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Obstructive Uropathy Secondary to Extrapulmonary Tuberculosis

Oladimeji OM[1], Akinola O[2]and Akinola R A[3]

[1.]Department of Internal Medicine, Lagos State University Teaching Hospital, Ikeja, Lagos
[2.]Royan Hospital, Lagos.
[3.]Department of Radiology, Lagos State University Teaching Hospital, Ikeja, Lagos

ABSTRACT

Renal tuberculosis is an uncommon manifestation of extrapulmonary tuberculosis, due to its insidious onset and non-specific constitutional symptoms, which makes it difficult to make proper diagnosis. If renal tuberculosis is not treated early, it can disseminate into the genitourinary system resulting into ureteric obstruction, hydronephrosis or pyonephrosis. This is the case of a 31 year old lady with obstructive uropathy from extrapulmonary tuberculosis.

CASE REPORT

Mrs O.U is a 31 year old female who presented with 1 week history of left flank pain prior to presentation. The pain was graded as 3 on a scale 0 to 10 (10 been the most severe pain) and was described as a dull pain, which was non-colicky and not sharp. The pain was not radiating and was not referred to other parts of the body, and pain was relieved with the use of analgesics.

There was no history of nausea, vomiting, fever, dysuria, frequency, nocturia, urgency, straining on micturition, haematuria, cough, haemoptysis, chest pain, breathlessness, and no history of weight loss or drenching night sweats. There was a background history of contact with aunt who was treated for pulmonary tuberculosis and younger sibling who was diagnosed with tuberculosis but refused treatment. She had a history of pregnancy induced hypertension, but no history of diabetes.She does not smoke cigarette, but she occasionally drinks alcohol. There was no known history of drug allergy.

Examination finding revealed a young lady, not pale, anicteric, afebrile, acyanosed, not dehydrated, no significant peripheral lymphadenopathy, and no pitting pedal oedema. Cardiovascular examination revealed a pulse rate of 70bpm, blood pressure was 100/70mmHg, no raised jugular venous pressure, apex beat was located at the 5th left intercostal space mid clavicular line, and only the 1st and 2nd heart sounds were heard. Abdomen was full, moves with respiration, there was left lumbar tenderness, and presence of left renal angle tenderness. No organ was palpable, no ascites and bowel sounds was normoactive. While digital rectal examination was normal. Chest examination findings revealed a respiratory rate of 20cycles per minute, trachea was central, equal chest excursion, tactile fremitus was equal, percussion note was resonant, vocal resonance was equal, with vesicular breath sounds. While neurologic examination was essentially normal.

Results of investigations included; chest x ray which was normal, sputum acid fast bacilli (3 different samples) was negative, sputum microscopy culture and sensitivity grew staphylococcus aureus sensitive to cefuroxime. Urinalysis shows numerous pus cells and culture yielded no growth. HIV, HBV and HCV were negative. Other laboratory results are as represented in table 1. Abdomino-pelvic ultrasound scan revealed liver was normal in size and echo-texture. Right kidney measured 10.5 by 3.96cm with good corticomedullary differentiation. Left kidney measured 11.4 by 6.32cm, with moderate dilatation of the left renal calyces suggestive of hydronephrosis, while other organs were normal. Abdominopelvic CT

Corresponding Author: **Oladimeji,** Department of Internal Medicine,Lagos State University Teaching Hospital, Ikeja, Lagos

Table 1: Laboratory results

Parameters	**13/08/2016**	**07/11/2016**	**16/11/2016**	**18/11/2016**
PCV (%)	41			40.7
WBC ($\times 10^9$/l)	8.4			7.7
Platelet ($\times 10^9$/l)	361			323
Neutrophil (%)	52			62.5
Lymphocyte (%)	39.7			30.3
Na^+ (meq/l)	139	138		
HCO_3^- (meq/l)	27	25		
Cl^- (meq/l)	95	96		
K^+ (meq/l)	3.8	4		
Urea (mg/dl)	65	32		
Creatinine (mg/dl)	1.8	0.8		
ESR (mm/hr)		110	71	58
Mantoux (mm)		3		
AST		12	11	
ALT		10	9	
ALP		99	25	
Total Bilirubin		1.99	0.97	
Conjugated bilirubin		0.44	0.43	

