

Solitary Fibrous Tumour of the Prostate with Ossification: A rare Case Report

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ABSTRACT

Solitary fibrous tumour (SFT) is a tumour of fibroblastic origin with characteristic histopathological and immunohistochemical features. Initially described in the pleura, it has now been described in various extrapleural locations including soft tissues and different organs. It is very rare in the prostate with only approximately 30 cases have been described in the literature mostly as case reports. It presents as slowly growing painless mass in the prostate with associated urinary symptoms. Radiologically and clinically it mimics prostatic adenocarcinoma. We report a case of 62 year male patient presenting with obstructive urinary symptoms. Computed tomography imaging suggested a prostatic origin. A trucut biopsy and immunohistochemistry was done which showed features of solitary fibrous tumour which was confirmed on subsequent radical cystoprostatectomy. We review the literature and discuss the challenging issues of misdiagnosis and prognosis.

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Introduction

Solitary fibrous tumour (SFT) is a tumour of fibroblastic origin with characteristic histopathological and immunohistochemical (IHC) features. Initially described in the pleura, it has now been described in various extrapleural locations including soft tissues and different organs.^[1] It is very rare in the prostate with only approximately 30 cases have been described in the literature mostly as case reports.^[2-4] It presents as slowly growing painless mass in the prostate with associated urinary symptoms.

Here we describe prostatic SFT in a 62 year male patient presenting with urinary symptoms.

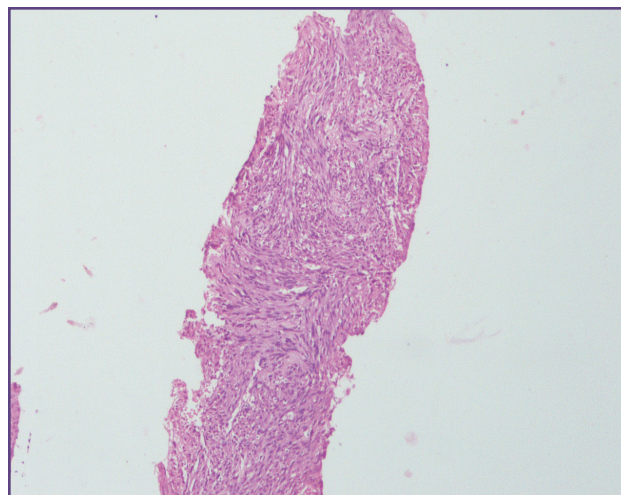
Case Report(S)

A 62 year old male patient presented with dysuria, urinary urgency and increased frequency. CT scan was done which showed a mass in the prostate measuring 18x12x6cm (Fig.1a). Serum PSA levels were within normal limits. Needle biopsy was done which showed fascicles of spindle cells with scattered fibrous bands (Fig.1b). Immunohistochemical stains were done for CD34 and smooth muscle actin (SMA). The tumour cells were strongly and diffusely CD34 positive (Fig.1c) and negative for SMA. Based on these findings a diagnosis of solitary fibrous tumour (SFT) was suggested and excision was done. Because of large size of the tumour, radical cystoprostatectomy was done. On gross examination, the prostate measured 18x12x6cm and was totally replaced by a variegated tumour with solid grey white, cystic,

myxoid and bony hard areas. The urinary bladder was grossly unremarkable (Fig.2). Microscopic examination showed a tumour with hypo and hypercellular areas with admixed collagen and many round to ectatic blood vessels giving a hemangiopericytomatous pattern. The tumour was composed of oval to spindle cells arranged haphazardly without any definite pattern (Fig.3a). Foci of ossification were seen (Fig.3b). The hypercellular areas showed necrosis with increased mitotic activity (7/10HPF) focally (Fig.3c and 3d). A panel of IHC stains was performed comprising of CD34, CD99, SMA, CD117 and progesterone receptor (PR). The tumour cells were diffusely and strongly positive for CD34 (Fig.4), weak and focally positive for CD99 and negative for SMA, desmin, CD117 and PR. Based on these characteristic histopathological and IHC findings, a diagnosis of solitary fibrous tumour was made and since the tumour showed increased mitotic activity with necrosis, it was reported as malignant solitary fibrous tumour. Presently the patient is on follow up and symptom free.

