Case Report

Renal Abscess due to Mycobacterium avium complex in a Human Immunodeficiency Virus-Positive Patient

Short running headline: Renal MAC Infection

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Disseminated *Mycobacterium avium* complex (MAC) infection usually involves tissues of the mononuclear phagocytic system (e.g. lymph nodes, spleen, and liver) (1). In contrast, renal disease due to MAC is rare (2-4). We report the first case of an HIV-positive man with a large renal abscess due to MAC infection.

**Case report**

A 41-year-old HIV-positive African man with a two-year history of macroscopic hematuria presented in renal failure complaining of fever and lethargy. The patient was normotensive and his temperature was 37.8°C. Marked peripheral oedema was the only other significant physical finding. Laboratory studies revealed the following relevant values: serum creatinine, 4.1 mg/dl; serum potassium, 5.4 mmol/l; hemoglobin, 7.6 g/dl; CD4+ T cell count, 100 X 10^6/L; HIV viral load, >750,000 copies/ml. An abdominal CT scan demonstrated an enlarged left kidney with multiple sharply outlined hypodensities suggestive of renal tuberculosis or a cystic nephroma (Fig. 1). Analysis of three early-morning urine specimens revealed hematuria, pyuria, and the persistent presence of acid-fast bacilli (AFB). Blood cultures were sterile.

Standard antituberculosis treatment (rifampicin, isoniazid, pyrazinamide and ethambutol) produced defervescence and clinical improvement within one week. Antiretroviral combination therapy (indinavir, lamivudine and stavudine) was commenced after one month and the antituberculosis treatment adjusted accordingly. The patient re-presented four weeks later with a convulsion and worsening renal failure possibly secondary to his isoniazid and indinavir therapies. All chemotherapies were ceased, peritoneal dialysis commenced, and the patient's physical condition slowly improved. Unfortunately, he developed bouts of confusion, paranoia and depression, and committed suicide by hanging (cause of death mechanical asphyxia) during one of these episodes. A post-mortem examination showed two pale kidneys which were difficult to decapsulate. The enlarged left kidney (340 g) contained an abscess (5 X 2 cm). Microscopic examination of both kidneys revealed a chronic interstitial nephritis with interstitial fibrosis. Around the
abscess there was a diffuse infiltrate consisting of lymphocytes, foamy macrophages and plasma cells. Distinct granulomas were not formed. The infiltrate contained mainly fragmented AFB, these findings being more pronounced in the left than the right kidney. Mycobacterial laboratory investigations completed after the patient's death found that 3 early-morning urine samples contained MAC. Blood and alveolar lavage cultures for MAC remained negative.

MAC has been detected in the urine of 43% of AIDS patients with disseminated infection (5), and autopsy studies have isolated MAC from the renal tissue of 8-55% of such cases (1,5). However, a literature review has found only three reports of HIV-positive patients with renal disease due to MAC: an AIDS patient with nephrocalcinosis associated with a MAC infection of the kidneys (2), another with nephropathy and renal localisation of a disseminated MAC infection (3); and an HIV-positive patient who developed a MAC infection of a renal allograft resulting in granulomatous inflammation and subsequent rejection (4).

Our case is the first reported example of MAC infection in an HIV-positive patient causing a clinical presentation similar to renal tuberculosis with abscess formation. The cause of the renal failure was probably related to the MAC infection. The interstitial nephritis observed at post-mortem examination may have been drug related (caused by the antiretroviral therapy ?). This patient's renal pathology preceded the introduction of HAART. Mycobacterial abscess formation is increasingly reported during HAART because of an immune restoration disease. Therefore it may be that in the future more mycobacterial abscesses of the kidneys will be observed.
References


Legend for figures

Figure 1: Abdominal CT Scan. Enlarged left kidney with multiple sharply outlined hypodensities.