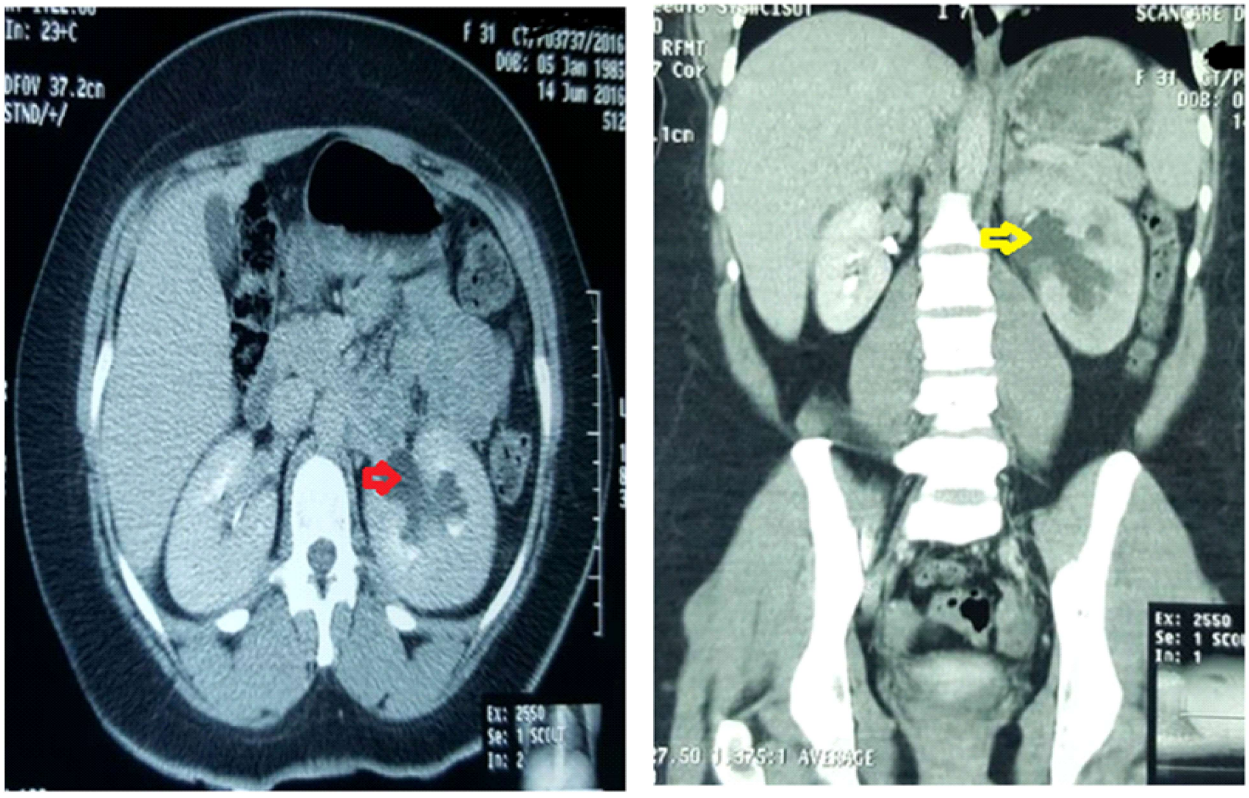

Fig. 1: Abdominopelvic CT scan showing left proximal hydronephrosis (as indicated by the pointers)

scan revealed left proximal hydronephrosis and stenosis at the mid ureter; this is as shown in figure 1.

She had cystoscopy and left ureteroscopy done, in which cystoscopy revealed normal appearing bladder, right ureteral orifice slightly higher on the trigone than the left. Findings on left ureteroscopy showed mid-ureteral luminal narrowing. Semi-rigid scope and flexible ureteroscope was unable to pass proximal to the stenosis. She further had open flank exploration and left ureteric exploration. Intraoperative findings included fibrosis at the upper and middle 3rd of the left ureter, with a retroperitoneal mass. Wedge biopsy of the left ureter and surrounding mass was taken. Macroscopic examination of the left ureteric mass revealed narrow lumen and thickened wall, with piece fatty tissue. While histologic features shows marked infiltrates of lymphocytes and plasma cells, with fibrosis of the muscular wall. The histology of surrounding mass shows areas of geographical necrosis and caseating granuloma, with langhans and foreign body giant cells. A diagnosis of obstructive uropathy secondary to extrapulmonary tuberculosis was made.

She had uretero-ureterostomy and stent placement, which was later removed. She was commenced on antituberculous medications which included the intensive phase of an oral rifampicin 600mg daily, isoniazid 300mg daily, ethambutol 800mg daily and pyrazinamide 1.2g daily for 2 months, and continuation phase of oral rifampicin 600mg daily and isoniazid 300mg daily for 4 months, with oral pyridoxine 25mg daily for 6 months. She made remarkable clinical improvement evident by resolution of symptoms (left flank pain), reduction in ESR (from 110mm/hr to 58mm/hr), and improvement in renal function after relieve of obstruction (as demonstrated by the improvement urea and creatinine). She became pregnant during the continuation phase and she continued her therapy till she completed 6 months regimen. There was no complication during the pregnancy, and she had normal delivery without any complications.

