CASE REPORT

Urothelial Carcinoma in Pediatric Patient

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Abstract Transitional cell carcinoma as a cause of hematuria is a rare entity in the pediatric age group. An 11-year-old child presented with gross, painless hematuria. Ultrasonogram and computed tomography scan of the child revealed a tumor in the posterolateral wall of the bladder. Cystoscopically, the mass was present in the bladder away from the trigone area about 2 cm lateral to the right ureteric orifice. Transurethrally, the tumor was excised by a cystoscope. Histopathologically, it was a low-grade noninvasive urothelial carcinoma of the bladder. A follow-up cystoscopy at 6 months and 1 year had no recurrence. Literature review revealed the pediatric age group as an uncommon age for urothelial carcinoma of bladder, which has a different biological behavior of being low malignant potential compared to their adult counterpart. They have been treated with transurethral resection of bladder tumor without any adjuvant therapy. There is no definite follow-up schedule for these tumors as it occurs in very small number of cases.

Keywords Urothelial carcinoma · Bladder carcinoma · Pediatric bladder tumor · Low-grade urothelial carcinoma

Introduction

Though gross hematuria has a benign etiology in many children, urothelial tumors may be an etiology in rare cases and have to be excluded in young patients who present with pain-

less hematuria. The finding of a gross urothelial tumor on cystoscopy may puzzle a pediatric surgeon due to the rarity of the entity.

Case Report

An 11-year-old male child presented with painless hematuria of 6 months duration. The hematuria was gross and was intermittent. Physical examination did not reveal any abnormality except for a mild degree of pallor. Laboratory parameters had low hemoglobin of 8.6 g %. Urine routine and microscopic examination revealed plenty of red blood cells and no pus cell or malignant cell. Ultrasonography of abdomen suggested a mass of 4×4 cm size, located on the right posterolateral wall of the bladder. Contrast enhanced computed tomography (CECT) scan (Fig. 1) showed the mass of size 4×4 cm located on the right posterolateral wall of the urinary bladder. It had finger-like papilliform processes. On contrast study, there was no increased enhancement.

Cystoscopy was done under GA with a 9-French-sized cystoscope which showed a growth of approximately 3×4 cm on the right posterolateral wall of the bladder which was about 2 cm superolateral to the right ureteric orifice. It had multiple finger-like projections (Fig. 2) into the bladder lumen. The tumor was resected transurethral with a loop cautery at minimal settings. The excised tumor was removed in bits from the bladder with a suction apparatus. The patient was catheterized postoperatively for 4 days during which there was no gross hematuria. The histopathology reported it as noninvasive urothelial carcinoma low grade with no involvement of lamina propria (Ta). Follow-up cystoscopy at 6 monthly intervals did not show any recurrence. He was asymptomatic at 1-year follow-up. He was advised for yearly follow-up for 5 years.

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Fig. 1 CECT scan of the abdomen showing the enhancing tumor (*arrow mark*) in the posterior wall of the urinary bladder

Discussion

The child presented at an age of 11 years which is an unusual age for bladder tumors. Primary tumors of bladder are rare in childhood. The most frequent bladder neoplasm in children is rhabdomyosarcoma affecting children younger than 4 years of age. A urothelial tumor in the bladder of patients younger than 40 years is rare with an incidence of 0.8 % [1]. This has a male predominance with a male to female ratio of 3:1 to 9:1 according to different series.

Presentation with macroscopic hematuria occurs in 82 to 87 % of cases. Less frequent presenting symptoms include microscopic hematuria, voiding symptoms, and urinary tract infection.

Bladder ultrasound has been used as an initial evaluating tool for hematuria. CT and MRI have also been used to confirm the presence of bladder tumors suggested by initial ultrasound. A biopsy of the tumor is always required for histological diagnosis. The approach preferred by several authors is an

initial ultrasound followed by a cystoscopy, which is sufficient to identify the tumor in all recently reported cases.

On cystoscopy, most of the tumors are located in the trigone region. We have found the tumor away from the trigone in the posterolateral wall of the bladder about 2 cm lateral to the right ureteric orifice.

Fine et al. [2] studied the pathology of urothelial cancers occurring in patients 20 years of age and younger. Tumors included urothelial papilloma (8.7 %), papillary urothelial neoplasm of low malignant potential (43.5 %), noninvasive low-grade papillary urothelial carcinoma (34.8 %), and non-invasive high-grade papillary urothelial carcinoma (13 %). In a later study, Wild et al. [3] found that immunohistochemistry staining for cytokeratin 20 demonstrated the normal pattern of expression for majority of the studied pediatric urothelial neoplasms. An analysis by Wang et al. [4] on patients younger than 20 years of age with urothelial tumors demonstrated that a higher proportion of these tumors are characterized by low grade, low stage, and low recurrence rate.

Fig. 2 Cystoscopic view of the urinary bladder tumor (**a, b**) showing polypoidal luminal growth. Histopathology of the mass is showing intact lamina propria (**c, d**) with enlarged crowded nuclei suggestive of low-grade papillary urothelial carcinoma

There are no established criteria for treatment and follow-up of these children suffering from urothelial carcinomas. Most patients have been treated with transurethral resection of the bladder tumor (TURBT). There is no evidence for adjuvant therapy small in a pediatric age group. Rifat et al. [5] have mentioned that TURBT along with cystoscopic follow-up was the most common modality of treatment in stage-Ta urinary bladder tumor in review of 127 cases of a pediatric age group. Korrekt et al. [6] have performed partial cystectomy for a high-grade tumor in view of risk of perforation of the pediatric bladder. Some reports have additionally treated with mitomycin C along with TURBT.

Recurrence rate is low among the pediatric population ranging from 2.6 to 5 % for a follow-up period from 6 months to several years [7]. Some authors have advocated for periodic surveillance [8], while others have argued against it given the risk of anesthesia and risk of damage due to repeated instrumentation in children [9]. As pediatric urothelial tumors are mostly well-differentiated low-grade lesions, the utility of cytology in diagnosis and follow-up is questionable.

Conclusion

Urothelial carcinoma is extremely rare in the first two decades of life. These tumors in the pediatric age group have a different biological behavior of being low-grade malignant. The etiology, treatment, and follow-up of these patients are not well described in literature. Children with gross hematuria as the presenting complaint, urothelial carcinoma should be considered as a differential diagnosis.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no competing interests.

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