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CASE REPORT

Transitional cell carcinoma of the bladder in first decade of life

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Abstract This report describes two rare cases of well-differentiated, non-invasive transitional cell carcinomas in children (Grade 1 Stage pTa). One was 8-year-old girl with a polypoid lesion and the other 9-year-old girl with kissing bilateral paraureteral lesions. The initial presentation was haematuria and symptoms of urinary tract infection. Subsequent course and investigation confirmed the diagnosis. Complete resection of the lesion and follow-up with urine cytology, vesical ultrasound and check cystoscopy at 4 years has showed no evidence of recurrence.

Keywords Bladder · Carcinoma · Transitional cell · Children · Polyp

Introduction

Gross haematuria in children is uncommon and most often has a benign cause. Tumours of the lower urinary tract in children are usually mesodermal in origin. Bladder tumours of the epithelial origin are uncommon in children and extremely rare in children less than 10 years of age [1–9]. We wish to report two cases which initially presented with gross haematuria and features suggestive of urinary tract infection.

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Case reports

Case 1

A 4-year-old girl presented to general practitioner on a week end with features of frequency and urgency of micturition of 2 days duration. Urine dip test was positive for blood, leucocytes and nitrites. No sample was sent for culture at the practice and she was started on therapeutic dose of trimethoprim for 5 days. Her symptoms settled very quickly but referred to paediatrician for further investigations. She had no family history of urinary problems and had no significant past medical history. Physical examination was normal. Ultrasound scan of the kidneys, ureters and bladder was normal and she was discharged from the clinic.

In 2002, she had an isolated episode of painless blood staining of her knickers one day. It was not possible to say where this blood came from but her mother thought it was similar to menstrual bleeding. It lasted for 1 day only and there was no recurrence. However on subsequent urine testing one of the samples was positive for urinary infection with coli forms sensitive to trimethoprim. Other samples were equivocal or negative. She had a course of trimethoprim and referred to paediatric urology clinic. Physical examination was normal. Repeat ultrasound showed normal kidneys but there was a 5-mm soft tissue nodule in the bladder adjacent to one of the ureteric orifices which were confirmed on repeat scan (Fig. 1). She underwent cystoscopy as a day case at which a large bladder polyp was seen on the left lateral wall. No attempt was made for resection due to lack of adequate instrumentation in day case theatre. She underwent cystoscopic total resection as an inpatient. There was a polypoid lesion over left lateral bladder wall with a pedicle which was resected

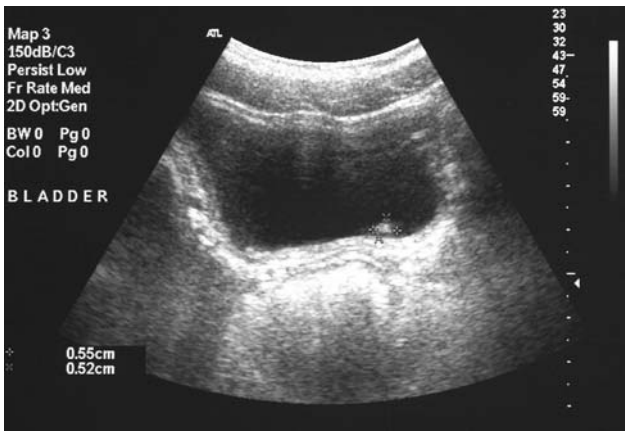

Fig. 1 Ultrasound scans showing the lesion in the lateral wall of the bladder

and the base was cauterised using an 11F resectoscope and 30′ lens.

Histology demonstrated masses of urothelial cells lying in fairly circumscribed groups within a loose fibro-vascular stroma. The urothelium is cytologically bland and mitotic figures are very infrequent but there was no evidence of maturation within the masses. The stroma contained minimal inflammatory cell infiltration. The presence of well-differentiated non-invasive transitional cell carcinoma was concluded from the morphological appearance (Grade 1, Stage pTa).

In view of rarity of the lesion, second opinion was sought from paediatric urologists, paediatric pathologist, paediatric oncologist and professor of paediatric uroncology was taken. The consensus was that she needed to be followed up with a periodic urinary cytology, ultrasound and check cystoscopy with possible resection of the mucosa at the site where the tumour was attached if necessary. Further treatment by way of chemotherapy was withheld as it was only stage 1 and non-invasive.

Since last 4 years after first resection, she has undergone 6 monthly regular surveillance with urinary cytology and ultrasound and check cystoscopy on a yearly basis which are all normal. There is no evidence of recurrence or any further spread. She remains very well with no urinary or systemic symptoms and is doing well at school as well. In January 2006, she had an episode of haematuria but her urine cytology, USS and cystoscopy were all normal except for minor degree of inflammations in the trigone area but no evidence of any recurrence of the polyp. On a course of antibiotics her symptoms disappeared. She has been doing very well since then at recent 4 year follow up.

Case 2

In 2003, a 9-year-old girl presented to general practitioner with features of blood in her urine when she wiped herself.

