

High-Grade Hyperinvasive Primary Bladder Sarcoma of Unknown Histogenesis

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Abstract: Primary bladder sarcomas of unknown histogenesis are very rare tumours which are known to be aggressive in their behaviour and as such have a very poor prognosis. We report the case of a middle-aged woman who presented as an outpatient following months of lower urinary tract symptoms. Although initial ultrasound was normal, the presence of a tumour was confirmed using flexible cystoscopy. Histology of specimens collected during Transurethral Resection of Bladder Tumour (TURBT) allowed firm diagnosis of primary bladder sarcoma of unknown histogenesis. Despite multiple TURBT procedures and the use of bilateral nephrostomies the patient was eventually treated with radical cystectomy, however, rapid recurrence meant that she sadly passed away before adjuvant chemotherapy could be initiated.

Keywords: primary bladder sarcoma, oncology, bladder mesenchymal tumours, sarcomatoid carcinomas.

INTRODUCTION

Bladder mesenchymal tumours are rare, representing less than 2% of genito-urinary tumours [1-3]. The most common subtype is rhabdomyosarcoma. Primary bladder sarcomas of unknown histogenesis are not only difficult to diagnose – particularly due to their rarity – but are also aggressive in behaviour and therefore have a very poor prognosis [1-3]. Although there are few published cases of such tumours, previous literature has suggested indicators of poor prognosis which were supported in this case [1-2]. This case also highlights the aggressive nature of this tumour with the patient succumbing to her illness within 10 weeks of her initial surgery despite subsequent radical cystectomy.

CASE REPORT

A middle-aged patient was referred to Urology outpatients with a several month history of lower urinary tract symptoms. Ultrasound of the urinary tract was normal. Flexible cystoscopy demonstrated a 5-cm unusual left-sided tumour and the patient was listed for a Transurethral Resection of Bladder Tumour (TURBT).

CT prior to surgery demonstrated thickening along the right lateral wall of the bladder with a dilated right renal pelvis. The patient underwent a TURBT and during the procedure an unusual mobile solid tumour was visualised. Initial resection was difficult and complicated by a post-operative bleed in recovery

necessitating a return to theatre where apparently new tumour was resected.

Tissue from these procedures amounted to 132.6g of grey-tan chippings. Microscopy showed a tumour of variable cellularity composed of relatively uniform spindle cells in a loose myxoid stroma (Fig. 1). Immunohistochemistry of the tumour cells was positive with vimentin. No transitional cell carcinoma or background carcinoma in situ was present. The differential diagnosis lay between an inflammatory myofibroblastic tumour (IMT) and a sarcoma. Sarcomatoid carcinoma was considered but since both cytokeratin markers were negative this diagnosis was less likely.

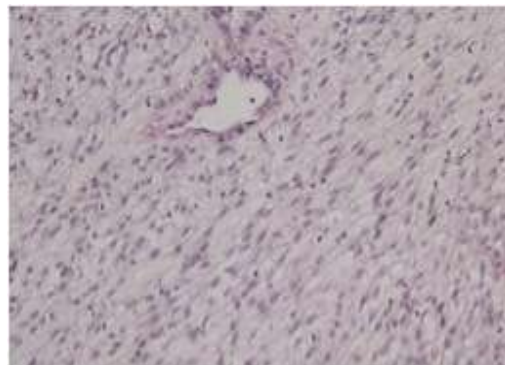


Fig. 1: Representative of the initial TURBT showing a moderately cellular infiltrate of uniform spindle cells in a myxoid stroma

Four weeks later, the patient re-presented with malaise and deteriorating renal function. On examination a nodular mass was palpable within the vaginal wall. Ultrasound scan revealed bilateral hydronephrosis. Bilateral nephrostomies were sited and yet another TURBT was performed showing a huge re-growth. Histology demonstrated similar features to the initial pathology. However, in addition, the tumour now showed a higher cellularity with a high mitotic rate (Fig. 2). The features were unequivocally of a high-grade sarcoma of unknown histogenesis due to the negative immunohistochemistry.

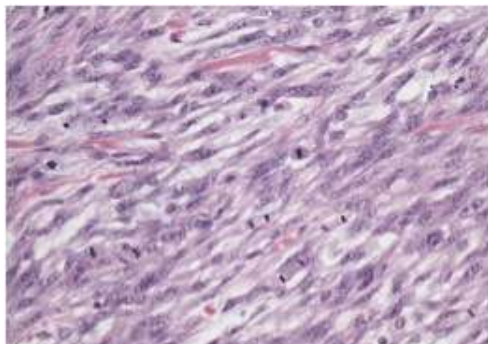


Fig. 2: Representative of the second TURBT and resection specimen showing a high grade spindle cell sarcoma with numerous mitotic figures

The patient underwent radical cystectomy within six weeks of initial diagnosis. The gross specimen received revealed the bladder was filled with a firm grey tumour mass with a lobular appearance and several nodules of tumour extending beyond the bladder wall (Fig. 3). The vagina and uterus were not involved with tumour. Microscopy showed a tumour with a similar appearance to the previous TURBT specimens. The tumour extended to a surgical margin posteriorly and to the urethral margin. None of the twelve pelvic lymph nodes received showed evidence of metastatic tumour, therefore the staging was pT3 N0 M0.

