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CASE REPORT

Solitary Fibrous Tumour of the Urinary Bladder

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ABSTRACT

Solitary fibrous tumour is an uncommon fibrous neoplasm. It was first described in the pleura, although extrapleural sites have also been reported. Solitary fibrous tumour arising from the urinary tract is rare. This report is of a patient with solitary fibrous tumour arising from the urinary bladder. The clinical and radiological features are discussed, together with a review of the literature.

***Key Words**: Neoplasm, fibrous tissue, Tumor, bladder*

INTRODUCTION

Solitary fibrous tumour (SFT) is an uncommon type of spindle cell neoplasm that was first described in the pleura in 1931.[1] The tumour is known by a variety of names, which reflect different hypotheses as to the histogenesis. SFT was once thought of as arising from the mesothelial cell[2] but the current belief is that it is of mesenchymal origin.[3] The thoracic cavity remains the most common site — SFT is usually associated with serosal surfaces, especially the pleura. However, anatomical sites unrelated to the serosal surfaces such as the lung, mediastinum, pericardium, peritoneum, nose, and paranasal sinuses have also been reported.[4-8] The histologic variability and non-specific radiological features make a definite diagnosis difficult, especially when the tumour is located in an unusual site.

CASE REPORT

A 44-year-old Chinese man presented with painless gross haematuria for a few days. Ultrasonography showed left hydronephrosis. Intravenous urogram (Figure 1) and mercapto-acetyl-triglycerine 3 studies revealed a mass on the left lateral wall of the urinary bladder associated with a non-functioning left kidney. Cystoscopy showed an extramucosal mass pressing onto the bladder neck. Pathological diagnosis could not be obtained from biopsy of the mass. Computed tomogram demonstrated a large well-defined tumour on the left side of the urinary bladder wall (Figures 2a and 2b). This tumour showed homogenous moderately dense contrast enhancement. It extended into the left lower ureter causing left hydronephrosis.

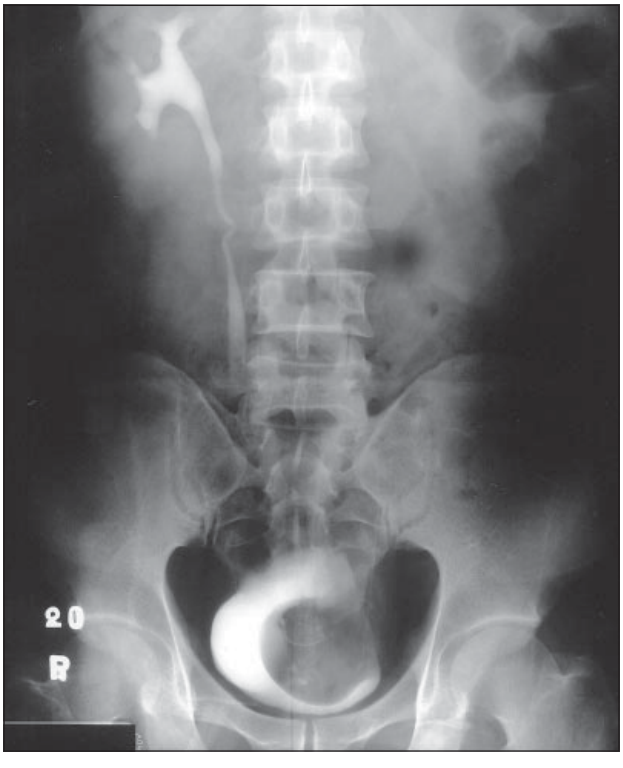

Figure 1. Twenty-minute release film of an intravenous urogram showing a filling defect at the left lateral wall of the urinary bladder and a non-functioning left kidney.

