Virchows Archiv A Pathol Anat (1993) 423:503–505

Virchows Archiv A
Pathological Anatomy and Histopathology

Case report

Prostate specific antigen and prostate specific acid phosphatase in adenocarcinoma of Skene's paraurethral glands and ducts

Milan Zaviačič[1], Jozef Šidlo[1], Miroslav Borovský[2]

[1] Institute of Pathology, School of Medicine, Comenius University Bratislava,Sasinkova 4, 811 08 Bratislava, Slovakia
[2] 1st Department of Gynaecology and Obstetrics, University Hospital, Bratislava, Slovakia

Received August 9, 1993 / Received after revision October 6, 1993 / Accepted October 7, 1993

Abstract. An autopsy case of adenocarcinoma of Skene's paraurethral gland co-incident with renal cell carcinoma is described. The adenocarcinoma showed distinct prostate specific antigen and prostate specific acid phosphatase pointing to the equivalence between the male prostate and Skene's paraurethral glands and ducts. Skene's gland are the homologue of the prostate in females and tumours arising from them are immunohistochemically similar to male prostate carcinoma.

Key words: Skene gland (female prostate homologue) adenocarcinoma – Prostate specific antigen – Prostate specific acid phosphatase

Introduction

This is a report of an adenocarcinoma of the paraurethral (Skene's) gland in a 70-year-old woman. On immunohistochemical examination, the prostatic markers prostate specific antigen (PSA) and prostate specific acid phosphatase (PSAcP) were found in the tumour cells indicating that this tumour is equivalent to male prostate carcinoma. Only a single case of similar appearance was published by Svanholm et al. (1987).

Correspondence to: M. Zaviačič

In the title and text the authors used the official term of Nomina Anatomica "paraurethral (Skene's) glands and ducts". Nevertheless recently published data on cross-antigenicity between the male prostate and Skene's glands and the newly discovered exocrine and neuroendocrine parameters of the prostate homologue in the female, comparable with the male prostate (Zaviačič 1987), support the use of the same term – the prostate – for prostatic tissue in both sexes (Zaviačič 1987, Zaviačič et al. 1985). The designations "female prostate homologue" or "female prostate equivalent" are a compromise between terms the female prostate and Skene's paraurethral glands.

Case report

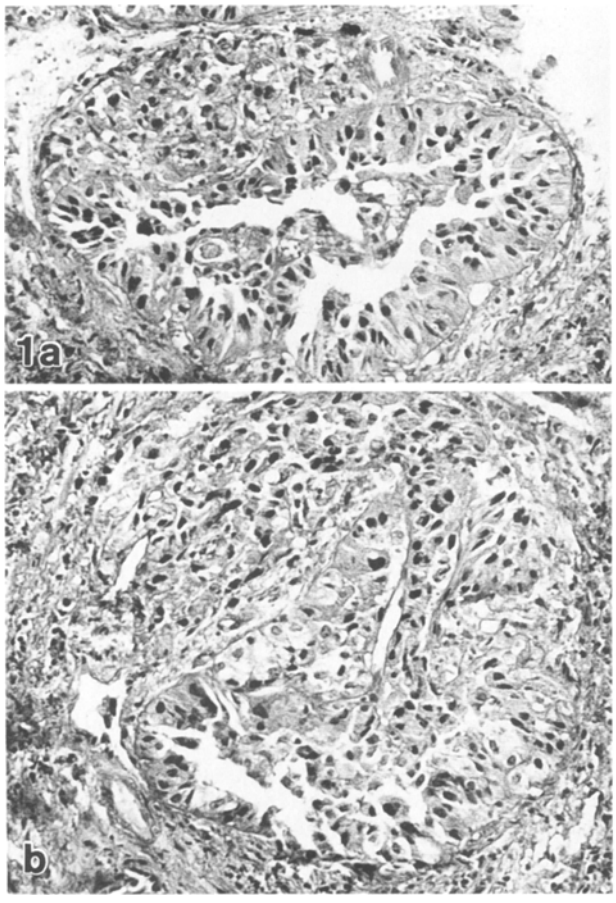
A 70-year-old female patient was referred to hospital by the tuberculosis unit with the finding of suspected carcinomatous lymphadenopathy. Ultrasonography showed a diffusely enlarged liver and a cyst in the upper pole of the left kidney. On gynaecological examination a flat tumour (1.2 cm diameter) was observed on the anterior wall of the vagina in the suburethral region approximately 1.5 cm behind the vaginal orifice and slightly protruding into the vagina. A biopsy taken from the tumour was sent for histological examination. In the meantime, the patient died of cardiorespiratory failure. The deceased underwent autopsy with clinically suspected carcinoma of the vagina with metastases into the liver, lungs and lymph nodes.

