Mullerianosis of the urinary bladder: a case report

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Mullerianosis is a rare, complex, benign tumor most commonly found in the bladder and often mistaken for a neoplastic lesion. Herein, we report a case of mullerianosis in a 65-year-old woman who presented with an incidental 2 cm bladder mass found on cross-sectional imaging. A mixed cystic and solid tumor was identified on cystoscopy and a transurethral resection of the suspected tumor was performed with histopathology confirming a final diagnosis of mullerianosis. While an unusual diagnosis, mullerianosis of the urinary bladder needs to be correctly identified to provide appropriate treatment and avoid misdiagnosis.

Key Words: mullerianosis, mullerian lesion, implantation, bladder mass

Introduction

Mullerianosis of the urinary bladder is an extremely rare condition with less than 40 cases reported since it was first described in 1996 by Young and Clement.[1] Mullerianosis is a morphologically complex, benign tumor-like lesion with diagnostic criteria characterized by the presence of at least two types of mullerian tissue – endometriosis, endocervicosis, and endosalpingiosis in the lamina propria and muscularis propria of the urinary bladder.[2] The lesion is invariably found on the dome and posterior bladder wall and most commonly affects the bladder in females of reproductive age.[2] The symptomatology varies but common clinical presentations are dysuria, abdominal/pelvic pain, and hematuria with or without menstruation irregularities. More than half of cases have been associated with history of cesarean deliveries or pelvic surgeries.[2] Herein, we report a case of urinary bladder mullerianosis in a 65-year-old woman.

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Figure 1. Cystic and solid bladder lesion.

Case report

A 65-year-old postmenopausal woman with three prior cesarean sections on hemodialysis for end-stage renal disease (ESRD) was found to have an incidental 2 cm bladder mass found on CT during a work up for hematochezia for which she was admitted to the hospital. At this time, she reported a 22-year smoking history but did not have any urologic symptoms and urinalysis was unremarkable without microscopic or gross hematuria.

A cystic and solid tumor located approximately 2-3 cm cephalad of the left ureteral orifice along trigonal ridge was identified on cystoscopy shown in Figure 1 and a transurethral resection of the suspected tumor was performed. Three centimeters total was resected including deep muscle in the sample. Upon resection, milky fluid was noted to ooze from some of the cystic components.

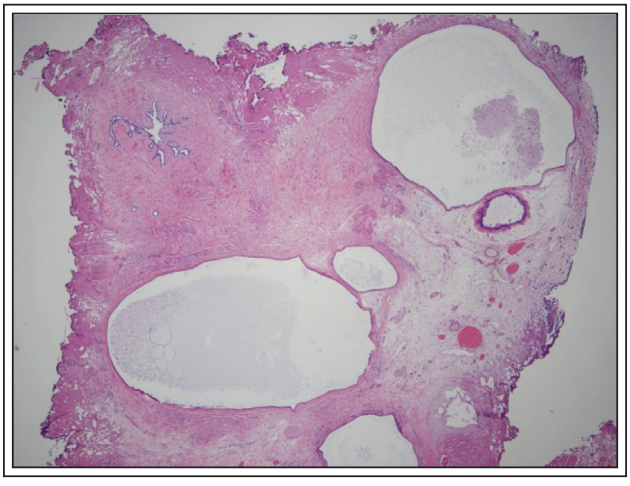

Figure 2. H&E stain (4X), of bladder wall showing cystically dilated and branching gland in bladder wall. Surface urothelium is present on the right side of the image.

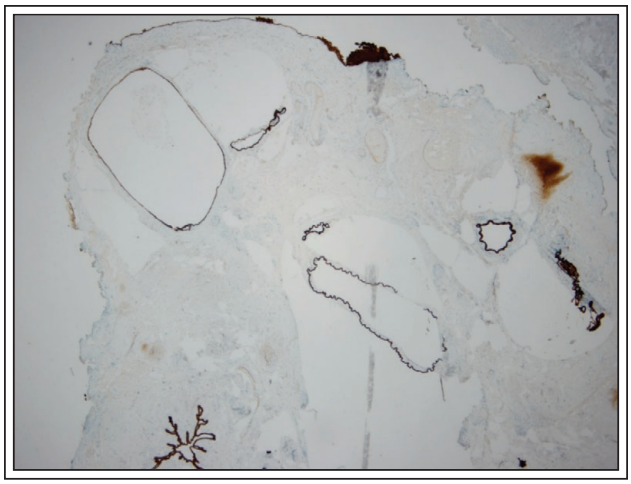

Figure 3. CK7 immunohistochemical stain is positive in mullerian epithelium and surface urothelium.

The histopathological examination showed the mucosa to be edematous and focally showed areas of cystitis cystica and chronic inflammation. The bladder wall had extensive involvement by benign appearing cystically dilated gland-like structures of various sizes, lined by a bland flattened to cuboidal epithelium distinct from the urothelium as demonstrated in Figure 2. By immunohistochemistry, the epithelium of the cystically dilated glands was positive for CK7 and PAX 8, but negative for CK20 shown in Figure 3. Additionally, GATA3 was negative in mullerian epithelium but focally positive in urothelium. The morphology and immunohistochemical pattern of staining support the diagnosis of bladder involvement by mullerian lesion. After discharge following an uncomplicated urologic course, the patient returned 1 week later for foley catheter removal. She was scheduled for follow up 2 weeks later to discuss the pathology report but was ultimately lost to follow up.

