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Case Report

Paediatrics Section

Cystitis Cystica with Prominent Vascular Channels Mimicking a Perineal Mass: A Paediatric Case Report

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ABSTRACT

Cystitis cystica is a benign reactive urothelial lesion characterised by cystic dilatation of von Brunn nests within the lamina propria, usually secondary to chronic mucosal irritation. Although commonly encountered incidentally in adults, it is uncommon in children and may present with atypical clinical features, often mimicking neoplastic or vascular lesions. Hereby, the authors present a case report of an eight-year-old female child who was brought to Paediatric Outpatient Department (OPD) by her mother with perineal itching, bleeding and dysuria for the past two to three days. Clinical examination revealed an exophytic periurethral mass. Contrast -enhanced Computed Tomography (CECT) of abdomen demonstrated a well-defined lesion with increased vascularity, raising suspicion of a vascular malformation or neoplasm. Cystoscopy revealed no intravesical pathology and a biopsy was obtained from the periurethral mass. Histopathological examination showed cystically dilated von Brunn nests with prominent vascular channels, consistent with cystitis cystica, without evidence of dysplasia or malignancy. The postoperative course was uneventful. The present case highlights the diagnostic challenge posed by atypical presentations of cystitis cystica in children and underscores the importance of histopathological confirmation to avoid overtreatment. Early recognition and appropriate evaluation are essential in paediatric practice to ensure optimal management and follow-up.

Keywords: Cystoscopy, Haematuria, Lower urinary tract symptoms, Urinary bladder diseases, Urothelium

CASE REPORT

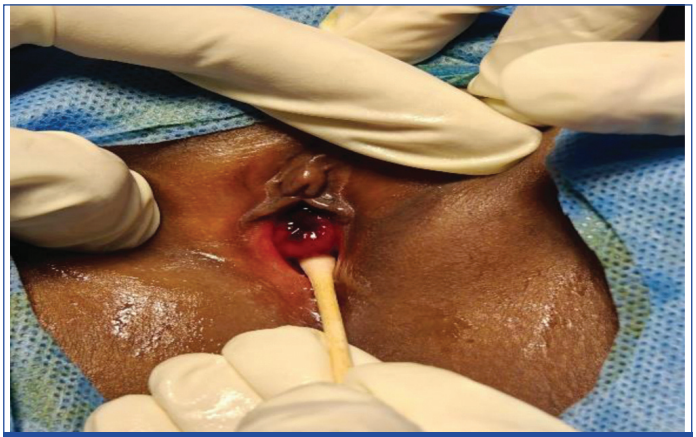
An eight-year-old female child presented to the Paediatric OPD with complaints of genital itching and bleeding from the perineal region for three days. There was history of painful micturition for the preceding 2-3 days. There was no history of increased frequency of urination, fever, trauma, prior urinary tract infections, or previous surgical interventions. There was no history suggestive of local injury, instrumentation, or child sexual abuse. She was born at term with an uneventful antenatal and postnatal history and had achieved normal developmental milestones.

On examination, the child was conscious, afebrile and haemodynamically stable. The general physical examination was unremarkable. Systemic examination, including cardiovascular, respiratory, abdominal and central nervous systems, were within normal limits. Laboratory investigations revealed a low haemoglobin level of 10.7 g/dL, a total leukocyte count of 9,700/mm^3 and a high platelet count of 6.7×10^5/mm^3. Renal function tests were within normal limits, with serum urea 12 mg/dL and serum creatinine 0.4 mg/dL. The coagulation profile was within normal limits, with prothrombin time 12 seconds, activated partial thromboplastin time 28 seconds and international normalised ratio 1.0. Urine routine examination and culture were within normal limits.

