



Urethral pyogenic granuloma in a pediatric patient[☆]

Alexandra M.C. Carolan, Shane F. Batie, Kelly M. Caldwell, Vivekanand Singh, Yvonne Y. Chan^{*}

University of Texas Southwestern Medical Center, Children's Health Texas, United States

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ABSTRACT

Pyogenic granuloma, also known as lobular capillary hemangioma, is a benign vascular tumor rarely found in the genitourinary tract. Here, we present a case of a 6-year-old boy presenting with gross hematuria who was found to have a mass at the bladder base on ultrasound. Endoscopic resection was performed, revealing the base of the mass originating from the prostatic urethra. Pathology found pyogenic granuloma. This entity has not previously been reported to arise from the pediatric urethra and should be considered on the differential for children presenting with gross hematuria and those found to have bladder or urethral masses.

1. Introduction

Pyogenic granuloma is a benign vascular tumor which may arise from skin or mucosa, most commonly the face and oral mucosa.¹ Pyogenic granuloma has previously been described in the bladder and ureter of adult patients.^{2,3} However, it has not been reported arising from the urethra or from the internal genitourinary tract in pediatric patients. Here, we report a rare pediatric case of pyogenic granuloma arising from the prostatic urethra.

2. Case presentation

A 6-year-old boy with no past medical or surgical history was referred to the Urology clinic with a two-week history of intermittent terminal hematuria with associated dysuria. He had one recent episode of daytime incontinence, which was unusual for him. He denied difficulty emptying his bladder, stranguria, slow stream and spraying. His family history included urolithiasis but no history of genitourinary malignancy. Genitourinary exam showed a circumcised phallus, a normally placed meatus with a ventral web of tissue, and no evidence of stenosis. Urinalysis showed trace blood, with negative nitrite and leukocyte esterase. Renal bladder ultrasound showed normal upper tracts and an 8 x 6 x 6 mm focal nodular region of soft tissue at the bladder base (Fig. 1). The lesion had minimal internal vascularity by ultrasound.

He underwent endoscopic evaluation in the operating room. Cystoscopy revealed a smooth lesion originating from the

verumontanum and ball valving into the bladder (Fig. 2, A), with overlying normal mucosa. There were no bladder lesions. Bilateral retrograde pyelograms showed no filling defects. Transurethral biopsy was performed. A frozen section of the lesion showed no evidence of malignancy. Transurethral resection of the lesion was performed to just proximal to the verumontanum (Fig. 2, B); the bladder neck was not involved (Fig. 2, C). The lesion was noted to have a wide base. A foley catheter was left in place for 4 days post operatively.

Pathologic examination revealed a pyogenic granuloma (Fig. 3), which comprised of proliferation of capillary-sized blood vessels arranged in lobules that showed positive expression of CD31. An immunostain for D2-40 was negative for any lymphatic malformation, and GLUT-1 immunostain was negative, indicating that the lesion was not an infantile hemangioma. Neutrophils were present marginating several vascular profiles, and rarely between the vessels.

At his 2-week postoperative visit, the patient reported that his hematuria resolved and his urinary flow improved. The patient followed up 6 months postoperatively, and he continued to do well, without recurrent hematuria or difficulty urinating. Urinalysis was negative, and renal bladder ultrasound was without evidence of recurrence.

3. Discussion

While overall rare, the most common diagnoses for pediatric bladder masses include rhabdomyosarcoma followed by fibroepithelial polyp, with vascular lesions being rarely reported.⁴ To our knowledge, pyogenic granuloma has not been previously reported arising from the

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^{*} Corresponding author. Children's Health Texas, 2350 N Stemmons Freeway, Ste 4300, Dallas, TX, 75207, United States.

E-mail address: yvonne.chan@utsouthwestern.edu (Y.Y. Chan).

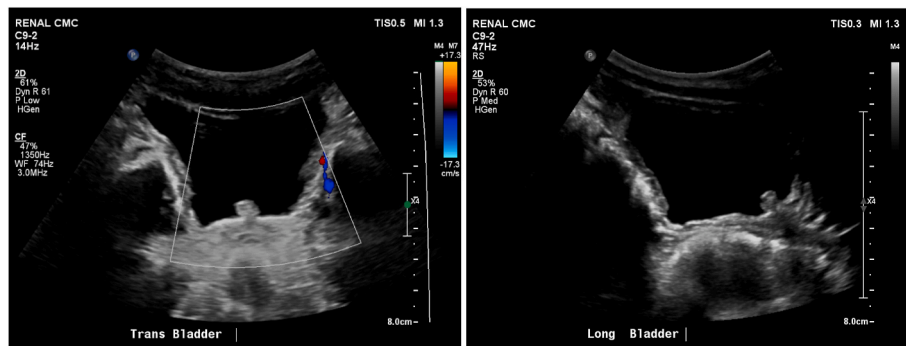


Fig. 1. Preoperative bladder ultrasound images showing the subcentimeter focal nodular region of soft tissue at the bladder base, with minimal internal vascularity.