Discussion

Although it is a rare disease, mullerianosis of the urinary bladder needs to be correctly identified to provide appropriate treatment and avoid misdiagnosis. The clinical presentation of urinary bladder mullerianosis is varied, but most often presents in women of

childbearing age with hematuria, dysuria, abdominal pain and or pelvic pain.[3] A minority of cases present with nonspecific symptoms such as abdominal pain or even may be asymptomatic as in this case. Interestingly, while most commonly occurring during reproductive aged women, this case is the oldest aged female at the time of diagnosis reported in the literature. Even with the most classic presentation of mullerianosis, a formal diagnosis is often delayed as it is often confused for other clinical entities such as endometriosis or malignant bladder tumors making the differential diagnosis broad and creating the possibility of unnecessary medical interventions.

While the pathogenesis of urinary mullerianosis remains unclear, there are two major theories described in the literature. The first, described by Young and Clement is known as implantation theory. The implantation theory suggests that mullerian tissue implants in the bladder during pelvic or cesarean surgery.[1] Given the patient's surgical history of three prior cesarean sections, the implantation theory is a possible explanation in the pathogenesis of our case. However, the lack of prior pelvic surgery in half of the cases reported has led to alternate theories.

Donne et al described the metaplastic theory which focused on the process of multiple mullerian type tissues having the ability to differentiate into mullerian type tissue.[4] Moreover, the posterior location of mullerianosis raises the thought that its anatomical proximity to the hormone responsive peritoneum may be influential in its ability to differentiate into endometrial, endocervical and tubal types.[4] In addition, Koren et al speculated that mullerianosis can arise by means of metaplasia of the urothelium during a chronic inflammatory state.[5] In our case, the patient also had cystitis cystica which could have played a role in the pathogenesis of the mullerian lesion in the presence of chronic inflammation. Lastly, Branca and Barresi, adding to the metaplastic theory, proposed that the secondary mullerian system responsible for forming the peritoneal mesothelium might be able to differentiate into endometrial, endocervical, and tubal tissue. The invariable location of the lesion on the posterior wall and the bladder dome, the only part of the bladder covered by peritoneum, may be influential in its ability to differentiate.[6]

These lesions tend to be detected on cross sectional imaging such as magnetic resonance imaging (MRI) or computer tomography (CT) as a polypoid mass of the bladder. Given the patients extensive smoking history and a bladder lesion on imaging, resection of the bladder tumor was performed. Resection of the lesion and pathologic analysis was crucial in aiding in the diagnosis of mullerianosis of the bladder.[6]

With this entity mimicking neoplasia, it is important to recognize both benign and malignant differential diagnoses. Histological analysis is necessary for the definitive diagnosis. Microscopically, the differential diagnoses include primary invasive adenocarcinoma of bladder or urachus, secondary involvement of bladder by adenocarcinoma of other sites, urothelial carcinoma with glandular morphology, and urachal cysts and cystic neoplasm.[7] On histologic examination, mullerian lesions consist of glands, cysts and tubules lined by endocervical, tubal epithelium or endometrial epithelium that extend into the lamina propria and muscularis propria. All glandular lesions deep in the wall of the bladder are not necessarily malignant. The key features to differentiate mullerianosis from malignant entities are bland appearing, well-formed glandular structures deep in bladder wall, admixed ciliated cells, hemosiderosis and hemorrhage.[7]

Current management of mullerianosis is controversial. Medical management with estrogen-progestin contraceptives, progestins, or GNRH agonist are preferred.[3] In cases of failed response to medical therapy after 6 months, TURBT is the surgical management of choice.[3] Medical management has shown symptomatic improvement but has not been associated with reduction in lesion size.[3] Although a diagnosis of mullerianosis is characterized as a benign lesion, a small number of cases have reported neoplastic transformation indicating follow up is necessary to monitor for such transformation or recurrence.[8] While this condition presents with a variety of symptoms, it is important to note asymptomatic cases that are found incidentally such as our case to understand the best course of management, especially if medical therapy was only shown to improve symptoms.

Conclusion

Mullerianosis of the bladder is a rare bladder lesion that is most often mistaken for a neoplastic lesion. Commonly this condition is found in females during their reproductive years with prior pelvic surgery. It is important to note that the clinical presentation of the benign condition varies, ranging from lower urinary tract symptoms, hematuria, abdominal pain and can also present without symptoms such as in our case. Although the risk of its progression towards carcinoma is rare, a small number of cases have reported neoplastic transformation. With so few reports of mullerianosis in the literature, emphasis should be placed on identifying the diagnosis in addition to providing the appropriate management of the lesion to provide the necessary treatment and follow up. □

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