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Bizarre leiomyoma of the prostate

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Summary. Obstruction of the urethra, caused by a prostatic tumour necessitated prostatectomy in a 49-yr-old man. Histology revealed a moderately cellular and vascular tumour with marked cellular atypia. After a follow-up for three years, the results of both the clinical investigations and prostatic needle biopsy were negative. Thus the original opinion of malignant prostatic mesenchymal tumour was revised, resulting in the diagnosis of bizarre leiomyoma. Subsequently the smooth muscle cell origin and the benign nature of the tumour were demonstrated by electron microscopy and Feulgen-cytophotometry, respectively. This is the first prostatic bizarre leiomyoma in which malignancy was excluded by demonstrating euploid polyploidy. This case also calls the attention to the need of more sophisticated methods in everyday diagnostic pathology.

Key words: Prostatic leiomyoma – Bizarre nuclear pattern – Bizarre phenomenon versus true malignancy

Introduction

Prostatic cancer is responsible for 7% to 8% of all tumour deaths in men older than 50 years (Mostofi and Davis 1985). Benign prostatic tumours are, however, very rare and are encountered in a younger age group (Wünsch and Müller 1982).

The clinical and pathological features of a prostatic bizarre leiomyoma are presented. This is the fourth case in the literature and the first one in which the benign nature of the lesion was proved also by cytophotometry.

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Case report

A 49-year-old man was hospitalized because of insidiously developing urethral obstruction. The past medical history and laboratory test were noncontributory. There was a significantly enlarged, firm prostate on rectal digital examination. Transvesical prostatectomy was performed followed by an uneventful recovery. Histologically the lesion was held to be malignant, thus following the operation patient had been treated with Cyclophosphamide for some month, but that was interrupted because of thrombocytopenia. Transurethral lithotripsy and suprapubic cystotomy were carried out because of bladder calculi in two and three years, respectively. During the latter a needle biopsy of the prostatectomy area was performed. Repeated intravenous urography, chest and bone X-rays, and routine laboratory tests indicated no recurrance or metastases. The patient has been followed for 36 months, currently he is well with no evidence malignancy. Three years after the first surgery the histology was revised and additional morphological methods were applied.

Material and methods

Both the prostatectomy and needle biopsy specimens were fixed and processed routinely. Electronmicroscopy could only be performed on paraffin-embedded material. Cytophotometry was carried out on 15 vm thick sections. Following hydrolysis (1 N HCl, 60° C, 9 min) measurements were carried out with an MPM IK computer-controlled cytophotometer (Carl Zeiss, Oberkochen FRG).

Results

The cut surface of the $7 \times 6 \times 6$ cm prostatectomy specimen was pale red with scattered small, grayish-red or yellow areas and was surrounded by a capsule-like compressed prostatic tissue. Microscopically the circumscribed tumour was mainly composed of irregularly interlacing bundles of smooth muscle cells with greatly variable sized oval or cigar shaped nuclei. Additionally, uniform cellular areas with short, blunt nuclei were also present. All these nuclei disclosed a fine, reticular chromatin pattern. The most striking finding was the