Discussion

SFT is a tumour of fibroblastic origin. It was first described in the pleura but now it has been described in various extrapleural locations like soft tissues, subcutaneous tissue, orbit, spinal cord, mediastinum, lungs, thyroid, liver, urinary bladder, testes and prostate.^[1] Chan JKC described SFT in pleural and different extrapleural sites (approximately 22 different sites) either related to serosal cavities or unrelated.^[5] SFT arising in a prostate is rare and there are few case reports and occasional case series.



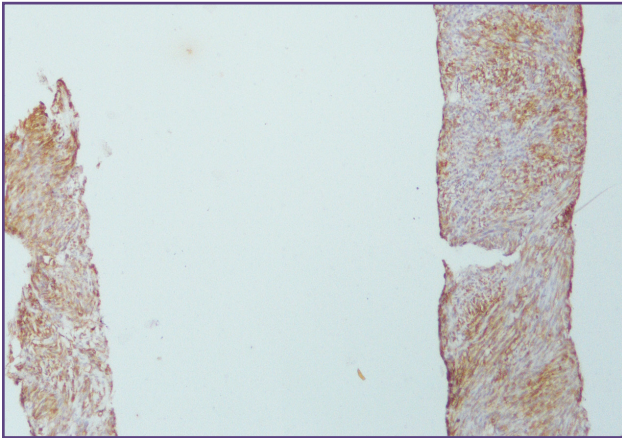


Fig 1 (A) CT scan showing mass in the prostate. (B) Trucut biopsy showing spindle cells with collagen (H&E, 10x). (C) Trucut biopsy showing strong and diffuse CD34 positivity (CD34, 10x).