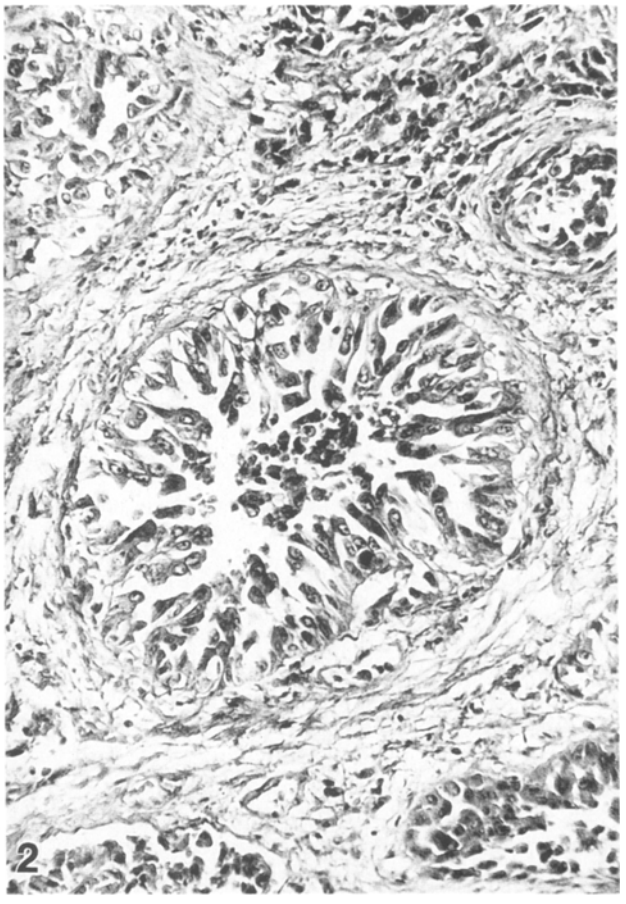
At autopsy, the left kidney was enlarged and weighed 190 g. In its upper pole and extending laterally was a tumour mass of elastic consistency and nodular structure ($7 \times 5.5 \times 5.5$ cm). It was whitish and rusty-brown to red in coloration. On the 7th right rib there was a focus (1 cm diameter) consisting of soft, elastic bluish-red tissue. Sectioning of both lungs and liver revealed bluish-red to gray nodules (3 to 5 mm diameter), some of them haemorrhagic. The lymph nodes (paratracheal, hilar and para-aortic) were enlarged with sporadic rusty-red foci.

On the anterior wall of the vagina, at the site where the gynaecologist diagnosed the tumour, the mucous membrane was slightly protruding over an area of almost 1 cm. The vertical section showed the tumour tissue to be below the vaginal mucosa and to spread diffusely into the depth of the urethrovaginal septum, towards the urethra.

On histology the tumour of the left kidney was classified as renal cell carcinoma. The tumour in the lungs, liver, lymph nodes and the rib shows the same histological structure as the renal tumour. Staining for the prostatic markers PSA and PSAcP was negative in the renal tumour and the metastases.

Biopsy of the tumour of the anterior vaginal wall revealed an adenocarcinomatous structure with cribriform multiple gland-like lumina (Fig. 1a, b). It was located below the detached stratified squamous epithelium of the vagina. From the autopsy material tissue of the same tumour was found in highly differentiated adenocarcinoma structures, spreading deep into the anterior wall of the vagina towards the urethra. The glands were formed of columnar epithelium (Fig. 2). Some large acinar structures were filled with epithelial cells forming multiple cribriform patterns, similar to the appearance of the tumour in the biopsy. Immunohistochemical staining using two-step indirect immunoperoxidase technique and