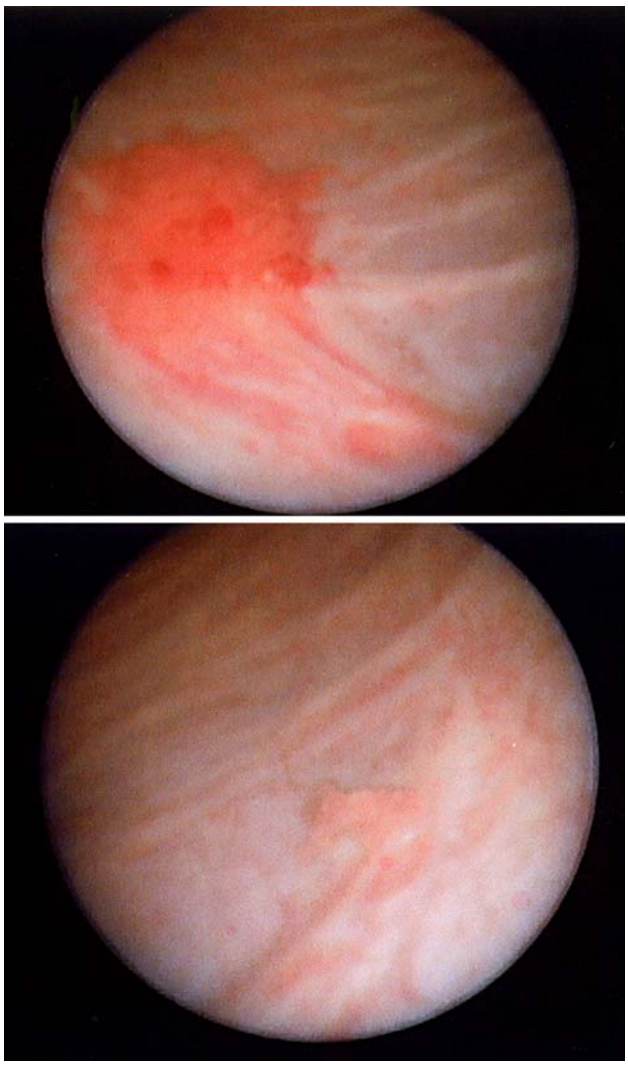

Fig. 2 Cystoscopic appearance of intravesical kissing lesions in case 2

She had mild dysuria as well. She was treated with amoxicillin. She had recurrence of symptoms after 3 months and was referred for further investigations. She had spotting of blood on toilet paper after micturition. She had no family history of urinary problems and had past medical history of tonsillectomy for chronic tonsillitis and right chalazion with mild myopia. Physical examination showed *Candida vulvitis*. Urine dip test showed positive for blood, 2+ of protein and trace of leucocytes but no nitrites. She was treated with local Canesten cream ± Hydrocortisone. She was discharged from the clinic by paediatrician ascribing the haematuria due to local trauma and infection.

In 2004, she had recurrent frequency, dysuria and frank terminal haematuria with occasional mild lower central abdominal pain 4 times in last 2 months. She was treated for a number of urinary tract infections without relief of

symptoms. Her blood pressure was 115/73. Full blood count, clotting screen, serum biochemistry including renal and urine culture were all normal. Abdominal ultrasound showed normal kidneys but showed changes of focal thickening of bladder wall suggestive of cystitis. She was started on trimethoprim prophylaxis.

She continued to have symptoms once every month lasting for 1 week. There has been no confirmed urine infection with positive culture so far. She was, therefore, referred to us. She underwent cystoscopy at which a large frond like lesion was found on the superolateral aspect of the right ureteric orifice. A similar lesion but much smaller in size was found on the left side in an exactly identical position (Fig. 2). Biopsies from both paraureteric lesions were taken. There was no evidence of cystitis.

Histology demonstrated the morphological appearance of early transitional cell carcinoma without any evidence of invasion of the lamina propria. Subsequently, she underwent cystoscopic resection of bilateral transitional cell carcinoma of the bladder uneventfully. Histology of both the lesions showed similar appearance with a villous architecture with branching of the villi and an urothelial covering which was thicker than normal. Urothelial nuclei show only mild variation in size and shape. There was no invasion of lamina propria or muscles. The appearance was that of a Grade 1 papillary transitional cell carcinoma of bladder (G1, pTa). In view of younger age of the patient, further opinions of two consultant paediatric pathologists were obtained who were in agreement with the diagnosis.

She has been followed up with a periodic urinary cytology, ultrasound and check cystoscopy. Further treatment by way of chemotherapy was withheld as it was only Stage 1 and non-invasive. Since resection, she has undergone 6 monthly regular surveillance with urinary cytology and ultrasound and check cystoscopy on a yearly basis which are all normal. There is no evidence of recurrence or any further spread.

Discussion

Primary benign papillary tumours are rare. Amongst malignant lesions, sarcomas are more common in children than carcinoma which could be transitional, squamous, adenocarcinoma or mixed one. Bladder cancer is an occupationally acquired industrial disease and cigarette smoking is associated with a two- or threefold excess risk.

A review of literature revealed less than 30 cases of transitional cell carcinoma in children younger than 10 years [10]. As in adults, there is a male predominance with ratios ranging from 3:1 to 9:1 and exposure to cigarettes may be associated with increased risk [11]. A series of genetic events are implicated and association with Costello syndrome is reported [12].

The most common presentation is painless gross haematuria and most tumours are Grade 1 transitional cell carcinoma. Low grade lesions, definitive cystoscopic management and a low recurrence rate were uniform findings [13]. Recurrence, invasion and death are rare but they have been reported [14].

Study of the biological behaviour indicate better prognosis for superficial bladder cancer (non muscle invasive tumours (pTa and T1 account for 70%) and poor prognosis for muscle invasive disease (25%) and flat non-invasive carcinoma in situ (5%). The most common sites for superficial tumours are the trigone and lateral walls of the bladder. The lesions are pedunculated and well differentiated.

Even though most cases of haematuria in children have a benign aetiology, our experience with the above cases suggests that haematuria especially if recurrent and painless should be thoroughly investigated including a cystoscopic examination.

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