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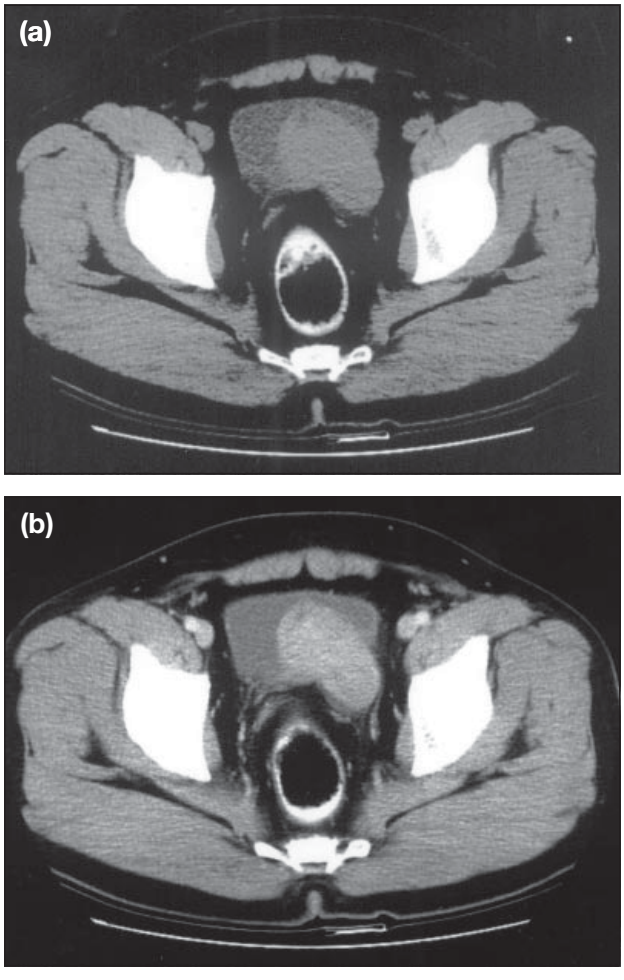

Figure 2. Axial computed tomography scan of the pelvis. (a) A large well-defined tumour mass is shown on the left side of the urinary bladder. (b) The tumour at the left side of the urinary bladder shows homogenous contrast enhancement.

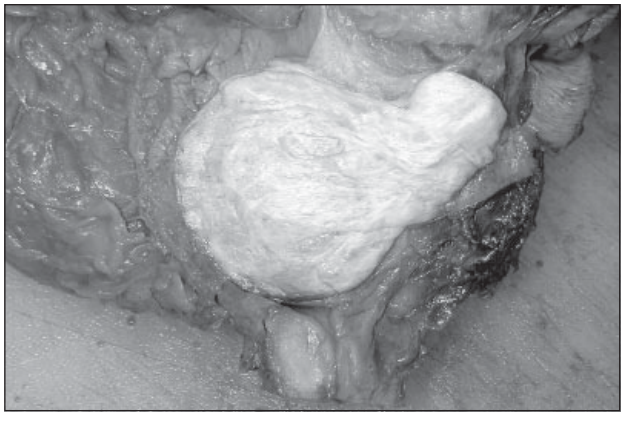

Figure 3. Sectioned surface of the tumour revealing the intramural and exophytic parts. Note the dilated left ureter, smooth tumour outline, and dense white tumour tissue.

Radical cystectomy, left total nephrectomy, and urinary diversion by ileal conduit was performed. A 7 x 5 x 5 cm tumour was found intraoperatively. The tumour protruded from the bladder wall and obstructed the left ureteric outlet (Figure 3). It also invaded through the bladder coat into the adventitial fatty tissue. The outline was sharply circumscribed and the mucosal surface over the tumour was smooth and slightly congested. The cut surfaces showed whorled tissue of a pinkish to white colour. Microscopic examination revealed abundant spindle cells (Figure 4) with scanty cytoplasm. Fibrous matrix was noted. No definite features of atypia were seen. There were zones of variable cellularity (Figure 5). Immunohistochemical studies revealed expression of CD34 but not c-kit, actin, or desmin.