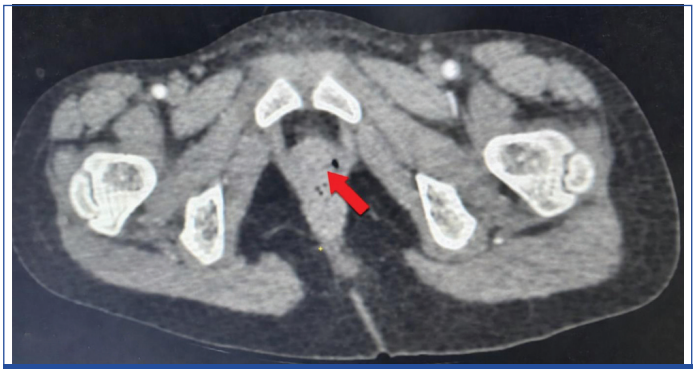
Local examination demonstrated a well-defined, exophytic mass measuring approximately 2×1.5 cm in the periurethral/perineal region with bleeding on touch [Table/Fig-1]. The overlying mucosa appeared congested. Digital rectal examination suggested a firm mass anteriorly, raising suspicion of a perineal or lower genitourinary tract lesion.

Ultrasonography of the abdomen and pelvis showed a hypoechoic lesion arising from the perineal region with increased vascularity. CECT revealed a well-defined lesion measuring approximately 5.5×1.0×1.4 cm in the perineal and periurethral region, suggestive of a vascular lesion [Table/Fig-2].

Based on clinical and radiological findings, differential diagnoses considered were vascular malformation, urethral prolapse, periurethral mass, inflammatory polyp and a neoplastic lesion such as embryonal rhabdomyosarcoma. Given the age of the child and presentation with perineal bleeding, trauma and child sexual abuse were also carefully evaluated and excluded based on history and clinical examination.



[Table/Fig-1]: Showing a well-defined, reddish, exophytic mass measuring approximately 2×1.5 cm arising from the periurethral/perineal region with surface bleeding on manipulation.

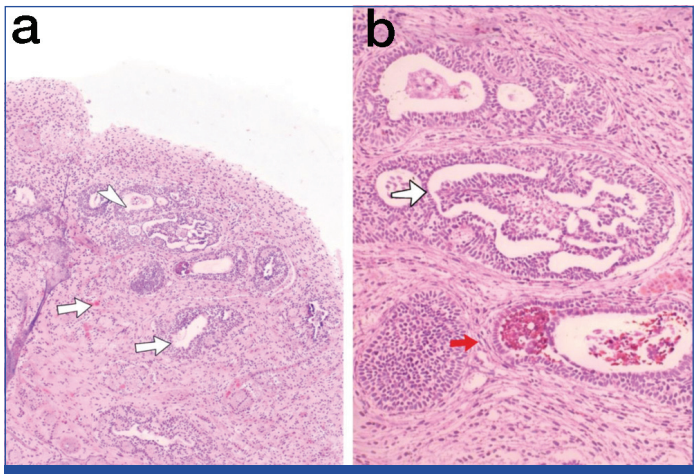


[Table/Fig-2]: Axial CECT image showing a well-defined, mildly enhancing soft-tissue lesion in the periurethral/perineal region (red arrow), measuring approximately 5.5×1.0×1.4 cm, without evidence of bony erosion or regional lymphadenopathy.

The absence of circumferential urethral mucosal protrusion made urethral prolapse unlikely. Imaging did not demonstrate infiltrative growth, regional lymphadenopathy, or aggressive features suggestive of malignancy. However, due to persistent diagnostic uncertainty and the vascular nature of the lesion, tissue diagnosis was warranted. Cystoscopy and genitoscopy were performed under general anaesthesia. Cystoscopy revealed a normal urethra, bladder mucosa and bilateral ureteric orifices, thereby excluding primary intravesical pathology. Genitoscopy showed a localised lesion with a cervical compression-like appearance. Incision biopsy was obtained from the lesion at the 3 o'clock and 9 o'clock positions and hemostasis was secured with absorbable sutures.

