thromboembolism with infarction and pneumonia with parapneumonic effusion are the most frequent causes of pleural effusion and fever, generally associated with lung condensation. Pleuritis of infectious origin (tuberculosis and viral) is a not infrequent cause of fever and pleural effusion without lung infiltrates. Pleural tumours usually show up in radiographs as extrapulmonary masses associated with an effusion or as an isolated pleural effusion. Metastases are the most frequent pleural tumours: from bronchogenic carcinoma, lymphoma and metastatic dissemination of adenocarcinomas. Primary pleural neoplasms such as mesothelioma are infrequent. Other causes of primary pleural pathology with effusion are autoimmune diseases like systemic lupus erythematosus or rheumatoid arthritis and drugs such as methysergide and the lupus-like drug group.

Finally, we should not forget the numerous abdominal processes that can produce pleural effusion by inflammation of the diaphragm and diaphragmatic pleura. Acute pancreatitis is a frequent cause of left pleural effusion. Hepatic cirrhosis with portal hypertension and renal failure can produce unilateral or bilateral pleural effusions, the patient's history providing clues for the diagnosis. Subphrenic abscess may be associated with pleural effusion. It is more frequent in postoperative patients but can also appear in patients without surgical history as a complication of cholecystitis, diverticulitis, appendicitis, perforated peptic ulcer, Crohn's disease and renal diseases such as pyonephrosis and xanthogranulomatous pyelonephritis.

**QUESTION 2**

The most likely diagnosis is xanthogranulomatous pyelonephritis with subphrenic abscess and secondary pleural effusion.

**Comment**

Xanthogranulomatous pyelonephritis is an uncommon inflammatory process of the kidney characterized by destruction and replacement of renal parenchyma by typical foamy histocytes. It usually affects adults in the 5th through 7th decades of life, although infants may also be affected. Approximately 70% of patients are women. Most patients have fever and flank pain. Prior urinary tract infection, malaise, weight loss and palpable flank mass are also frequent. Laboratory studies show an elevated erythrocyte sedimentation rate, anemia and leukocytosis. More than 80% of patients have pyuria and proteinuria. *Escherichia coli* and *Proteus mirabilis* are the most frequent infecting organisms in urine cultures. Before the introduction of CT and ultrasound, the correct pre-operative diagnosis was infrequent. With the appropriate clinical setting, plain radiographic findings of renal enlargement and renal calculi (seen in more than 80%, predominantly staghorn calculi), and intravenous urographic findings indicating poor or no function, the diagnosis of xanthogranulomatous pyelonephritis should be suspected. Subsequently, CT should be performed to characterise renal involvement and to assess the frequent extrarenal signs of an inflammatory process. These are usually found in the perirenal space, subphrenic space, psoas muscle and lateral abdominal wall. The renal pelvis is typically contracted with central renal calculi. Treatment is total nephrectomy unless both sides are affected, in which case conservative surgery, such as partial nephrectomy, should be performed.

**Final diagnosis**

Xanthogranulomatous pyelonephritis with subphrenic abscess and secondary pleural effusion.

**Keywords:** xanthogranulomatous pyelonephritis, pleural effusion

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