CASE REPORT
Urooncology

Doi: 10.4274/jus.galenos.2025.2025-1-14
J Urol Surg

An Eight-year-old Child with Non-muscle Invasive Urothelial Carcinoma of the Bladder

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Abstract

Bladder cancer is a disease caused by malignant transformation of cells in the bladder tissue. While bladder cancer is frequently a disease of the sixth and seventh decades, cases have been reported in patients in the first two decades of life. Here, we report a case of an eight-year-old child who presented at an external facility with complaints of abdominal pain. Abdominal ultrasonography revealed a polypoid lesion in the bladder, and histopathological examination following resection confirmed a diagnosis low-grade papillary non-invasive urothelial carcinoma.

Keywords: Urinary bladder neoplasms, child, carcinoma, transitional cell, pathology

Introduction

Childhood bladder cancer is a rare condition and accounts for 0.1-0.4% of total bladder cancers. Bladder cancers are observed more frequently in males, in childhood. They are divided into two main groups: epithelial and non-epithelial. Among epithelial bladder cancers, the most common type in childhood is urothelial carcinoma. However, there is limited information about the management of urothelial carcinoma in childhood (1-3).

The most common reason for presentation of paediatric patients diagnosed with bladder cancer is gross haematuria and obstructive symptoms. Non-specific urinary system symptoms may also be among the reasons for presentation. On the other hand, incidentally discovered cases were also reported (3,4). Here, we report a child with urothelial carcinoma and discuss the recent literature.

Case Presentations

An eight-year-old child patient was admitted to a paediatrician with complaints of abdominal pain. There was no family history of tumour. The patient has no exposure to tobacco products or any chemicals. Physical examination revealed no pathological findings or obvious abnormalities. Laboratory investigations, including blood tests, coagulation profile, and urinalysis (with bacteriological examination), were within normal limits. Ultrasonographic imaging of the abdomen revealed polypoid lesions measuring 12×8×8 mm and 8×8×8 mm within the bladder lumen. Written informed consent was obtained from the patient and their legal guardians before all procedures. Cystoscopic examination of the bladder revealed a papillary tumoural formation superolateral to the left ureteral orifice and it was transurethrally resected (TUR). Histopathologically, it was reported as "low grade noninvasive papillary urothelial carcinoma", and repeat transurethral resection (re-TUR) was planned.

Contrast-enhanced thoracic and abdominal tomography was completed for metastasis screening. No abnormality was detected in the scans.

Four weeks after the initial procedure, a follow-up cystoscopic examination was performed in our clinic. A polypoid tumoral lesion measuring approximately 1 cm in size, extending from the prostatic urethra into the bladder, was observed (Figure 1).

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Received: 28.01.2025 **Accepted:** 27.05.2025 **Epub:** 04.06.2025

Cite this article as: Atnallar G, Tepe RS, Çolak F, Akdeniz F, Kazaz İO, Özyavuz R. An eight-year-old child with non-muscle invasive urothelial carcinoma of the bladder. J Urol Surg. [Epub Ahead of Print]