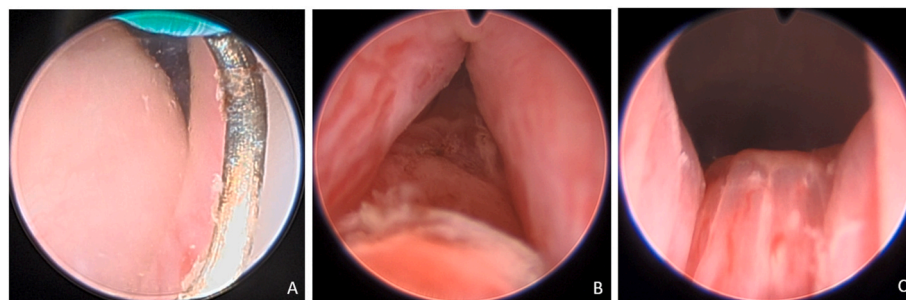


Fig. 2. (A) Lesion ball-valving into bladder from prostatic urethra. (B) Post-resection, open prostatic urethra. (C) Bladder neck, not involved by lesion or resection.

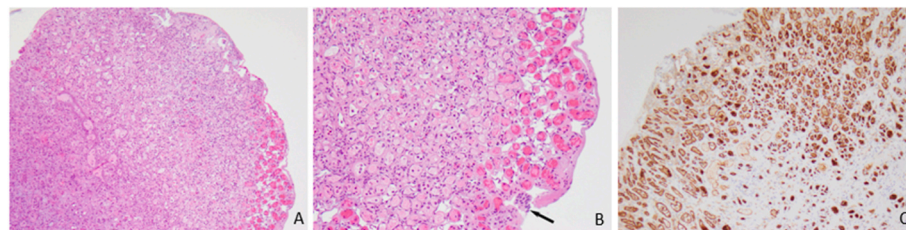


Fig. 3. (A) Lesional tissue comprises capillary-sized vessels (H&E stain, 100× magnification). (B) Higher magnification shows a small focus of urothelium (arrow), erythrocytes filling lumina of vasculature (H&E stain, 200× magnification). (C) Immunohistochemical stain showing diffusely positive CD31 expression in the capillaries.

urethra of a pediatric patient.

The term pyogenic granuloma is a misnomer, as the lesion does not have purulent nor granulomatous features. The entity has therefore been more accurately classified histologically as lobular capillary hemangioma, as it is characterized by proliferation of capillary-sized blood vessels arranged in lobules and frequently with a feeder vessel.¹ Clinically, when arising from external sites, it typically appears as a solitary hemorrhagic appearing, smooth papule which grows over the course of days to weeks. In a 2017 retrospective review of 155 biopsy-confirmed pyogenic granuloma cases, the most commonly affected sites included the face, fingers and lip/oral cavity.¹ Less commonly reported, pyogenic granuloma can also arise from mucosal sites other than oral mucosa, including the gastrointestinal⁵ and genitourinary tracts.^{2,3}

In a 2017 review by Koo et al., 22% of patients with pyogenic granuloma had a history of either trauma or irritation at the site, while 78% of patients had an unknown etiology.¹ The hormonal changes at the time of pregnancy have also been reported as a potential causative factor for pyogenic granuloma. Several medications have been implicated as well, including oral contraceptives, retinoids, antiretrovirals and anti-neoplastic drugs.^{1,5} In the previously reported mucosal urologic cases, potential contributing factors included a recent history of ureteroscopy for urolithiasis³ and recent chemotherapy for pancreatic cancer.² In the

case presented here, no clear etiology was found, as this pediatric patient was otherwise healthy, was on no medications, and had not had any urologic instrumentation.

Management options for pyogenic granuloma vary depending on site but include surgical excision, endoscopic resection, laser ablation, electrodissection, and observation. While benign, the lesions can recur locally, reported in 7.7% of patients with a mean follow up of 39 months.¹

4. Conclusion

Here we present a rare case of pyogenic granuloma arising from the prostatic urethra of a pediatric patient. This rare entity should be considered on the differential for gross hematuria and urinary tract obstruction for adult and pediatric patients. Follow up after surgical management is recommended due to the possibility of recurrence.

Consent

Consent was deemed not applicable for this retrospective case review by the institutional internal review board.

Declaration of competing interest

The authors declare that there are no conflicts of interest regarding the publication of this article.

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