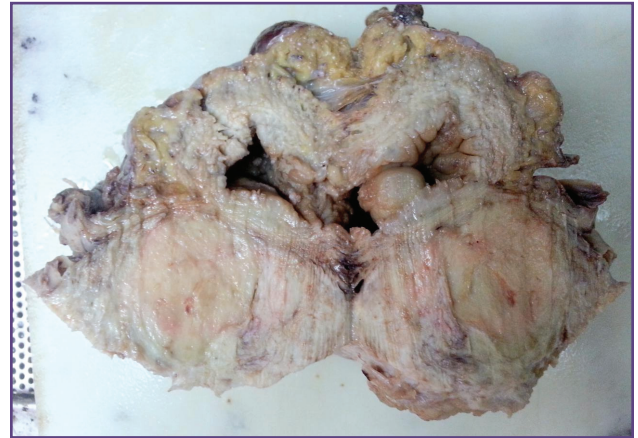


Fig. 2: Gross specimen showing prostatic tumour and urinary bladder

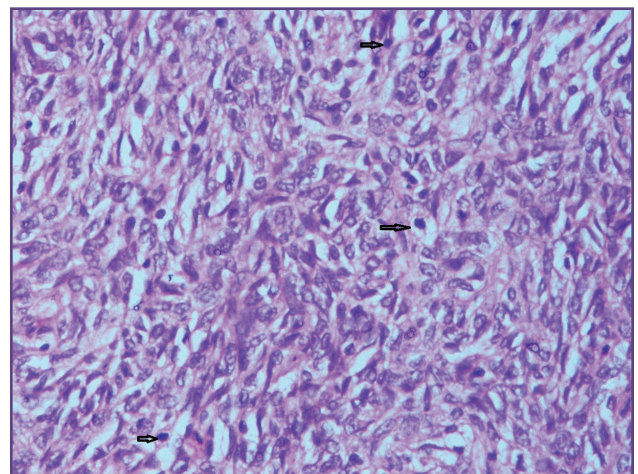
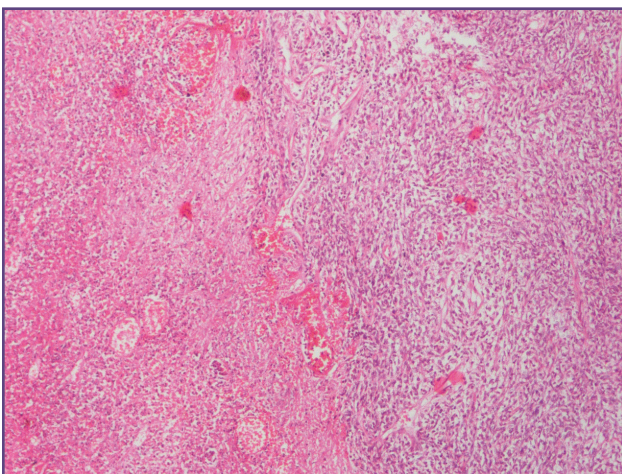
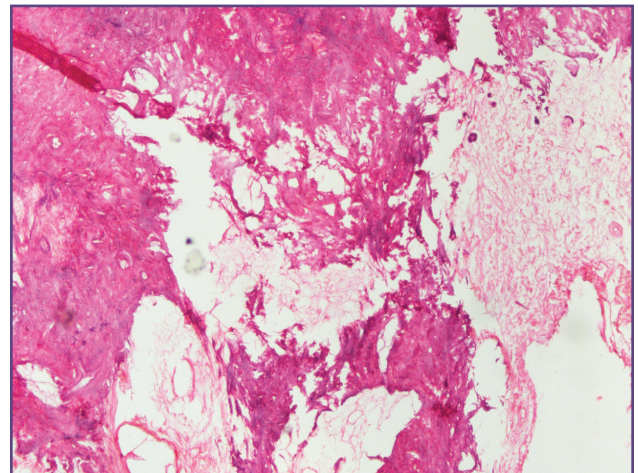
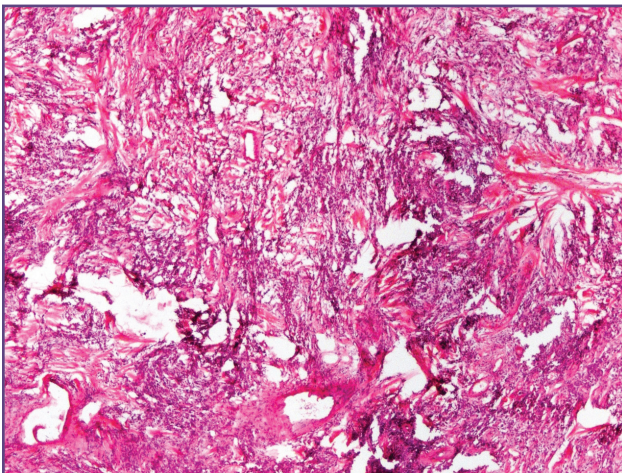


Fig 3. (A) Low power view showing collagen, haphazardly arranged cells and blood vessels (H&E, 4x). (B) Ossification in hypocellular areas (H&E, 4x). (C) Hypercellular areas with necrosis (H&E, 10x). (D) High power view showing hypercellular areas with increased mitosis (arrows), (H&E, 40x)

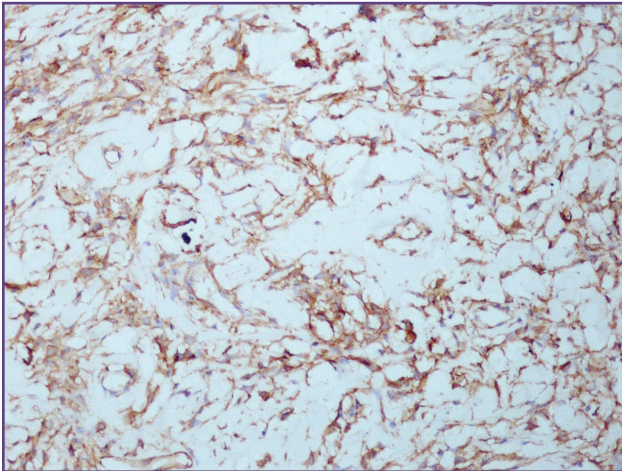


Fig. 4: Tumour cells showing strong and diffuse CD34 positivity in resected tumour (CD34, 20x)