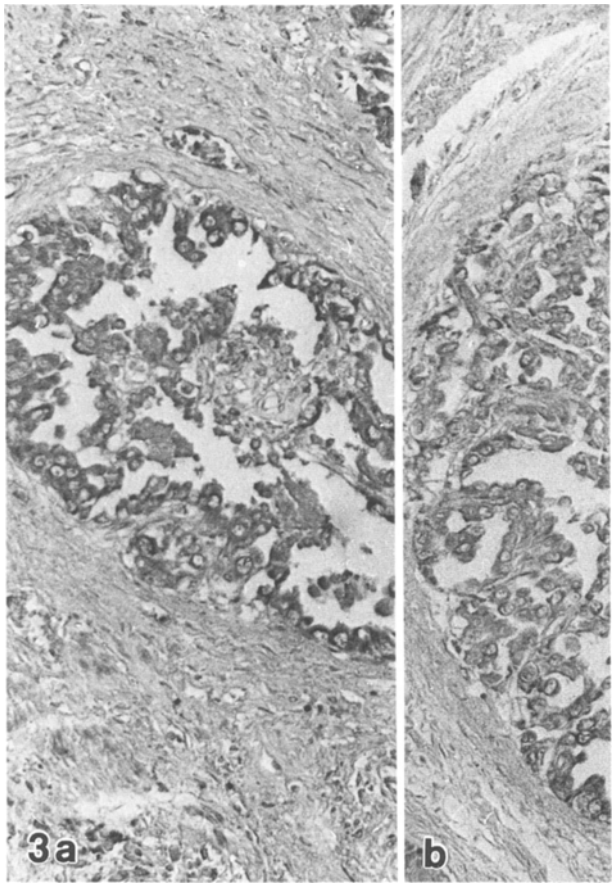


Fig. 1a, b. Biopsy sample of the tumour of the anterior wall of the vagina. Well-differentiated glands of adenocarcinoma (**a**) and cribriform multiple gland-like lumens of adenocarcinoma of the paraurethral (Skene's) gland (**b**). Haematoxylin and eosin, **a** ×175, **b** ×175

Fig. 2. Deep in the tumour of the anterior wall of the vagina towards the urethra. Well-differentiated adenocarcinoma of Skene's gland with proliferating high columnar epithelium. Haematoxylin and eosin, ×175

Fig. 3a, b. Tumour cells of adenocarcinoma of Skene's paraurethral gland (tumour of the "anterior wall of the vagina") show distinct positive cytoplasmic staining for prostate specific antigen (**a**) and prostate specific acid phosphatase (**b**). Immunoperoxidase technique, **a** ×175, **b** ×175

antibodies to PSA (DAKO) and PSAcP (DAKO) show strong cytoplasmic positivity in tumour cells both in this case (Fig. 3a, b) and in biopsies of carcinoma of the male prostate. Control sections, with omission of primary antibodies and their substitution with non-immune rabbit serum, are both in this case and the biopsy samples of male prostate carcinoma constantly negative.

We classified the tumour as a non-metastasising adenocarcinoma of Skene's paraurethral glands and ducts (adenocarcinoma of the female prostate homologue). This classification is made on the basis of the following findings: microscopic appearance of the tumour of the vaginal anterior wall, results of immunohistochemical examination with prostatic markers, particularly immunohistochemical PSA positivity.

Discussion

Tumours of Skene's paraurethral glands and ducts – the prostate homologue in females – are very rare when compared with the occurrence of tumours of the male prostate. Primary urethral carcinomas are one of the less frequently occurring carcinomas of the female reproductive system with a reported incidence from 0.016 to 0.7 or 0.95% (Egloff 1972). They are mostly squamous or urothelial in nature (Groben et al. 1985; Kamat et al. 1981; Levine 1980). Approximately 10% of malignant tumours of the female urethra have been reported as adenocarcinomas derived from paraurethral ducts and glands (Adler 1968; De Haan 1965; Huffman 1951; Roberts and Melicow 1977; Schnitzer 1964).

The morphological similarity between adenocarcinoma of the female urethra and the male prostatic carcinoma has been known for many decades (Huffman 1951). Only recently, however, has it became clear what the exact origin of Skene's paraurethral glands and ducts are and that they express prostatic markers PSA and PSAcP (Svanholm et al. 1987). PSA is a highly specific and sensitive marker for benign and cancerous epithelial cells of male prostatic origin (Nadji et al. 1981; Svanholm 1986). Pollen and Dreillinger (1984) and Tepper et al. (1984) also reported that normal Skene's paraurethral glands and their content showed strong immunohistochemical staining for PSA and PSAcP.

Unlike the high PSA specificity, PSAcP cross-reacts with many other tissues (Epstein et al. 1986; Jöbsis et al. 1981; Sobin et al. 1986; Svanholm 1986). In the light of this the usefulness of PSAcP as a marker for selective detection of normal and cancerous prostate tissue is limited in both sexes and PSA immunohistochemical staining must be preferred not only for male normal and cancerous prostate tissue (Jöbsis 1990), but also for normal and cancerous prostate homologue tissue in the female.