The postoperative period was uneventful. The urinary catheter was removed on postoperative day four and the child voided normally without pain or bleeding.

Histopathological examination {Haematoxylin and Eosin (H&E)} revealed urothelial epithelium with multiple cystically dilated von Brunn nests within the lamina propria, along with prominent vascular channels. No evidence of dysplasia or malignancy was identified [Table/Fig-3a,b]. These findings confirmed the diagnosis of cystitis cystica with prominent vascular proliferation. The child was followed-up for three months and remained asymptomatic, with no evidence of recurrence on clinical examination.



[Table/Fig-3]: a) Low-power photomicrograph showing urothelial lining with multiple cystically dilated von Brunn nests within the lamina propria (white) (H&E, ×100); b) Higher magnification view demonstrating cystic dilatation of von Brunn nests lined by urothelium with surrounding stromal proliferation and prominent vascular channels (red arrows). No evidence of dysplasia or malignancy was noted (H&E, ×400).

DISCUSSION

Cystitis cystica is a benign reactive lesion of the urinary bladder characterised by cystic dilatation of von Brunn nests within the lamina propria, typically occurring secondary to chronic mucosal irritation. Early descriptions in the literature documented its occurrence in both adults and children, with Vlatković G et al., describing its clinicopathological features in paediatric patients [1]. Subsequently, Wiener DP et al., demonstrated that cystitis cystica and cystitis glandularis are relatively common incidental findings in adults with limited clinical significance [2].

Further paediatric-focused studies by Corica FA et al., emphasised that although often incidental in adults, these lesions may present symptomatically in children and mimic significant pathology [3]. Later, morphological evaluation studies confirmed that cystitis cystica represents a reactive rather than neoplastic process within the spectrum of proliferative urothelial lesions [4].

With increasing clinical recognition, atypical presentations were reported. Smith AK et al., discussed the clinical significance and management challenges of these lesions [5], while Bapat SS et al., described cystitis cystica mimicking a bladder tumour [6]. Sharma A et al., subsequently reported a paediatric case presenting as a bladder mass, highlighting the diagnostic dilemma [7].

More recent studies have focused on imaging and diagnostic approaches. Zhou XH et al., discussed the controversial premalignant potential of related lesions [8], while Masuoka S et al., demonstrated the role of advanced imaging in differentiating cystitis cystica from malignancy in Paediatric patients [9]. Recent reports, such as that by Khan M et al., have also described complications including urethral obstruction, emphasising the need for careful evaluation and management [10].

In the present case the child presented with perineal itching, bleeding and dysuria, along with an exophytic periurethral mass showing increased vascularity on imaging. This presentation is particularly unusual, as cystitis cystica is not typically associated with prominent vascular channels, leading to diagnostic confusion with vascular malformations or neoplastic lesions.

Histopathological examination remains the gold standard for diagnosis, demonstrating cystically dilated von Brunn nests lined by urothelium within the lamina propria [2,4]. In the present case the presence of prominent vascular channels likely contributed to the unusual presentation with bleeding.

Although historically considered to have premalignant potential, current evidence suggests that malignant transformation is rare, particularly in paediatric patients [1,8]. Management is generally conservative, focusing on elimination of underlying irritative factors, with surgical intervention reserved for symptomatic or diagnostically uncertain cases [5,7,10].

Long-term follow-up is recommended, as recurrence has been reported and the theoretical risk of malignant transformation, although low, cannot be completely excluded [1,3].

CONCLUSION(S)

Cystitis cystica is a rare benign urothelial lesion in children that can mimic vascular or malignant masses, leading to diagnostic uncertainty. Histopathology is essential for confirmation, especially in atypical presentations such as bleeding. Early recognition helps avoid unnecessary aggressive interventions while ensuring appropriate follow-up due to possible recurrence. Always consider cystitis cystica in children with unexplained urinary or perineal symptoms. Timely diagnosis prevents mismanagement and reduces anxiety.

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