Intravesical Ectopic Prostatic Tissue May be Misdiagnosed as Nephrogenic Adenoma: a Case Report and Overview

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Case Report

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Abstract

Background

Ectopic prostatic tissue is a relatively infrequent condition, usually found accidentally during imaging examinations or surgery. From 1967 to 2021, the reports of ectopic prostate tissue in English literature are increasing. It is rarely reported that ectopic prostate may be misdiagnosed as a nephrogenic adenoma (NA).

Case presentation

This article reports a 45-year-old male patient with no symptoms. The computed tomography (CT) scan revealed a homogeneous isoechoic mass in the posterior inferior wall of the bladder. Firstly, the transurethral cystoscopic biopsy revealed a smooth sessile mass that covered normal bladder mucosa located in the middle of the interureteric ridge, and pathological results considered an intravesical NA. Then, the mass was completely resected under laparoscopic pneumovesicum and the pathological diagnosis was ectopic prostate tissue.

Conclusions

The clinical symptoms of ectopic prostate were similar to other bladder neoplasms, and fewer characteristics of imaging examinations are available to diagnose. Surgery was the mainstay treatment of ectopic prostatic tissue and has a good prognosis. Ectopic prostatic tissue presents as a tumor in the bladder, urologists may easily misdiagnose the condition like a tumor. Therefore, it is necessary to awareness of ectopic prostatic tissue to avoid misdiagnosis.

Background

Ectopic prostatic tissue is defined as single prostate gland scattered in the urogenital tract or outside the urinary tract; the condition does not involve in ectopia of the whole prostate gland[1]. It is a relatively uncommon entity that mostly occurs in the lower genitourinary tract in males, but is also reported outside the urogenital tract[2]. From 1967 to 2021, ectopic prostatic tissue in the bladder has been reported in 30 patients in English literature in PubMed(Table 1). Ectopic prostatic tissue is the most common in the bladder trigone[3].

Intravesical ectopic prostatic tissue usually involves gross hematuria, dysuria, or no symptoms, and fewer characteristics are available to diagnose it through surface morphology and imageological examinations such as color Doppler ultrasound, contrast-enhanced computed tomography (CT), and magnetic resonance imaging (MRI); therefore, it is easily misdiagnosed as bladder tumor. All cases can be confirmed using pathological findings.

The typical surgical treatment is transurethral resection of the bladder mass. As ectopic prostatic tissue is uncommon and atypical, we report our different experience with the case and present a review of the
literature regarding its theranostics.

Case Presentation

A 45-year-old man presented to our urology department with a medical history of bladder occupying lesions. The patient did not have dysuria and hematuria, and all the laboratory examinations were normal, including prostate-specific antigen (free PSA: 0.23 ng/ml, total PSA: 0.5 ng/ml). CT revealed a homogeneous isoechoic mass in the posterior inferior wall of the bladder (Fig. 1.a.), without perivesical infiltration or local lymphangiogenesis. A tentative diagnosis of a bladder tumor was made. Transurethral cystoscopic biopsy revealed a smooth sessile mass (length x width: 8 mm × 7 mm) that covered normal bladder mucosa located in the middle of the interureteric ridge. Pathological results of biopsy firstly considered an intravesical nephrogenic adenoma (NA). Finally, the mass was completely resected under laparoscopic pneumovesicu (Fig. 1.b.). Postoperative pathological diagnosis revealed the ectopic prostate tissue in the bladder. Histologically, the resection tissue had intact bladder mucosa, with the glands comprising subepithelial cells (Fig. 2.a.). Immunohistochemically, PSA of the prostatic glands was strongly positive (Fig. 2.c.). High-molecular-weight cytokeratin (34bE12) and p63 were positive for prostate glands.

The patient was well and no recurrence was noted during the 6-month postoperative follow-up.

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient.

Discussion And Conclusion

In 1967, Gutierrez first reported ectopic prostatic tissue in English literature. Although more cases have been reported since, its pathogenesis remains unclear. The mechanism of ectopic prostatic tissue mainly includes three theories: embryo development residual, embryo submucosal migration, and metaplasia changes caused by chronic inflammation[4–5]. The prostate-type glands are seen in the trigone during embryogenesis[6], consistent with the most common location of ectopic prostatic tissue in the bladder trigone. Importantly, the ectopic prostatic tissue is not different from normal prostate tissue histologically or immunohistochemically. Our case also revealed that the prostate glands were submucosal, supporting the theory that ectopic prostate tissue is a continuation of the embryonic structures[8].