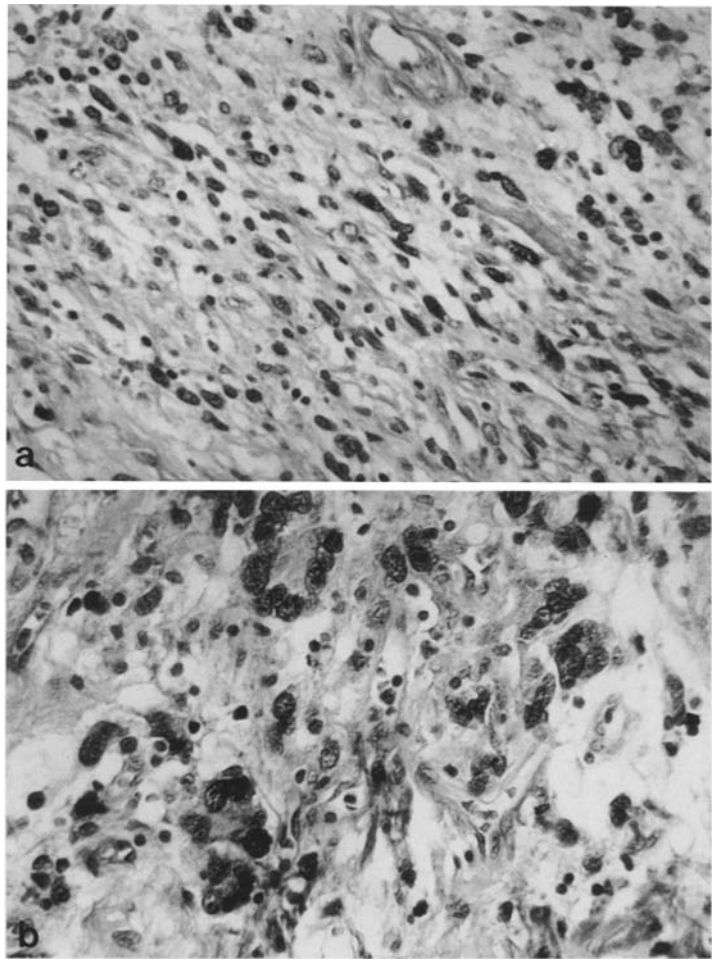

Fig. 1 a. Low power view of a more differentiated part of the tumour with some scattered bizarre nuclei H.-v.G. (×360); **b** Dedifferentiated area of the tumour. Highly atypical, bizarre nuclei H.-v.G. (×288)

abundance of haphazardly distributed large cells. These had irregularly shaped bizarre nuclei, often with marked karyopyknosis. Not infrequently the bizarre cells were multinucleated giant cells. The presence of a nucleolus was a general feature, although it was lacking in the bizarre nuclei. The tumour was rich in venous type vessels lacking elastic fibers. Their thick wall consisted of disorderly arranged hyalinized collagen and smooth muscle cells, some of which disclosed bizarre nuclear pattern.

The diagnosis of malignant mesenchymal tumour possibly of smooth muscle origin was given. Three years later the revision of the original slides by one of us resulted in the diagnosis of bizarre leiomyoma.

The needle biopsy specimen consisted of loose connective tissue and striated muscle fibers, but no tumour tissue. Electronmicroscopically the tumour cells were surrounded by basal lamina, and contained myofilaments and glycogen particles in their cytoplasm.

The results of DNA cytophotometry are summarized in Fig. 3. All these features were consistent with those of bizarre leiomyoma.

Discussion

Benign leiomyogenic tumours different from the customary pattern have been labelled as cellular leiomyoma, epitheloid leiomyoma, leiomyoblastoma, bizarre leiomyoma, bizarre leiomyoblastoma and atypical leiomyoma (Hajdu 1979). Fechner suggested (Fechner 1968) a simple and useful classification for benign leiomyogenic tumours: A) leiomyoma; B) cellular leiomyoma; C) bizarre (atypical) leiomyoma. "B" is more cellular than "A" and is composed of round and polygonal cells with a clear zone surrounding the nucleus completely or partially. For benign smooth muscle tumours with atypical cells, nuclear hyperchromasia, pleomorphism and ocassional mitoses "bizarre leiomyoma" is the appropriate term. Although the atypia and polymorphism are

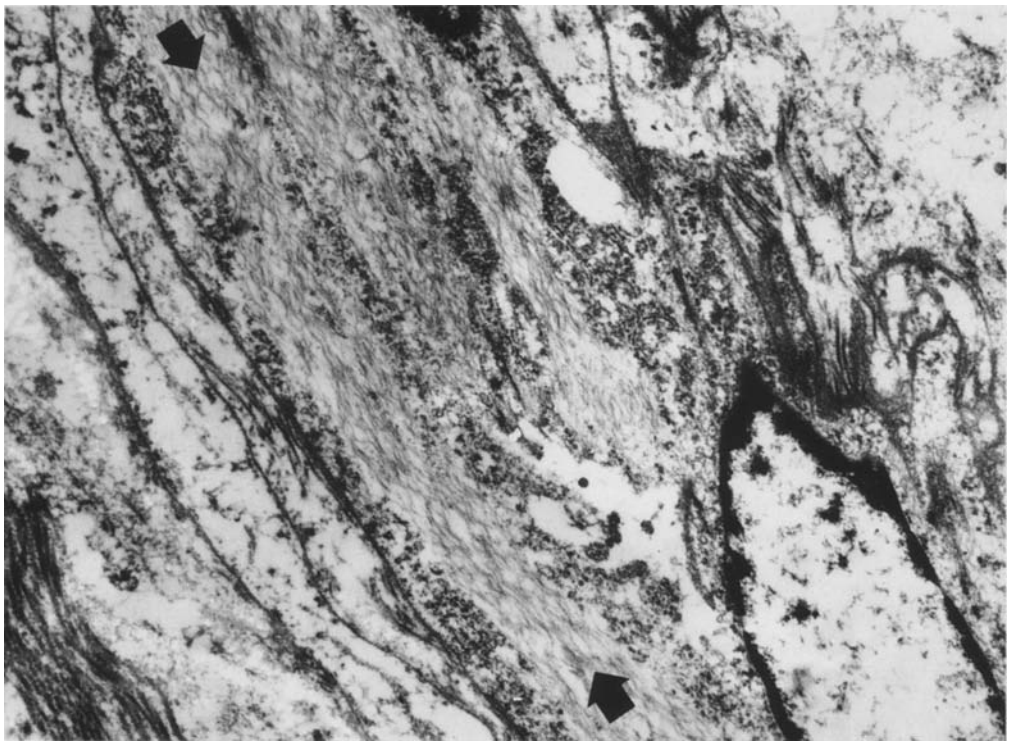

Fig. 2. Electronmicrograph of tumour cells. Bundless of myofilaments (arrows) and glycogen particles in the cytoplasm. × 7280