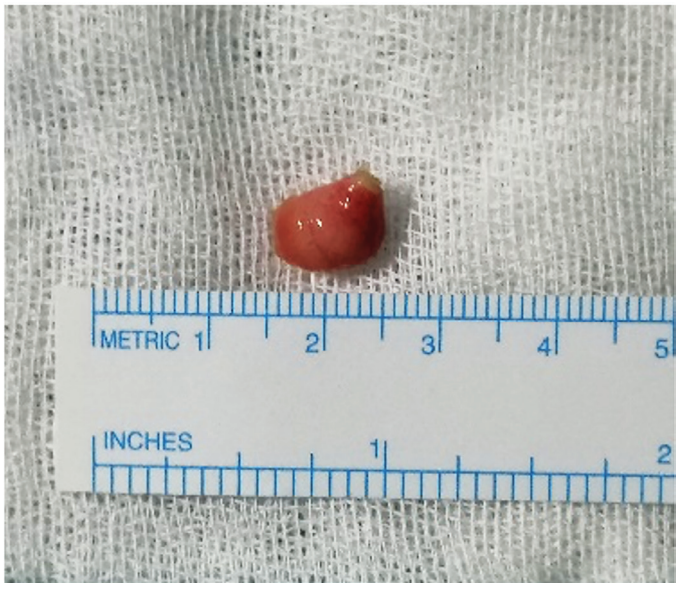

Figure 1. Polyp resected from prostatic tissue

Additionally, a hyperemic appearance at the site of the previous TUR scar was identified superolateral to the left ureteral orifice (Video 1; at the second second of the video, the right ureteral orifice is visible; at the tenth second of the video, the left ureteral orifice is seen; at the fifteenth and thirty-third seconds of the video, the previous TUR scars are visible; at the fortieth second of the video, the lesion in the prostatic urethra is seen). Complete resection was performed under general anaesthesia using a 13 Fr resectoscope. TUR was conducted on the polypoid tumoral lesion in the prostatic urethra, and the hyperemic area of the previous TUR scar was also sampled. Histopathological evaluation revealed that the polypoid tissue resected from the prostatic urethra was a "fibroepithelial polyp", while the tissue resected from the previous TUR scar area in the bladder consisted of "bladder mucosal fragments with no specific pathological findings".

He was followed up with surveillance cystoscopies every three months and annual contrast-enhanced computed tomography scans of the thorax and whole abdomen. Now, in his third year in follow-up, he was free of any recurrence or symptoms.

Discussion

The leading risk factors for childhood bladder cancer include exposure to tobacco and environmental toxins, chemotherapeutic agents, bladder anomalies and syndromic conditions. While non-epithelial bladder tumours are more common in children, the most common type is rhabdomyosarcoma. Rhabdomyosarcoma is the most common malignant tumour of the bladder in children younger than ten years. Histopathological subtypes of rhabdomyosarcoma originating from embryonic mesenchymal cells are embryonal (>90%) and alveolar (<10%) (5).

Childhood bladder cancers are less invasive and have higher disease-free survival rates compared to adult bladder cancers. Although imaging modalities are useful in bladder cancers, cystoscopy plays an important role in diagnosis, treatment, and follow-up (6). TUR is a cornerstone of treatment for childhood bladder cancers, offering low recurrence rates and favorable prognoses (7). Single-dose intravesical chemotherapy is used in adults to reduce the risk of recurrence in the postoperative period. However, there are insufficient data on the indications and use of this treatment in paediatric patients. The efficacy of intravesical immunotherapy, which is widely used in adult patients after TUR, has not been fully established due to the rarity of such cases in children. The disease in pediatric patients typically follows a low-grade course, and resection significantly improves outcomes (8,9). Recurrence is notably less common in children compared to adults.

There is no bladder cancer staging specific to childhood. Although there is no protocol in follow-up, the frequency and method of follow-up may be determined according to progression and recurrence. Urine cytology and urinary ultrasonography may be preferred in the follow-up of low-grade urothelial carcinoma in children (6). However, the sensitivity of urine cytology is low in the diagnosis of low-grade urothelial carcinoma. Although recurrence is not frequently observed in low grade bladder cancers, follow-up is mandatory (8,10). Pathological evaluations, recurrence rates, and follow-up details of previously reported case series are summarised in Table 1.

Fibroepithelial polyps are rare, benign tumors of mesodermal origin that can occur in the urinary tract. Their exact etiology remains unclear, with theories ranging from reactive processes caused by urothelial irritation, such as infection or inflammation, to benign neoplasms. These polyps consist of mesodermal tissue covered by a normal layer of transitional epithelium. Diagnosis is typically made using ultrasonography and cystoscopy, and confirmed through histopathological examination. Treatment involves surgical removal, usually performed via cystoscopic transurethral resection. The precise cause of benign fibroepithelial polyps remains uncertain, and there are no established guidelines for long-term follow-up (13).