In a series of solitary fibrous tumours of 5 and 12 cases respectively, Westra et al^[6] and Mentzel et al^[7] described one case each of SFT arising in the prostate. Two cases of prostatic SFT were described by Pins et al^[8], one showing benign appearance and the other showing cytological atypia with increased mitotic activity. The largest series comprises of 13 cases by Herawi et al^[9] and in this series, 10 cases were arising in the prostate, 2 cases arising between prostate and rectum with extension into the prostate and one case was pelvic mass without prostatic infiltration. About 50% of the cases in this series were malignant. Solitary fibrous tumour in prostate presents as slowly growing mass with associated urinary symptoms like dysuria, urgency and increased frequency. It arises in adult age group with a age range of 46-75 years^[9]. Serum prostate specific antigen (PSA) levels are within normal limits. Some patients may present with hypoglycemia as SFT has been shown to produce insulin like growth factors.^[1] Grossly, SFT presents as well circumscribed mass with grey white cut surface. Microscopically, it shows oval to spindle cells arranged in a patternless manner with admixed collagen and hemangiopericytomatous blood vessels. The cells are benign in appearance and mitotic activity is low. Ossification can be seen rarely in the hypocellular areas as in the present case.^[5] Some SFTs may show hypercellularity with cytological atypia, necrosis and increased mitotic activity (>4/10hpf) and are considered as malignant SFT.^[1,5,8] But these criteria are not absolute as there is no correlation between these features and behaviour of the tumour. The most important prognostic factor is complete surgical resection with clear margins.^[5] Immunohistochemically, SFT shows strong and diffuse positivity for CD34 and variable positivity for SMA, CD99 but negativity for keratins, PR and CD117.

The differentiation diagnosis includes long list of spindle cell tumours which includes tumours of specialized prostatic stroma and mesenchymal tumours.^[8,10] The tumours of specialized prostatic stroma include stromal nodules, stromal tumour of uncertain malignant potential (STUMP) and stromal sarcomas. Stromal nodules are associated with benign prostatic hyperplasia and show benign spindle cells with admixed many small round blood vessels and chronic inflammatory cells. STUMPs are tumours of prostatic stroma and may show variable patterns like hypercellular stroma with or without atypical cells, phylloides like pattern and myxoid stroma with benign stromal cells.^[8,10] Mitosis and necrosis are not seen. Benign prostatic glands are present within the stroma in STUMP but absent in SFT. STUMPs are positive for CD34 and progesterone receptor unlike SFT which are negative for PR. Stromal sarcomas are hypercellular and show cytologically atypical spindle cells with mitosis and necrosis. Sometimes carcinomas of the prostate may show predominantly spindle cell morphology and are called as sarcomatoid carcinomas, however, foci of conventional adenocarcinoma or a previous history of prostatic adenocarcinoma is present. The spindle cell tumours of mesenchymal origin include leiomyoma, leiomyosarcoma, rhabdomyosarcoma, fibrosarcoma, synovial sarcoma, inflammatory myofibroblastic tumour, hemangiopericytoma and sometimes gastrointestinal stromal tumour. These tumours can be differentiated from SFT by characteristic histopathological and immunohistochemical features. Leiomyoma and leiomyosarcoma show smooth muscle morphology with benign spindle cells in leiomyoma and atypia and mitosis in leiomyosarcoma and positivity for vimentin, smooth muscle actin and desmin on IHC stain. Rhabdomyosarcoma is seen in younger age group and shows embryonal morphology with desmin and myogenin positivity. Fibrosarcoma and synovial sarcoma morphologically show herringbone and biphasic patterns respectively. Inflammatory myofibroblastic tumours are usually small in comparison of other prostatic spindle cell tumours and show spindle cells in cell culture pattern with admixed inflammatory cells.^[10] Sometimes it is very difficult to differentiate SFT and hemangiopericytoma because the morphological and immunohistochemical features overlap, however, the admixture of collagen and variable cellularity is not seen in hemangiopericytoma. Gastrointestinal stromal tumour (GIST) of the rectum may be confused clinically and radiologically as prostatic mass and histologically shows spindle cells, but can be differentiated from SFT by positivity for CD117 on IHC in GIST and the characteristic morphology of SFT.

The treatment is complete surgical excision with clear resection margins. The behaviour of SFT is variable and

cannot be exactly predicted based on morphological features.

Conclusion

In conclusion, here we have described a case of solitary fibrous tumour in the prostate which is rare with very few cases described. In addition, the present case showed certain unusual morphological features like ossification which has not been described in the prostate. Our case represents the one with complete clinical, radiological and histological data and a long follow up.

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Competing Interests

None declared

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