In our case of tumour coincidence, the tissue of the renal cell carcinoma and its metastases proved to be negative on examination for prostatic markers, not only for PSA but also for PSAcP staining.

There is compelling evidence for the necessity of examining prostatic markers, preferably PSA, in all cases of tumours of the vagina, urethra and other pathological processes of structures derived from embryonal cells of the urogenital sinus. In the female, this embryonic tissue is the origin of Skene's paraurethral glands and ducts (Campbell 1954; Egloff 1972; Huffman 1948; Longo 1982), the vulvar vestibule and Bartholin's glands (Blaustein 1982).

References

Adler M (1968) Report on a primary carcinoma of the urethra as contribution to the problem of gynaecologico-urological borderline cases (in German). Zentralbl Gynakol 90:123–124

Blaustein A (1982) Pathology of the female genital tract. Springer, Berlin Heidelberg New York

Campbell M (1954) Urology. Saunders, Philadelphia

De Haan QC (1965) Paraurethral gland adenocarcinoma. Am J Obstet Gynecol 93:903–904

Egloff B (1972) Pathological anatomy of the female urethra (in German). In: Lubarsch O, Henke F, Rossle R, Uehlinger E (eds) Handbook of pathological anatomy VII (4) female reproductive organs. Springer, Berlin Heidelberg New York, pp 433–488

Epstein JI, Kuhajda FP, Liebermann PH (1986) Prostate specific acid phosphatase immunoreactivity in adenocarcinomas of the urinary bladder. Hum Pathol 17:939–944

Groben P, Karis M, Reddick RL, Siegal GP (1985) Primary transitional cell carcinoma of the female urethra with features of clear cell adenocarcinoma. Urol Int 40:294–297

Huffman JW (1948) The detailed anatomy of the paraurethral ducts in the adult human female. Am J Obst Gynecol 55:86–100

Huffman JW (1951) Clinical significance of the paraurethral ducts and glands. Arch Surg 62:615–626

Jöbsis AC (1990) Prostate. In: Filipe MI, Lake BD (eds) Histochemistry in pathology. Churchill Livingstone, Edinburgh, pp 367–372

Jöbsis AC, Vries GP, De Meier AEFH, Ploem JS (1981) The immunohistochemical detection of prostatic acid phosphatase: its possibilities and limitation in tumour histochemistry. Histochem J 13:961–973

Kamat MR, Kulkarni JN, Dhumale RG (1981) Primary carcinoma of female urethra: review of 20 cases. J Surg Oncol 16:105–109

Levine RL (1980) Urethral cancer. Cancer 45:1965–1972

Longo VJ (1982) The female prostate. Urology 20:108–109

Nadji M, Tabei SZ, Castro A, Chu M, Murphy GP, Wang MC, Morales AR (1981) Prostatic-specific-antigen. Cancer 48:1229–1232

Pollen JJ, Dreilinger A (1984) Immunohistochemical identification of prostatic acid phosphatase and prostatic specific antigen in female periurethral glands. Urology 23:303–304

Roberts TW, Melicow MM (1977) Pathology and natural history of urethral tumours in females. Urology 10:583–589

Schnitzer B (1964) Primary adenocarcinoma of the female urethra, a review and report of 2 cases. J Urol 92:35–39

Sobin LH, Hjermstad BM, Sesterhenn IA, Helwig EB (1986) Prostatic acid phosphatase activity in carcinoid tumours. Cancer 58:136–138

Svanholm H (1986) Evaluation of commercial immunoperoxidase kits for prostatic specific antigen and prostatic specific acid phosphatase. Acta Pathol Microbiol Immunol Scand [A] 94:7–12

Svanholm H, Anderson OP, Rohl H (1987) Tumour of female paraurethral duct. Immunohistochemical similarity with prostatic carcinoma. Virchows Arch [A] 411:395–398

Tepper SL, Jagirdar J, Heath D, Geller SA (1984) Homology between the female paraurethral (Skene's) gland and the prostate. Arch Pathol Lab Med 108:423–425

Zaviačič M (1987) The female prostate: non-vestigial organ of the female. A reappraisal (letter). J Sex Marit Ther 13:148–152

Zaviačič M, Zaviačičová A, Brozman M, Holomáň IK, Brucháč D, Oberučová J, Kokavec M (1985) The female prostate or Skene's paraurethral glands and ducts? Reasons for returning to the original term of De Graaf (In Slovak). Čs Gynek 50:372–377