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clinical practice

Renal tuberculosis: a case report

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SUMMARY: **Renal tuberculosis: a case report.**

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Tuberculosis or TB (tubercle bacillus) remains a major public health problem in developing countries. Over the last decades extra-pulmonary locations of the disease have become more frequent due to the increased prevalence of acquired immune deficiency syndrome and the increase number of organ transplants. The urogenital localization represents about 27% of all extra-pulmonary localizations of TB and may be due either to a disseminated infection or to a primitive genitourinary localization. The majority of patients, has pyuria, sometimes with hematuria. The diagnosis of urinary tuberculosis is based on the finding of pyuria in the absence of infection by common bacteria. The initial medical treatment includes isoniazide, rifampicin, pyrazinamide, ethambutol and streptomycin. This disease should be suspected in patients with unexplained urinary tract infections, especially if immunocompromised and/or coming from endemic areas.

KEY WORDS: Renal tuberculosis - Surgery.

Introduction

Tuberculosis (TB) is a disease induced by the *Mycobacterium tuberculosis* (MT) which causes a granulomatous immune reaction and a typical tissue necrosis called "caseous necrosis." In primary infection, the bacillus causes an inflammatory reaction at the site of entry that can heal with formation of sclerosis. The bacteria can also spread locally or throughout the body through the lymphatic system, blood, air, canalicular and contiguity (1-3). Renal infection, generally following the haematogenous spread of the MT, is characterized by the formation of micro-abscesses around the periglomerular capillary. The immune system is usually capable to block the disease with the formation of small inactive granulomas. These granulomas may remain dormant and asymptomatic for many years and they usually reactivate and grow when the host immunity became compromised. At this point start the florid stage of the disease in which the granulomas may coalesce with the formation of cavities. The latter may communicate with the calyces, and thus allowing the infection of the downstream anatomical structures such as the renal pelvis, ureter, bladder and urethra. A progressive destruction of the kidney then take place with the formation on the kidney surface of several scars and deformed excretory system filled with caseous material (pyonephrosis). The end result is the formation of fibrous tissue containing necrotic material commonly called chalk or putty kidney (2, 4-7). Different drugs are available for the treatment of tuberculosis, including isoniazide, rifampicin, pyrazinamide, ethambutol and streptomycin. Their combined administration for appropriate periods allows not only to cure the disease, but also to eradicate the MT avoiding relapses (2, 7). We previously mentioned that conditions causing a decreased efficiency of the immune system render the human body prone to TB. It is worth to mention as the acquired immune deficiency syndrome (AIDS) is held responsible for the reappearance of serious cases of TB that were almost completely disappeared in Western countries (8-10). In the present study, the clinical case of a 67 years old patient with sub-ileus intestinal obstruction caused by a large palpable mass occupying the entire left hemi-abdomen and found to be a chalk kidney following TB is presented.

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Case report

A 67 years old Italian male patient was admitted to the Emergency Room of the "Umberto I" Hospital of Rome for abdominal pain, constipation by 36 hours, but with bowel pervious to gas. The clinical examination revealed the presence in the left abdomen of a hard-elastic and fixed mass with irregular margins and a longitudinal diameter of about 30 cm. Blood parameters showed a slight neutrophilia (11,450 white blood cells/ml) and a moderate renal insufficiency (blood urea nitrogen and serum creatinine levels were elevated being, respectively, 54 mg/dl and 1.2 mg/dl). Computerized tomography (CT) scan with contrast medium of the thorax, abdomen and pelvis showed the presence of a retroperitoneal mass of renal origin completely filling the left retroperitoneal space, from the subdiaphragmatic area to the iliac fossa, with displacement of the spleen and the descending colon (Figure 1). It was decided to refer the patient to surgery. In order to perform a full abdominal exploration and to evaluate possible colic infiltration, as well as to evaluate the splenic lodge and the abdominal great vessels, a vertical median xipho-pubic incision was performed. The lesion described in the CT scan proved to be a huge post-tuberculosis chalk kidney (Figure 2). The isolation of the kidney with accurate control of the artery and vein allowed a classic nephrectomy. Postoperative course was uneventful and the patient was discharged on day eight with a home therapy based on isoniazid 250 mg twice a day. Six months after surgery, the patient was in good health and in the absence of signs and symptoms of TB disease.

Discussion

Tuberculosis is due to the *Mycobacterium tuberculosis* (MT), which is very resistant to environmental factors and cause in infected individuals a typical granulomatous immune reaction and tissue necrosis called caseous necrosis. MT can enter the body through mucous membranes or through the skin. The latter is an extremely rare occurrence and tends to remain localized (1-3). The course and evolution of tubercolosis are highly dependent on patients reactivity to the infection and on the route of infection and spread in the organism. Cell-mediated immunity effectively regulates bacterial restraint in granulomatous lesions, in most cases without entirely eradicating the bacteria, which persist in a latent state (2). Urogenital tuberculosis is responsible for 30% to 40% of all extrapulmonary cases and occurs in 2% to 20% of patients with pulmonary tuberculosis (2). It is a widespread disease in developing countries and is most prevalent in males aged between 30 and 50 years old. As above mentioned in the kidney the end result of the disease is the formation of fibrous tissue containing necrotic material commonly called chalk or putty kidney (1, 2, 4). The initial disease signs include storage symptoms, dysuria, hematuria, cloudy urine, fever, hematuria, back pain, which may associated to high blood pressure values (2, 4, 5, 7-10). The diagnosis of tuberculosis is formulated on the basis of medical history, clinical signs, instrumental examinations and the search for the Koch bacillus in lung sputum, pleural fluid, urine, cerebrospinal fluid, lymph node biopsies, etc. (2, 6, 8). Different drugs are available for the treatment of