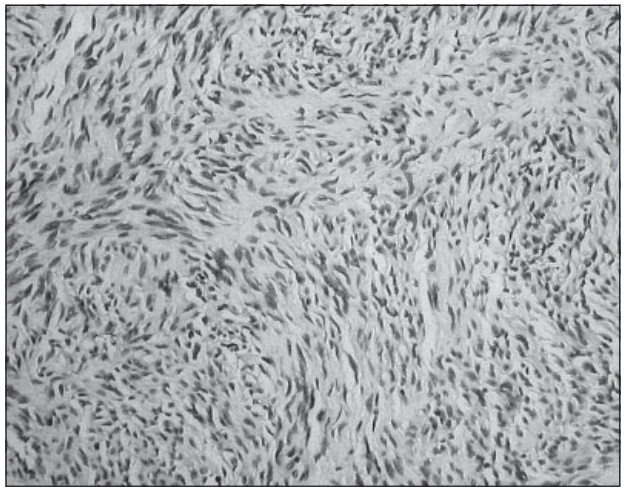

Figure 4. Photomicrograph of the tumour showing bland spindle cells in fascicles. (Original magnification x 10.) Note the characteristic cracking artifact between the tumour cells and the collagenous stroma.

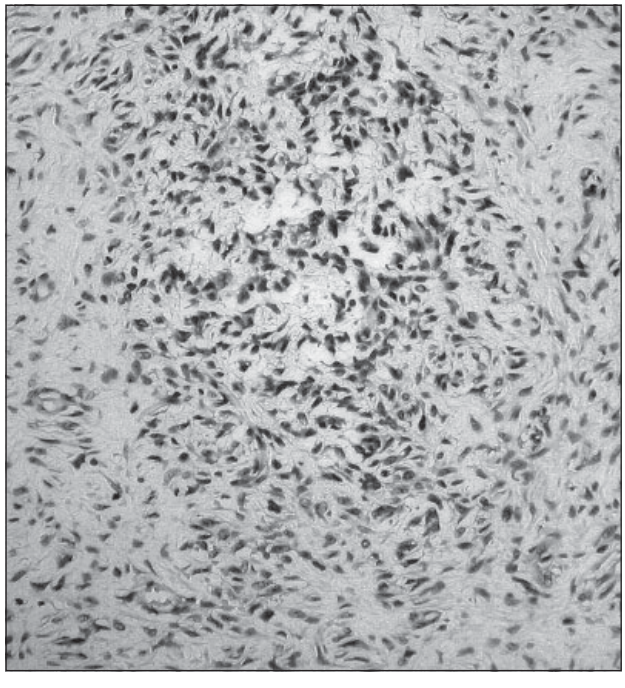

Figure 5. Photomicrograph of the tumour showing a cellular area surrounded by hyalinized areas of lower cellularity. (Original magnification x 10.)

The pathological features were compatible with a solitary fibrous tumour. As no evidence of malignancy was shown, no radiotherapy or chemotherapy was given after the operation. The patient was discharged home with regular follow up.

DISCUSSION

SFT is an uncommon soft tissue neoplasm that has been well recognised in the pleura. The tumour is usually described in the literature as a case report or case series. The overall incidence is unknown. SFT arising from the urinary bladder is rare. To date, there have only been 5 cases reported.[9-11] Four were men and one was a woman. The age of the patients ranged from 42 to 67 years. Extrapleural SFT usually presents with symptoms related to the location and size of the tumour. Asymptomatic patients are sometimes encountered. For SFTs arising from the urinary bladder, patients can present with pelvic pain, dysuria, haematuria or, as with this patient, obstruction at the left ureteric orifice causing left hydronephrosis. No predisposing or risk factors are known. The incidence or likelihood for a patient with a SFT at 1 location to develop a second at another location is also unknown.

SFTs arising from the urinary bladder are usually well circumscribed. They show endophytic growth with an intact urinary bladder wall. The usual size at presentation is 5 to 6 cm.[12] In this patient, the tumour presented as a non-calcified soft tissue mass with homogeneous contrast enhancement on CT study. This demonstrates the usual radiological appearances of SFT. Nevertheless, in other sites such as the peritoneum,[13] kidney,[14] and pleura[15] SFTs show heterogenous density and contrast enhancement, with areas of solid component, necrosis, and haemorrhage. Calcification of the tumour has also been reported.[14] Central scar has also been demonstrated in renal SFT.[14]

Microscopic features of SFT are characterised by proliferation of spindle cells in parallel clusters next to dense collagenous stroma. There may be cellular and hypocellular zones, as in this patient. Immunohistochemically, virtually all SFTs positively express CD34, which serves as a good marker for this tumour. Rarely, desmin may be expressed. There is no expression of cytokeratin or mesothelial markers.