DISCUSSION

Renal tuberculosis is an uncommon manifestation of extrapulmonary tuberculosis, due to its insidious onset and non-specific constitutional symptoms, which makes it difficult to make proper diagnosis[1]. If renal tuberculosis is not treated early, it can disseminate into the genitourinary system resulting into ureteric obstruction, hydronephrosis or pyonephrosis[2].

Pulmonary tuberculosis accounts for 60% of the case of tuberculosis, while extrapulmonary tuberculosis represents the remaining 40%[3]. According to WHO, the incidence of tuberculosis in Nigeria is 322 per 100,000 population, while only 15% was said to be reported as at 2015[4]. There is paucity of data on the prevalence of extrapulmonary tuberculosis in Nigeria, however, WHO reported a prevalence of 5% among patients registered for directly observed treatment for short course (DOTS) in 2012[5]. Goni et al in North-Eastern Nigeria reported the prevalence of extrapulmonary tuberculosis to be 14.4% among patients registered at the DOTS clinic in 2014, out of which 28.5% had skeletal tuberculosis, 28% had TB adenitis, abdominal tuberculosis represented 21.2%, tuberculous pleural effusion was 12.8%, miliary tuberculosis 5%, TB meningitis was 1.7%, while others represented 5% (which included adrenal TB, breast, skin, genitourinary and TB pericarditis)[6].

The prevalence of genitourinary tuberculosis in Nigeria from other publications ranges from 2.9% to 14%[7,8,9]. Orakwe and Okafor[10] studied the pattern of genitourinary tuberculosis in Nigeria, and they reported the following pattern of distribution; kidney (16.3%), epididymis (58.4%), testis (9.3%), bladder (7%), and only 2 cases were seen to have ureteric involvement (4.2%), and one case involved the prostate(2.3%). This demonstrates the low prevalence of ureteric tuberculosis. The clinical spectrum reported in this study included testicular swelling and pain (80.6%), fever (51.6%), dysuria (22.6%), loin pain (19.3%), urgency (19.3%), and primary infertility (9.6%)[10]. However, less than 50% of patients with renal tuberculosis have active pulmonary tuberculosis[7]. Study by Chijioke and Aderibigbe[7] reported a similar clinical profile which included 43% presenting with increased urinary frequency, 36% had nocturia, 28.5% had loin pain, haematuria and dysuria were seen in 7% of the studied population, while 36% had renal angle tenderness, and only 2.7% of the patients had sterile pyuria. Worthy of note also, is that of the 148 patients with tuberculosis in the studied population, only one

patient had hydronephrosis. This patient presented with loin pain, coupled with a background history of contact with family members managed for tuberculosis increased the suspicion for genitourinary tuberculosis, although there was no evidence of active pulmonary tuberculosis.

The pathogenesis of tuberculosis of the urogenital system begins from haematogenous dissemination from the lungs. The haematogenous spread of the bacilli gets to the cortical glomeruli, which triggers mechanical stress and alteration in cell biology, and this result in an increase rate of protein synthesis, increases in the proliferation of mesangial cells and mesangial matrix deposition. There is also increase infiltration by inflammatory cells. The infection may remain limited to the renal parenchyma which can lead to glomerulonephritis or can also progress to gain access through the pelvi-calyceal system, which can result in granulomatous destruction of this pathway, with involvement of the bladder and ureter. This may progress to ureteric stricture and obstruction and can manifest as hydronephrosis or pyonephrosis[2].

Diagnosis is usually made by isolation of the causative organism via the urinary specimen or through characteristic features on histology. The characteristic histologic feature includes epitheloid granuloma with or without caseation and presence of langhans type giant cells. Mycobacterium bacilli may sometimes be demonstrated on histology, but are usually difficult to find[11]. Also worthy of mention is the presence of sterile pyuria, mantoux, and interferone gamma release assay, Gene Xpert, sputum AFB, sputum culture, chest x-ray which can all serve as pointers to diagnosis. The patient's diagnosis was made based on characteristic histologic evidence and supported by the presence of sterile pyuria, elevated ESR and positive history of contact, andalso she improved on anti-kochs. Although mantoux was negative in this patient, and this could be attributed to either false negative, faulty reagent, or poor technique in performing the procedure.

Therapy requires the use of four antituberculous drugs which include rifampicin, isoniazid, pyrazinamide, and ethambutol for 2 months as the initial intensive phase, and to continue with rifampicin and isoniazid for 4 months as the continuation phase[12]. In the advent of multidrug resistance, therapy should be based on drug susceptibility test, and usually, last for at least 18 months[13]. The indexed patient had 6 months of anti-kochs and improved clinically, with improvement in renal function.

Conclusion, urogenital manifestation of tuberculosis usually presents with non-specific symptoms, and can progressively cause irreversible damage to the kidney. Therefore, high index suspicion is necessary to make proper diagnosis, and early management can prevent progressive kidney damage.

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