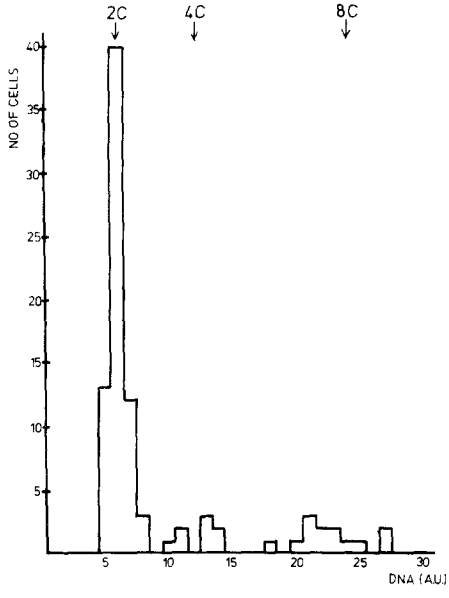

Fig. 3. Most of the cells display 2C, a few 4C, and some 8C DNA content. The individual peaks are easily differentiable. The DNA distribution displayed is euploid-polyploid

striking, these tumours invariably run a benign course. Bizarre leiomyomas occur most often in the gastric wall. A survey of 176 gastric mesenchymal tumours revealed that all the 14 bizarre leiomyomas and leiomyoblastomas observed, had originally been misinterpreted as malignant myogenic or neurogenic tumours (Salmela and Tallqvist 1967). Such data confirm the importance of the correct histological diagnosis to avoid further surgical intervention and/or chemotherapy. Fechner's five patients with uterine bizarre leiomyoma had been on synthetic progestin therapy because of endometriosis or meno-/metrorrhagia. Four of these cases were seen during a survey of 315 uterine leiomyomas (Fechner 1968).

A survey of the literature revealed three cases which can be considered prostatic bizarre leiomyoma. The first and second case described by Attah and Powell are similar to ours; they were, however, described as "atypical stromal hyperplasia" (Attah and Powell 1977). The lesion presented by Rosen et al. (1980) is identical with ours. It was the first prostatic tumour in the literature, the smooth muscle cell origin of which was confirmed by electron microscopy.

The cytophotometric evaluation of our case revealed peaks at 2C, 4C, and 8C, i.e. the lesion is characterized by an euploid-polyploid DNA content. Eightyfive to 90% of solid malignant tumours are characterized by aneuploid DNA content (Böhm and Sandritter 1975; Wagner and Richart 1968). The high standard deviation in our measurements is due to the presence of hapha-

zardly cut and overlapping nuclei that is an inherent feature of histological sections (Károlyi et al. 1986). The case presented is the first one in which the benign nature of the lesion was verified also by cytophotometry. It also clearly indicates the need of more sophisticated methods in everyday diagnostic pathology.

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References

Attah EB, Powell MEA (1977) Atypical stromal hyperplasia of the prostate gland. Am J Clin Pathol 67:324–327

Böhm N, Sandritter W (1975) DNA in human tumors: A cytophotometric study. In: Grundman E, Kirsten WM (Ed) Current topics in pathology, Springer, Berlin, Heidelberg, New York, pp 151–219

Fechner RE (1968) Atypical leiomyomas and synthetic progestin therapy. Am J Clin Pathol 49:697–703

Hajdu SI (1979) Pathology of soft tissue tumors. Lea and Fabiger, Philadelphia

Károlyi P, Szentirmay Z, Krasznai G (1986) Cytophotometric study of the epithelium of seminal vesicle. Morphol Igazságügyi Orv Sz 26:56–59 (in Hungarian)

Mostofi FK, Davis CJ (1985) Male reproductive system and prostate. In: Kissane JM (ed) Anderson's Pathology. 8th Edition pp 791–832

Rosen Y, Ambiavagar PC, Vuletin JC, Macchia RJ (1980) Atypical leiomyoma of prostate. Urology 15:183–185

Salmela H, Tallqvist G (1967) Mesenchymal tumours of the stomach. A histopathological classification of 176 tumours and a follow-up study of 160 cases. Acta Pathol Microbiol Scand 71:8–20

Wagner D, Richart RM (1968) Polypoidy in the human endometrium with the Arias-Stella reaction. Arch Pathol Lab Med 85:475–480

Wünsch PH, Müller HA (1982) Hemangiopericytoma of the prostate. A lightmicroscopic study of an unusual tumor. Path Res Pract 173:334–338

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