Completely calcified non-functioning kidney: a classical image of putty kidney

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DESCRIPTION

A 56-year-old woman presented with symptoms of urgency, frequency and urge-incontinence for 3 years with intermittent episodes of fever. Her urine was acidic with few pus cells, but sterile on culture. Other laboratory tests were normal. Ultrasonography suggested hydronephrotic right kidney with internal echoes. X-ray kidney, ureter and bladder (KUB) show multiple lobulated calcifications in the right renal region conglomaterated into the shape of the kidney (figure 1). Contrast-enhanced CT reaffirmed a densely calcified non-excretory right kidney with a small contracted bladder suggesting urinary tuberculosis with right putty kidney and a thimble bladder (figure 2). With antitubercular treatment for 8 weeks, right simple nephrectomy with ileocystoplasty was performed. The specimen was grossly calcified and histopathology was suggestive of caseous necrosis and calcifications (figure 3).

Diagnosis of genitourinary tuberculosis with urine culture or histopathology is often delayed. Therefore, radiological examination is used widely to determine the same.¹ Primary renal infection remains confined in the glomeruli, but on

Figure 2 Contrast-enhanced CT showing completely calcified right kidney.

reactivation, it spreads into the medulla and interstitium.² Disease progress with periodic ruptures, granuloma formation, caseous necrosis and cavitation within the renal parenchyma. Host's healing response induces fibrosis, calcium deposition, and stricture formation, which contribute to obstruction and progressive renal dysfunction.³ The end result of diffuse disease is destruction, loss of function and calcification of the entire kidney.² Radiological findings in renal tuberculosis (TB) depend on the extent of the disease process and are best demonstrated on intravenous urogram and CT scan. Moth-eaten-calyx, amputated calyx, phantom calyx and autonephrectomy are seen with progress of disease.² Diffuse, uniform, extensive parenchymal calcifications in a non-functioning kidney forming a cast of the kidney is called as 'putty kidney' or 'autonephrectomy' and is a characteristic of end-stage renal TB.¹⁻³ The present X-ray KUB and CT is a classic example of such autonephrectomised putty kidney.

Figure 1 Diffuse alveolar calcification in right renal region in a shape of kidney.

Figure 3 HPE of cold cup biopsy suggestive of granulomatous cystitis (H&E stain, $\times 10$).

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Learning points

- ▶ Laboratory diagnosis in GUTB is often delayed and high index of suspicion required to procure them. Hence imaging has an important role in diagnosis.
- ▶ Radiological findings in renal tuberculosis (TB) depend on the extent of the disease process.
- ▶ Extensive parenchymal calcification in a non functioning kidney forming its cast is called a 'putty kidney' or 'autonephrectomy' which is a characteristic of end-stage renal TB.

Competing interests None.

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