

An extremely rare case of dermoid cyst of urinary bladder

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Abstract

We report an extremely rare case of a dermoid cyst of the urinary bladder in a 30-year-old female who presented with pain in the left flank and dysuria since 9 months. On imaging (ultrasound and computed tomography), a relatively well-defined mass lesion with areas of fat and calcification was seen arising from the bladder wall. Cystoscopy showed presence of hair on the surface of the lesion. Histopathological findings were consistent with dermoid cyst in the urinary bladder.

Key words: Carcinomatous; cystoscopy; cystic teratoma; dermoid cyst; fat; urinary bladder

Introduction

Teratomas comprise a number of histologic types of tumors, most common being mature cystic teratoma (also known as dermoid cyst). It frequently consists of skin and sweat glands, while other commonly found components include clumps of long hair, pockets of sebum, blood, fat, bone, nails, teeth, eyes, cartilage, and thyroid tissue.^[1] Dermoid cysts can be found at various sites, most common being the ovaries. However, the occurrence of dermoid cysts in the urinary bladder is an extremely rare entity.

The first case of urinary bladder teratoma was reported by Marsden *et al.* in 1981 who studied the dataset of 137 children (age 0–14 years) from the Manchester University Children's Tumour Registry (MCTR).^[2] However, the essential nature of a teratoma was not clearly established in this review, and a broad term of "germ cell tumors" was used.

The first case of urinary bladder teratoma from Asia was described by Misra *et al.* in 1997 in a young Indian girl with a partially mobile mass on per rectal examination.

The mass had tufts of hair on cystoscopic examination; a provisional diagnosis of bladder teratoma was corroborated by histopathological examination and the mass was resected surgically.^[3]

Agrawal *et al.* described another case in a 29-year-old female with a yellowish-to-grayish white bladder mass on cystoscopy with multiple hair on its surface. Transurethral resection of the mass was done, and a diagnosis of mature teratoma of urinary bladder was confirmed.^[4]

To our knowledge, the last case of dermoid cyst of urinary bladder was reported by Okeke *et al.* in 2007 in a 34-year-old female with multiple tiny echogenic structures causing acoustic shadows in the urinary bladder.^[5]

Because only a few cases have been reported in the literature in the past, we report a case of dermoid cyst of urinary bladder and describe the ultrasound (US), computed tomography (CT), and cystoscopic findings of the same because these tumors, if detected early and diagnosed correctly, show a good prognosis after surgical excision.

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Case Report

Clinical presentation

A 30-year-old female presented to our hospital with the chief complaints of left flank pain and dysuria since 9 months. Patient had no complaints of fever or hematuria. There was a history of occasional tobacco chewing since the past 10 years. There was no relevant medical history or history of any surgical intervention. Physical examination was unremarkable apart from poor dental hygiene and some missing teeth. Laboratory investigations revealed normal hemoglobin level, total leukocyte count, kidney function tests, and viral markers. The routine urine examination was negative for red blood cells, white blood cells, protein, and glucose.

Transvaginal and transabdominal ultrasound scans revealed a 29×18 mm heterogeneously hyperechoic nondependent mass lesion [Figure 1A] arising from the right superior wall (dome) of the urinary bladder with multiple areas of calcification and dense posterior acoustic shadowing. Rest of the urinary bladder wall had normal thickness. Bilateral ovaries were normal in size and echotexture and were separate from the bladder wall [Figure 1B]. Uterus was normal in shape, size, and echotexture. No fluid or collection was noted in the pouch of Douglas.

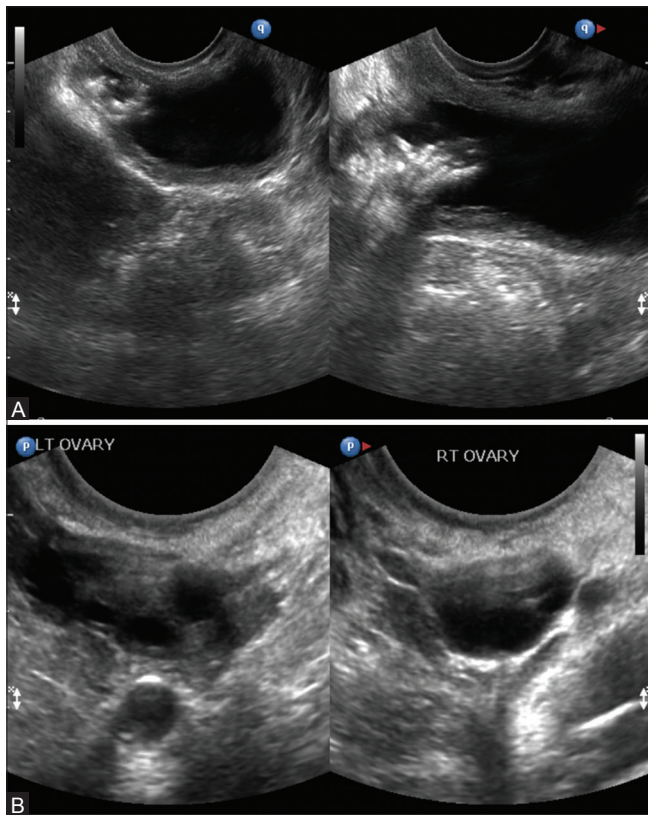


Figure 1 (A and B): (A) Transvaginal ultrasound in midsagittal plane. 29×18 mm heteroechoic mass in urinary bladder in superior part with areas of calcification and dense posterior acoustic shadowing. (B) Bilateral ovaries are normal with multiple follicles within

