Case 10688

Urinary schistosomiasis
(bilharziosis)
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Section: Uroradiology & genital male imaging
Area of Interest: Urinary Tract / Bladder
Procedure: Diagnostic procedure
Imaging Technique: Conventional radiography
Imaging Technique: CT
Special Focus: Calcifications / Calculi Case Type: Clinical Cases
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Patient: 48 years, male

Clinical History:
A 48-year-old male patient of central African origin presented to our emergency department, complaining of dysuria and urinary frequency. Macroscopic haematuria was present.

Imaging Findings:
A plain abdominal radiograph was obtained, showing complete calcification of the bladder wall, the appearance of which might be referred to as a "fetal head" calcification [2] (Fig. 1).

Computed Tomography (CT) showed irregular scarring of the bladder wall with calcium deposits as well as ureteral calcifications. Also visible were calcifications of the prostate and the seminal vesicles (Fig. 2, 3, 4).

Discussion:
Schistosomiasis, or bilharziosis, is a chronic parasitic disease caused by trematoda "flukes" called schistosomae, occurring in contaminated water. There are two major forms of schistosomiasis, intestinal and urogenital, the latter caused essentially by S. haematobium [1, 2]. Urogenital schistosomiasis is more widespread in sub-saharan Africa, the Middle East [1, 2]. The S. haematobium life cycle resembles that of other schistosomae [2]. Parasite eggs are released from infected humans into water and release miracidia that infect snails, the intermediary agent [1]. After infection, the miracidium transforms into sporocysts. With further division, numerous cercariae larvae are produced and excreted, capable of infecting humans as the definitive host. After skin penetration, they migrate as metacercariae into the liver, developing into mature paired "flukes". Migration continues into urinary bladder veins where the sexual cycle is finished with the liberation of new eggs, partially excreted with human urine, but partially remaining in the bladder wall mucosa, inducing a granulomatous reaction, responsible for parietal scarring and calcification [2, 3]. In progressing urogenital disease, calcifications of the ureters, the seminal vesicles, and the prostate appear [3].

The irritation of the bladder mucosa by the granulomatous reaction is responsible for the clinical presentation with macrohaematuria, pollacuria, and dysuria [1]. Chronic cystitis and ureteritis result, possibly progression to bladder cancer and infertility. Granuloma formation at the lower ureters may obstruct urinary flow, with subsequent development of hydronephrosis [2]. Lesions in the urinary bladder may take the form of protruding papillomatous and ulcerated structures [3]. The infection has been suggested as a risk factor for HIV infection [4].

In advanced disease stages, ringlike bladder and ureter calcifications become visible on abdominal radiographs, the
former resembling a fetal head in the pelvis [2]. Intravenous urography may show bladder wall irregularities with architectural distortion, ureteral stenoses, and chronic obstruction. Sonography shows bladder wall thickening, pseudotumoural papillary projections, hydronephrosis, and may detect urothelial tumours [2]. CT is the best examination to assess the entire urinary system for cancerous degeneration [3]. A definitive diagnosis of genitourinary schistosomiasis is based on detecting parasite eggs at microscopic urinalysis [5].

Prevention is best accomplished by eliminating freshwater snails, the reservoir of the disease. Acrolein, copper sulfate, and niclosamide can be used. In infested areas, morbidity may be reduced by preventive chemotherapy with praziquantel [5].

Schistosomiasis is the most common worldwide cause of bladder wall calcification [3]. Urine examination should be performed if S. haematobium infection is suspected [5].

**Differential Diagnosis List:** Urinary schistosomiasis (bilharziosis), Urinary stone disease, Bacterial or tuberculous cystitis, Primary urinary tract cancer, Status post intravesicular chemotherapy

**Final Diagnosis:** Urinary schistosomiasis (bilharziosis)

**References:**


Jade J. Wong-You–Cheong, MD; Paula J. Woodward, MD; Maria A. Manning, MD; Charles J. Davis, MD (2006) Inflammatory and Nonneoplastic Bladder Masses: Radiologic-Pathologic Correlation. RadioGraphics 2006; 26:1847–1868


Description: Plain abdominal radiograph showing "fetal head" calcification of the bladder wall. Origin: Geneva University Hospitals, Department of Radiology
Description: Non-enhanced axial CT shows irregular scarring of the bladder wall with calcium deposits as well as ureteral calcifications. Origin: Geneva University Hospitals, Department of Radiology
Description: Bladder capacity is reduced with near complete calcification. Origin: Geneva University Hospitals, Department of Radiology
Description: Seminal vesicles also show "honeycombed" calcifications. Origin: Geneva University Hospitals, Department of Radiology
Figure 3

Description: Sagittal reconstruction of contrast enhanced CT with "flat" bladder. Origin: Geneva University Hospitals, Department of Radiology