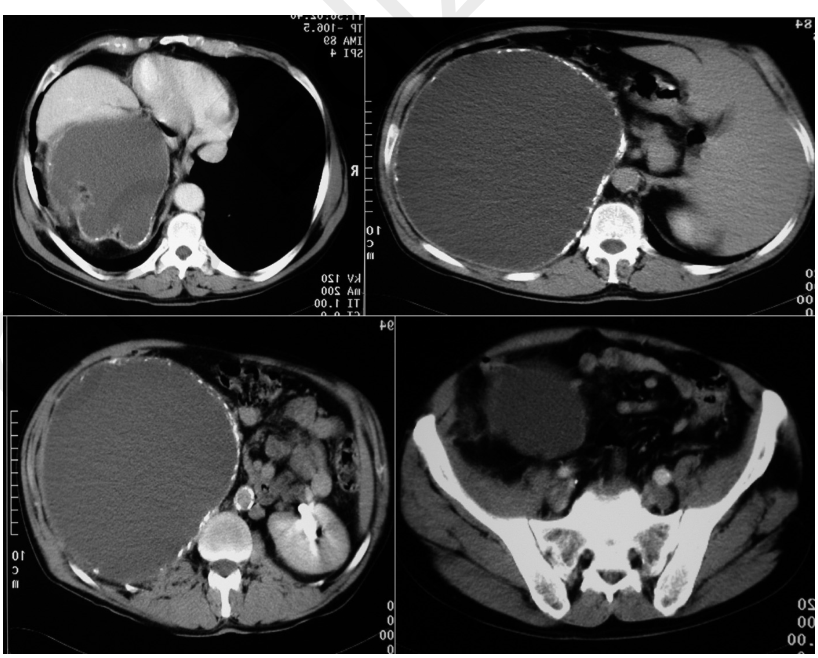

Fig. 1 - Computerized tomography scan with contrast medium of the thorax, abdomen and pelvis showing the presence of a retroperitoneal mass of renal origin completely filling the left retroperitoneal space, from the subdiaphragmatic area to the iliac fossa, with displacement of the spleen and the descending colon.

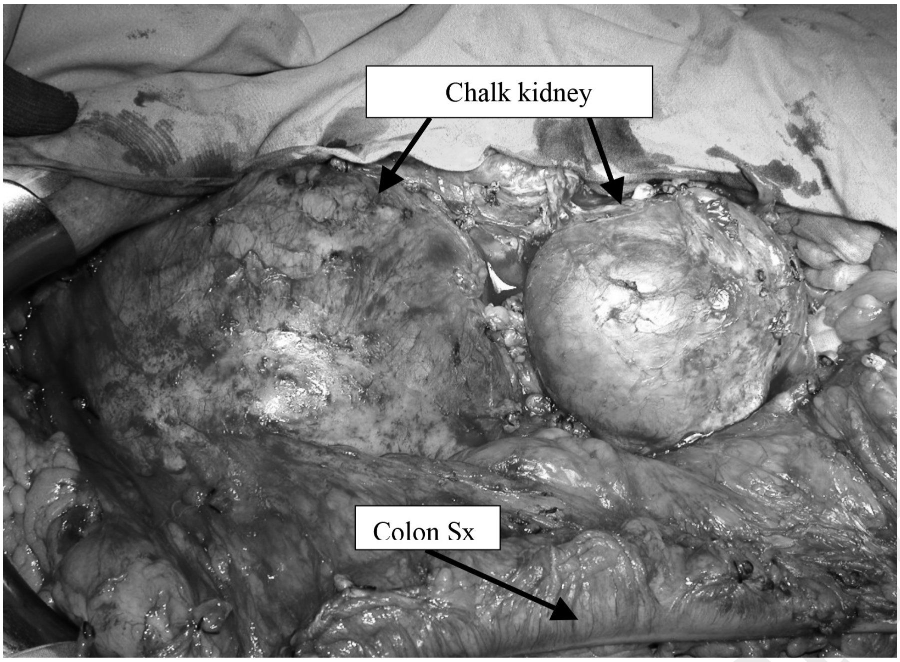

Fig. 2 - Intraoperative view of the renal lesion after opening the left parietocolic groove and mobilization of the left colon

tuberculosis. Their combined administration for appropriate periods allows not only to cure the disease, but also to eradicate the MT (1, 2). In agreement with epidemiological studies, the clinical case here reported describe the difficulties in the diagnosis of renal tubercolosis (2). Possible reasons for the delayed diagnosis are the insidious progression of the disease, non-specificity of the symptoms, lack of physician awareness, and poor careseeking behavior. As a consequence, the diagnosis of tubercolsis is rarely made before severe urogenital lesions develop and in about 6% of patients end-stage chronic renal failure develop (2).

Conclusions

Diseases such as tuberculosis, that have made the history of medicine, even in Italy are having a new peak of prevalence mostly due to immigration flows and increasing use of immunosuppressive therapies. A worrying underestimation of renal tuberculosis is actually evident. This may be responsible for the delayed diagnosis leading to the development of renal failure and uremia, complications which are largely preventable by a correct and timely diagnosis followed by an appropriate therapy.

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