Ectopic prostatic tissue usually presents as a single, smooth-surfaced, firm nodular, papillary mass on cystoscopy. It may appear as a homogeneous mass in the bladder on sonography or CT, with few characteristics different from those of typical urothelial carcinomas. Ectopic prostate tissue is a benign lesion that mainly depends on the pathological diagnosis. Even on a preliminary biopsy of the bladder mass, the ectopic prostate tissue can be easily confused with bladder tumors. Similar to our case, pathological examination of cystoscope biopsy is considered as NA, which typically appears as papillary
projections protruding into the bladder lumen on cystoscopy. Histologically, NA may be simulated to various malignant tissue elements such as prostatic adenocarcinomas[7]. Immunohistochemically, NA is variably positive for AMACR and CD10 and may be positive for PSA and PSAP in the focal lesion, while being negative for p63[7]. Because of these similar characteristics, ectopic prostate tissue may be misdiagnosed as an NA. The secretory and basal cells of the prostate glands express PSA, PSAP, P63, 34βE12, and CD10, but P63, 34βE12, and CD10 are not expressed in carcinomatous prostates[8]. Based on this observation, the tumor origin in the prostate and NA can be distinguished. Besides, other benign lesions of the bladder that could be misdiagnosed as malignant should also be identified.

Table 1. Overview of case reports of ectopic prostate tissues located in the bladder.

<table>
<thead>
<tr>
<th>Authors (year of publication)</th>
<th>No.</th>
<th>Sex</th>
<th>Age (years)</th>
<th>Presentation</th>
<th>Location</th>
<th>Size (mm)</th>
<th>Therapy</th>
<th>Follow-up (mo)</th>
<th>Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gutiérrez et al (1967)</td>
<td>1</td>
<td>male</td>
<td>20</td>
<td>hematuria</td>
<td>trigone</td>
<td>6</td>
<td>TRUS</td>
<td>60</td>
<td>no</td>
</tr>
<tr>
<td>Klein et al (1984)</td>
<td>1</td>
<td>male</td>
<td>58</td>
<td>hematuria</td>
<td>trigone</td>
<td>6</td>
<td>TRUS</td>
<td>60</td>
<td>no</td>
</tr>
<tr>
<td>Ishibe et al (1988)</td>
<td>1</td>
<td>male</td>
<td>58</td>
<td>hematuria</td>
<td>trigone</td>
<td>6</td>
<td>TRUS</td>
<td>60</td>
<td>no</td>
</tr>
<tr>
<td>Morey et al (1989)</td>
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<td>male</td>
<td>58</td>
<td>hematuria</td>
<td>trigone</td>
<td>6</td>
<td>TRUS</td>
<td>60</td>
<td>no</td>
</tr>
<tr>
<td>Richter et al (1991)</td>
<td>1</td>
<td>male</td>
<td>76</td>
<td>hematuria</td>
<td>trigone</td>
<td>6</td>
<td>TRUS</td>
<td>60</td>
<td>no</td>
</tr>
<tr>
<td>Bellozza et al (2005)</td>
<td>3</td>
<td>male</td>
<td>45–70</td>
<td>hematuria</td>
<td>trigone</td>
<td>6</td>
<td>TRUS</td>
<td>60</td>
<td>no</td>
</tr>
<tr>
<td>Haiat et al (2011)</td>
<td>17</td>
<td>male</td>
<td>30–79</td>
<td>hematuria</td>
<td>trigone</td>
<td>6</td>
<td>TRUS</td>
<td>60</td>
<td>no</td>
</tr>
<tr>
<td>Ko et al (2013)</td>
<td>1</td>
<td>male</td>
<td>58</td>
<td>hematuria</td>
<td>trigone</td>
<td>6</td>
<td>TRUS</td>
<td>60</td>
<td>no</td>
</tr>
<tr>
<td>Kim et al (2013)</td>
<td>1</td>
<td>male</td>
<td>72</td>
<td>hematuria</td>
<td>trigone</td>
<td>6</td>
<td>TRUS</td>
<td>60</td>
<td>no</td>
</tr>
<tr>
<td>Di Vincenzo et al (2016)</td>
<td>1</td>
<td>male</td>
<td>60</td>
<td>hematuria</td>
<td>trigone</td>
<td>6</td>
<td>TRUS</td>
<td>60</td>
<td>no</td>
</tr>
<tr>
<td>Adhya et al (2018)</td>
<td>1</td>
<td>male</td>
<td>56</td>
<td>hematuria</td>
<td>trigone</td>
<td>6</td>
<td>TRUS</td>
<td>60</td>
<td>no</td>
</tr>
<tr>
<td>Gupta et al (2021)</td>
<td>1</td>
<td>male</td>
<td>18</td>
<td>hematuria</td>
<td>trigone</td>
<td>6</td>
<td>TRUS</td>
<td>60</td>
<td>no</td>
</tr>
</tbody>
</table>