There are no specific radiological characteristics for SFT arising from the urinary bladder. The radiological differential diagnoses are leiomyoma, leiomyosarcoma, transitional cell carcinoma, or haemangiopericytoma. As the definitive diagnosis requires histological and immunohistochemical findings, biopsy is usually required. Approximately 10% to 20% of the SFTs arising from the pleura behave in a malignant fashion. However, most of the extrathoracic SFTs show a benign nature,[16] although local recurrence and distant metastasis have been reported.[10] Therefore, SFT should be surgically removed with the aim of complete excision. Follow-up is necessary in view of the possibility of tumour recurrence. This patient is still regularly followed up with no evidence of recurrence or metastasis.

REFERENCES

1. Klemperer P, Rabin CB. Primary neoplasms of the pleura: a report of five cases. Arch Pathol 1931;11:385-412.
2. Stout AP, Murray MR. Localized pleural mesothelioma: investigation of its characteristics and histogenesis by method of tissue culture. Arch Pathol 1942;34:951-964.
3. Westra WH, Gerald WL, Rosai J. Solitary fibrous tumor. Consistent CD34 immunoreactivity and occurrence in the orbit. Am J Surg Pathol 1994;18:992-998.
4. Younsen SA, Flynn SD. Intrapulmonary localized fibrous tumor. Intraparenchymal so-called localized fibrous mesothelioma. Am J Clin Pathol 1988;89:365-369.
5. Witkin GB, Rosai J. Solitary fibrous tumor of the mediastinum. Am J Surg Pathol 1989;13:547-557.
6. El-Naggar AK, Ro JY, Ayala AG, Ward R, Ordonez NG. Localized fibrous tumor of the serosal cavities. Immunohistochemical, electron-microscopic and flow-cytometric DNA study. Am J Clin Pathol 1989;92:561-565.
7. Young RH, Clement PB, McCaughey E. Solitary fibrous tumor of the peritoneum. Arch Pathol Lab Med 1990;114:493-495.
8. Zukerberg LR, Rosenberg AE, Randolph G, Pilch BZ, Goodman ML. Solitary fibrous tumor of the nasal cavity and paranasal sinuses. Am J Surg Pathol 1991;15:126-130.
9. Corti B, Carella R, Gabusi E, D'Errico A, Martorana G, Grigioni WF. Solitary fibrous tumor of the urinary bladder with expression of bcl-2, CD34, and insulin-like growth factor type II. Eur Urol 2001;39:484-488.
10. Bainbridge CT, Rajiva R.Singh, Mentzel T, Katenkamp D. Solitary fibrous tumor of urinary bladder: report of two cases. Human Pathol 1997;28:1204-1206.
11. Westra HW, Grenko TR and Epstein J. Solitary fibrous tumor of the lower urogenital tract: a report of five cases involving the seminal vesicles, urinary bladder, and prostate. Human Pathol 2000;31:63-68.
12. Weiss SW, Goldblum JR. Solitary fibrous tumor. In: Strauss M, editor. Enzinger and Weiss's soft tissue tumor. 4th Ed. St Louis: Mosby; 2001:1021-1031.
13. Kinoshita T, Ishii K, Higashiiwai H, Naganuma H. Malignant solitary fibrous tumor of the peritoneum. Histopathology 1996; 28:463-466.
14. Gelb BA, Simmons LM, Weidner N. Solitary fibrous tumor involving the renal capsule. Am J Surg Pathol 1996;20:1288-1295.
15. Tublin EM, Tessler NF, Rifkin DM. US case of the day. Radiographics 1998;18:523-525.
16. Fukunaga F, Naganuma H, Nikaido T, Ushigome S. Extrapleural solitary fibrous tumor: a report of seven cases. Mod Pathol 1997; 10:443-450.