Table 1. Pediatric bladder tumors: clinical features, pathology, and follow-up outcomes. Table 1 was created based on data from Uçar et al. (11)

Author	n	Age (years)	Sex	Symptom	Pathology	Recurrence	Follow-up (years)	Follow-up protocol
Hoenig et al. (6)	5	11-18	5M	Hematuria (5/5)	LGPTA	1/5	3.5	USG
Ander et al.	9	4-18	6M 3F	Abdominal pain (1/9); voiding dysfunction (1/9); hematuria (7/9)	PUNLMP (1/9); G1T1 (3/9); LGTa (4/9); G1Ta (1/9)	No	5	Same protocol as adults
Lerena et al.	6	6-17	4M 2F	Pyelonephritis (1/6); hematuria (5/6)	G1-3 PTA (1/6); G1 PTA (5/6)	No	1.5-5.5	USG
Bujons et al. (8)	8	9-16	6M 2F	Hematuria (8/8)	G2T1 (1/8); G1T1 (1/8); G1Ta (2/8); G2Ta (4/8)	No	8-20	USG, cytology, cystoscopy
Polat et al.	11	12-17	6M 5F	Abdominal pain (1/11); incidental (1/11); hematuria (9/11)	PUNLMP (1/11); papilloma (2/11); LGTa (4/11); LGT1 (4/11)	No	1-7	USG, cystoscopy
Berrettini et al.	18	3-17	9M 9F	Incidental (2/18); hematuria (16/18)	UP (8/18); PUNLMP (8/18); LG-UC (1/18); HG-UC (1/18)	No	5	USG, cytology, cystoscopy
Fine et al. (10)	23	4-20	19M 4F	Hematuria (19/23)	UP (2/23); PUNLMP (10/23); LG (8/23); HG (3/23)	3/23	13	NA
Uçar et al. (11)	4	10-17	2M 2F	Abdominal pain (1/4); incidental (1/4); hematuria (1/4) dysuria (1/4)	G1Ta (4/4)	No	1-15	USG, urinalysis
Galiya et al. (12)	9	4-19	7M 2F	Hematuria (6/9); abdominal pain (1/9); vaginal pain (1/9); incidental (1/9);	LGTa (5/9); PUNLMP (3/9); HGPT1 (1/9)	No	1-5	USG, cystoscopy

LG: Low grade, HG: High grade, TCC: Transitional cellular carcinoma, PUNLMP: Papillary urothelial neoplasm of low malignant potential, UC: Urothelial carcinoma, UP: Urothelial papilloma, NA: Not available

Conclusion

Although childhood bladder cancer is exceedingly rare, the challenges encountered in its diagnosis and treatment underscore the importance of a multidisciplinary approach. The rarity of this condition has resulted in the absence of standardized treatment protocols, highlighting the need for further research in this area and reporting all cases in the literature.

Larger case series and clinical trials are essential to enhance understanding, and management of childhood bladder cancer. These efforts could contribute to improving diagnostic and therapeutic strategies, ultimately leading to better prognostic outcomes for this uncommon disease.

Acknowledgement

This paper was presented as a poster at the 6th International Urological Surgery Congress with International Participation in 2022.

Video 1.

Ethics

Informed Consent: Written informed consent was obtained from the patient and their legal guardians before all procedures.

Footnotes

Authorship Contributions

Surgical and Medical Practices: G.A., R.S.T., F.Ç., F.A., İ.O.K., R.Ö., Concept: G.A., R.S.T., F.Ç., F.A., İ.O.K., R.Ö., Design: G.A., R.S.T., F.Ç., F.A., İ.O.K., Data Collection or Processing: G.A., R.S.T., F.Ç., Analysis or Interpretation: G.A., R.S.T., F.Ç., F.A., İ.O.K., R.Ö., Literature Search G.A., R.S.T., F.Ç., Writing: G.A., R.S.T., F.Ç., F.A., İ.O.K., R.Ö.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

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