To the best of our knowledge, ectopic prostate tissues are arising in the adult male of all ages. All cases of intravesical ectopic prostate tissues were completely excised by transurethral resection reported in English literature on PubMed (Table 1). However, in our case, the bladder occupying lesion was completely resected under laparoscopic pneumovesicum, which was described as intravesical surgery using pneumovesicum in urology[9]. The pneumovesicum can provide enough space for operation, and laparoscopy has the characteristics of magnification that is convenient for doctors to accurately remove the tumor tissue. It could definitively diagnose the tissue type and avoid misdiagnosis, which, to the best of our knowledge, has not been previously reported. If the intravesical lesion is small, transurethral resection maybe brings less trauma to the patient compared with resection through laparoscopic pneumovesicum. All case reports of ectopic prostate tissues located in the bladder are not recurrence in the follow-up(Table 1). Although postoperative prognosis is good, it may be recurrent[10]. So far, no malignant cases of recurrent ectopic prostate tissue have been reported. However, cancer arising in the
ectopic prostatic tissue of the bladder has been reported\cite{11}. Therefore, regular examination and follow-up are crucial for patients with this condition.

The limitation of this case is that benign lesions should be considered when the bladder occupying lesion does not look malignant. By selecting a more suitable surgical resection method, can be reduced the surgical trauma of patients. In addition, the short follow-up time is one of the limitations.

**Conclusions**

All in all, ectopic prostatic tissue in the bladder is difficult to diagnose according to its clinical features. Histopathology is the gold standard method to diagnose. Surgery was found to be the mainstay treatment of ectopic prostatic tissue and showed a good prognosis. Once found a bladder mass, ectopic prostatic tissue should be considered in the differential diagnosis. We shared the experience of our case to contribute to increasing the knowledge of ectopic prostatic tissues in the bladder among clinicians and pathologists, which would be beneficial to reduce the misdiagnosis of intravesical lesions.

**Abbreviations**

**CT:** Computed tomography  
**NA:** Nephrogenic adenoma  
**PSA:** Prostate-specific antigen

**Declarations**

**Availability of data and materials**

The authors confirm the data and materials are available.

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**Contributions**

YL W performed data and drafted the manuscript. ZQ L and AM W contributed to manuscript writing. The authors read and approved the final manuscript.
Ethics declarations

Ethics approval and consent to participate

The study has been approved by the institutional review board of Ethics Committee of Maoming People's Hospital. Informed consent was assigned in Chinese format.

Consent for publication

The patient signed written consent for this case report and agrees to the publication of details and photos related to the case.

Competing interests

The authors have no conflicts of interest to disclose.

Additional information

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References


**Figures**

**Figure 1**

(a) Contrast-enhanced computed tomography showing a homogeneous isoechoic bladder mass in the posterior inferior wall. (b) Laparoscopic pneumovesicu showing the mass is located in the middle of the ureteral ridge.

**Figure 2**

(a) The bladder mucosa is intact, and the prostate glands are located in the submucosa. (H&E, ×100). (b) Prostate glands consist of epithelial cells and corpora amylacea with irregularly dilated lumen. (H&E staining, ×100). (c) Immunohistochemically, prostate-specific antigen (PSA) is positive. (IHC staining, ×100).