CT scan was performed and showed a 35×36 mm relatively well-defined heterogeneous mass lesion in the urinary bladder on the right side of the dome with multiple specks of calcification and internal discrete hypodense areas within the mass lesion (CT attenuation of fat) on noncontrast scans. Multiple linear strands of calcification were noted extending anteroposteriorly on both sides of the mass lesion. On postcontrast images, no enhancement of the mass lesion was noted. The mass lesion was protruding in the lumen and was also seen to extend laterally out of the bladder contour [Figure 2]; the lesion was close to but separate from the right ovary [Figure 3]. Rest of the urinary bladder was normal in outline and wall thickness. No fat stranding was noted in the surrounding areas. Few calcific foci were incidentally noted in the spleen along with left small kidney with a 22×19 mm calculus in renal pelvis causing moderate hydronephrosis. Rest of the abdominal viscera was unremarkable.

Cystoscopy and transurethral resection (TUR) biopsy revealed a hard bladder mass having hair and calcifications on the surface and yellowish fat in the centre involving the bladder dome on the right side. TUR biopsy specimen was sent for histopathological examination and revealed skin comprising stratified squamous epithelium (epidermis) and dermis with adnexal structures including sebaceous glands [Figure 4A] and sweat glands [Figure 4B]. Lobules of mature fat and densely fibrotic stroma were observed [Figure 5]. Based on imaging, cystoscopy, and histopathology, a diagnosis of dermoid cyst of urinary bladder was entertained.

Discussion

Calcification in the urinary bladder is a common finding with vesical calculi, inflammatory etiologies, and neoplastic lesions constituting the majority of the list. Calcification



Figure 2: Contrast-enhanced CT scan showing heterogeneous mass in the right dome of the urinary bladder extending laterally outside the bladder contour to the right side. Linear strands of calcification are seen on the left side of the mass lesion. Areas of calcification and fat are seen in the centre of the lesion

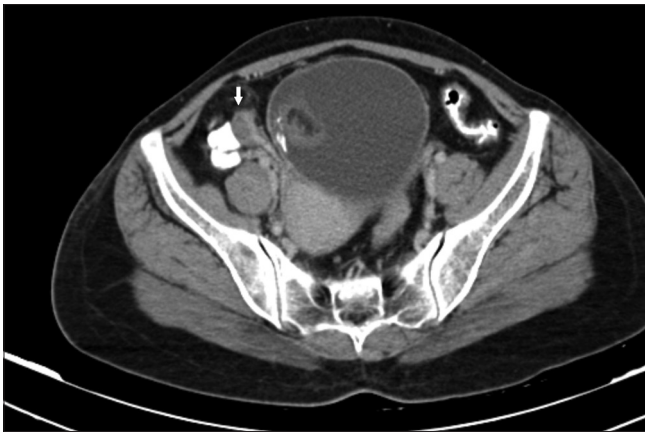


Figure 3: Contrast-enhanced CT scan (7 slices above Figure 2; 1 slice thickness = 3 mm) shows right ovary separate from the mass lesion

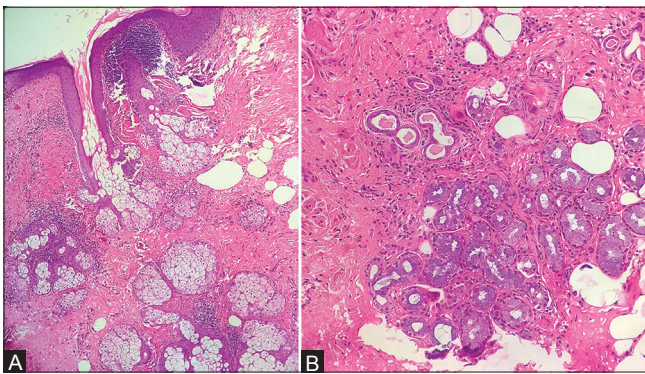


Figure 4 (A and B): (A) Photomicrograph showing stratified squamous epithelium with dermis revealing multiple sebaceous glands and dense fibrotic stroma (H and E, $\times 100$); (B) Sweat glands observed in another focus (H and E, $\times 200$)