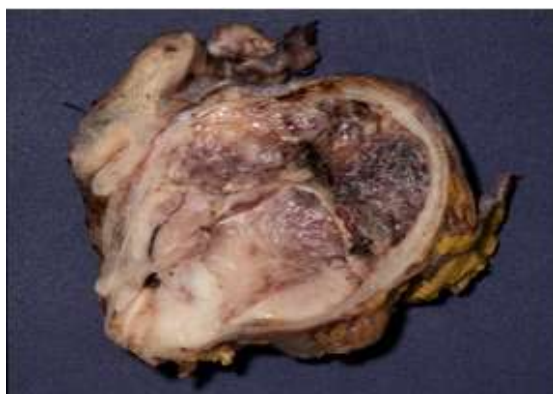


Fig. 3: Photograph of the gross specimen received showing the bladder filled with tumour and several nodules which extend beyond the bladder wall

The patient made an uncomplicated recovery from her radical cystectomy. However, one month later she was readmitted unwell with localised tenderness in the right iliac fossa. CT demonstrated significant disease progression. There were numerous soft tissue lesions in the bladder bed representing gross tumour recurrence with lymphadenopathy extending along the left pelvic sidewall. Unfortunately, the patient's condition deteriorated and she succumbed to her illness before adjuvant chemotherapy could begin. She passed away within 10 weeks of her initial resection.

DISCUSSION

The differential diagnosis in this case included IMT, sarcomatoid carcinoma and primary sarcomas. Sarcomatoid carcinomas are rare malignant epithelial neoplasms with neoplastic spindle cell components. The epithelial component is not easily recognisable and its presence may only be appreciated after the performance of immunohistochemistry. Primary sarcomas must be distinguished from sarcomatoid carcinomas because the former diagnosis has implications in patient management.

Inflammatory myofibroblastic tumour (IMT) is relatively common and usually occurs de novo or less commonly following trauma. Such tumours favour men and there is a varied age range at presentation. The tumours can be polypoid or sessile and they can achieve a size of more than 10cm. Microscopically there is a spindle cell proliferation in a myxoid stroma with variable mitotic rates. They can infiltrate deeply and can be difficult to distinguish from sarcomatoid carcinoma on small biopsies. Alk-1 is a useful marker, positive in more than half of bladder IMTs. Following TURBT the lesions typically stabilise and regress [4]. With this case, although initially morphologically IMT was considered the speed of re-growth of the tumour signified a high grade sarcoma.

High grade sarcomas of uncertain histogenesis are rare and there are very few published cases. The two largest case series of soft tissue sarcomas of the urinary tract [1] suggested that high tumour grade, large tumour size, vascular invasion, incomplete surgical resection and metastatic disease at presentation were associated with poorer outcomes [1-2]. Three of these parameters were found in this case, predicting a poor prognosis for this patient.

Bladder sarcoma, like other primary non-urothelial bladder tumours shares an unfavourable prognosis despite aggressive surgical management. This is secondary to aggressive behaviour as well as usually an advanced stage at presentation [5]. Unfortunately this patient did not survive long enough to receive adjuvant treatment. It is unlikely given the speed at which her tumour recurred that this would have been successful. As has been suggested previously, the systematic

investigation of most non-urothelial bladder tumours is limited by the rarity of these lesions[5]. As such, this case is reportable both for the sheer aggression of this particular subtype as well as its rarity.

CONCLUSION

The systematic investigation of most non-urothelial bladder tumours is limited by the rarity of these lesions. As such, this case is reportable both for the sheer aggression of this particular subtype as well as its rarity.

REFERENCES

1. Dotan ZA, Tal R, Golijanin D, Snyder ME, Antonescu C, Brennan MF *et al.*; Adult genitourinary sarcoma: the 25-year Memorial Sloan-Kettering Experience. *J Urol*, 2006; 176: 2033-2039.
2. Spiess PE, Kassouf W, Steinberg JR, Tuziak T, Hernandez M, Tibbs RF *et al.*; Review of the M.D. Anderson experience in the treatment of bladder sarcoma. *UrolOncol.*,2007; 25: 38-45.
3. Shanks J, Iczkowski K.; Spindle cell lesions of the bladder and urinary tract. *Histopathology*, 2009; 55: 491-504.
4. Montgomery EA, Shuster DD, Burkart AL, Esteban JM, Sgrignoli A, Elwood L *et al.*; Inflammatory myofibroblastic tumors of the urinary tract: a clinicopathologic study of 46 cases, including a malignant example inflammatory fibrosarcoma and a subset associated with high-grade urothelial carcinoma. *Am J SurgPathol*, 2006; 30: 1502-1512.
5. Dahm P, GschwendJE; Malignant non-urothelial neoplasms of the urinary bladder: a review. *EurUrol*, 2003; 44: 672-81