Infected kidney stone progressing to perinephric abscess and thoracic empyema

Antonio Tufano 1, Rocco Minelli 2, Giovanni Di Lascio 1, Giampaolo Delicato 3, Giulio Baffigo 3, Stefano Signore 3

1 Department of Maternal-Child and Urological Sciences, Sapienza Rome University, Policlinico Umberto I Hospital, Rome, Italy;
2 Department Life and Health “V. Tiberio”, University of Molise, Campobasso, Italy;
3 Department of Urology, Sant’Eugenio Hospital, Rome, Italy.

A perinephric abscess can result from complications of pyelonephritis or hematogenous spread of infection. An abscess is usually diffuse liquefaction between the Gerota’s fascia and renal capsule. Symptoms are nonspecific and usually include flank pain, fever and sometimes dysuria. Laboratory evidence of pyuria and proteinuria may also be present. Inflammatory markers including ESR and CRP are usually elevated and should be considered in a patient who does not improve despite appropriate antibiotics therapy. CT with contrast is the best imaging modality for diagnosis of perinephric abscess and evaluation of abscess extension into surrounding organs (1).

Regardless of their site and origin, renal parenchymal abscesses may evolve in one or more of the following ways: perforation of the renal capsule and formation of perinephric abscess, extension toward the renal pelvis and drainage into the collecting system or development into a chronic abscess. The diaphragm is normally an effective barrier to the spread of infection. Approximately 15% of subdiaphragmatic abscesses are complicated by empyema (2). When subphrenic abscess is complicated by transdiaphragmatic spread of infection, there is a significant increase in both mortality and morbidity. Empyema following abdominal infection has been described but the pathobiological mechanism is poorly understood. There has been considerable debate in the past about the method of spread of infection from the abdomen to the chest. In 1929, Lemon and Higgins showed that spread from subphrenic abscess can be by bacterial migration through lymphatics (3). Harley (1955) believed that infection does not pass through the diaphragm by the lymphatics and that empyema is always the result of direct rupture of an abscess through the diaphragm into the pleural cavity (4). The possibility of septicaemic spread to the lung and pleura also makes the lymphatic transfer hypothesis uncertain. Subphrenic abscess is the most common origin of pleural empyema from below the diaphragm.

In this case the result of culturing abcess material, obtained by surgical drainage revealed Citrobacter Koseri. Citrobacter, a member of the Enterobacteriaceae family, comprises a group of aerobic, Gram-negative bacilli that are frequently found in water, soil, food and animal and human intestines (5). The most common sources of Citrobacter are urine, sputum and soft tissue exudates (6). The usual sites of Citrobacter infection include the urinary tract (39%), gastrointestinal tract (27%), wound or decubitus (10%) or other sites (11%) (7). Citrobacter infections are usually found in compromised hosts, patients aged > 60 years and neonate (8). The infections usually occur in inflamed or shocked tissue before bacteremia takes place. C. koseri is intrinsically sensitive to antibiotics active against Gram-negative bacilli except for amino- and carboxy-penicillins (9).

Treatment of perinephric abscesses are usually done with antibiotics by intravenous route, and drainage of the abscess, if the abscess is small and there is pus out of the urine, the placement of a double “J” catheter can be enough. The percutaneous route by needle where the collection of liquid or pus is aspirated, or the nephrostomy placement is another good alternative; only in cases where drainage is not adequate or as it happened in this case where the involvement was massive, nephrectomy is necessary (10).

References


Correspondence
Antonio Tufano, MD
antonio.tufano91@gmail.com
Giovanni Di Lascio, MD
Department of Maternal-Child and Urological Sciences, Sapienza Rome University, Policlinico Umberto I Hospital
Viale del Policlinico 155, 00161 Rome (Italy)

Rocco Minelli, MD
Department Life and Health “V. Tiberto”, University of Molise,
Via Francesco De Sanctis 1, Campobasso 86100 (Italy)

Giampaolo Delicato, MD
Giulio Baffigo, MD
Stefano Signore, MD
Department of Urology, Sant’Eugenio Hospital, Rome (Italy)