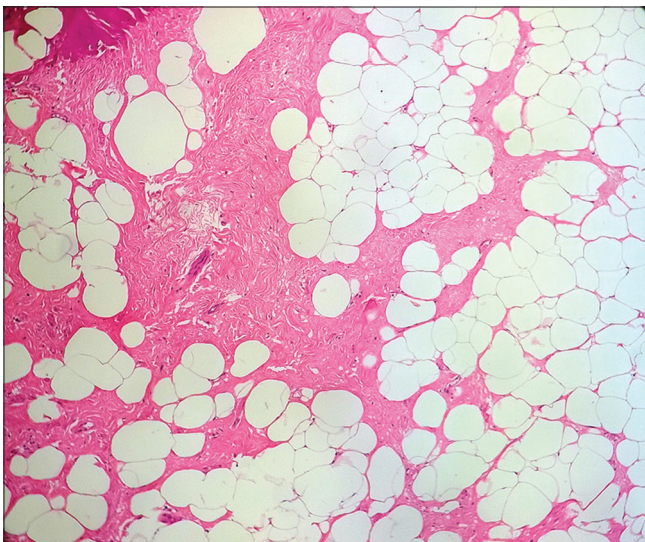


Figure 5: Photomicrograph showing lobules of mature fat (H and E, $\times 200$)

may be intraluminal or within the bladder wall. A chronic inflammation and irritation in the bladder wall or mucosa may lead to subsequent fibrosis, and eventually calcifications. Tuberculosis and schistosomiasis (caused

by *Schistosoma haematobium*) are such common causes of bladder wall fibrosis and calcification. The calcification in these cases can also extend into the distal ureters. Other infectious causes for bladder calcification, such as *Proteus* species, are rare as they require alkaline urine and a devitalized bladder tissue for their growth. Amyloidosis and bilharziasis, both of which occur submucosally are among the few other causes of bladder wall calcification.

Although the development of squamous cell carcinoma in the bladder secondary to a *Schistosoma* infection is well known, bladder tumors occurring *de novo* are also well-known to calcify. These tumors usually present as a sessile or a pedunculated intraluminal growth. Histological calcification occurs commonly in neoplasms of the bladder, however, the individual calcium deposits are usually too small to be appreciated radiographically.^[6] The incidence of radiographically visible calcification in the bladder tumors has been estimated to be approximately 0.5%.^[7] Calcifications are seen in epithelial (squamous and transitional cell carcinoma) and mesenchymal (leiomyosarcoma,^[8] neuroblastoma,^[9] hemangioma,^[10] osteosarcoma^[8]) lesions, being more common in the former. These tumors may have surface (commoner) or intrasubstance calcifications; and the calcifications may be punctate, linear, or coarse. Bladder calcification is usually dystrophic (i.e., occurring in the necrotic tissue) which can also occur post radiation therapy.^[8]

A few entities such as deposition of calcium salts around the balloon of Foley's catheter, a calcified pelvic hydatid cyst, or calcification of the mucosal surface of an enlarged prostate can simulate bladder calcifications. Kirks and Tyabi^[11] reported patients with prune belly syndrome in whom calcification was noted in the wall of urachal cyst.

Dermoid cyst of the urinary bladder is among one of the extremely rare causes of calcification in the bladder, and only a few cases have been reported in the literature. Dermoid cysts, or cystic teratomas, are encapsulated tumors which are composed of well-differentiated derivations from at least two of the three germ layers (i.e., ectoderm, mesoderm, and endoderm). The germinal elements may be in the form of hair follicles, sweat glands, and pockets of serum, fat, blood, bone, nail, teeth, cartilage, and thyroid tissue. Okeke *et al.*^[5] reported a case of dermoid cyst in the urinary bladder of a 34-year-old female with histopathological findings of skin and adnexal tissue (including hair follicles and sweat glands) interposed with adipocytes.

Dermoid cysts are very common in the ovary in young females. It may occur at multiple sites in the body, and urinary bladder is one of the rarest. It is frequently diagnosed on ultrasonography as an echogenic mass that shows a posterior acoustic shadowing owing to sebaceous material and hair in the cyst cavity or a calcific component within a cyst. A mural nodule corresponding to a mucus

plug (Rokitansky nodule) may be demonstrated. In a few cases, multiple mesh-like hair in the cyst appear in a dot-dash pattern. Bladder dermoids show the same pattern on ultrasound as the ovarian dermoids. CT scan is characteristic and has high sensitivity in demonstrating fat (areas of very low attenuation) and calcifications within a mass lesion. A Rokitansky protuberance or few tufts of hair may be identified. Finally, most lesions are surgically resected as majority of the dermoid cysts are benign in nature.

Thus, it is imperative to keep bladder dermoids as a differential for calcifications in the bladder (excluding other causes) and diagnose it based on the characteristic imaging findings as discussed.

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Conflicts of interest

There are no conflicts of interest.

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