Signet-ring prostatic carcinoma. Case presentation and review of the literature

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Abstract

The authors present the case of a 71 years old man with the histopathological diagnosis of a signet-ring prostatic carcinoma, examined in usual and special stains as PAS and mucicarmin. The literature, the clinical aspect, the microscopic features, and the pathogenesis concerning this subject are reviewed.

***Keywords*:** prostate gland, signet-ring carcinoma, clinical presentation, PAS, histogenesis.

Introduction

Signet ring prostatic carcinoma (SRPC) is a rare form of adenocarcinoma, with an incidence of 0.4% of all prostatic tumors [1, 2]. It is usually diagnosed as a minor component of a high grade adenocarcinoma (i.e. ductal adenocarcinoma, squamous, and adenosquamous cell carcinoma, sarcomatoid carcinoma).

Some authors suggest that the signet ring carcinoma is not associated with colloid carcinoma; other data show the presence of extravasated mucin of the colloid carcinoma in some isolated signet ring cells. So, the pure form of this entity is extremely rare. The histopathological diagnosis of a SRPC is attributed only to those tumors in which the signet ring cells make up at least of 25% of the tumor volume [3, 5].

The macroscopic aspect of the tumor is not different than any kind of prostatic adenocarcinoma, neither in color nor in consistence. Clinically, this form of tumor is diagnosed in an advanced stage with a high level of serum PSA or PAP [7]. Microscopically, the signet-ring tumor cells can be arranged in nests sheets or isolated. The vacuolated cytoplasm of the cell does not contain mucin, the mucin dyes being negative in the majority of cases [5, 6].

The prognosis of SRCP is poor, being classified as a high grade carcinoma (usually grade 5) [3].

Case presentation

Patient S.M., 71 years old, was admitted in 2004 in the Urological Department of the Municipal Hospital Cluj with *nonspecific* prostatic symptoms and had a TUR (transurethral resection).

Pathology

The TUR specimens (weighing 10 g) revealed a normal macroscopic aspect.

All the specimens were fixed in formalin, paraffin embedded, cut at 4 microns and stained with H&E. There were examined 26 prostatic slides, all of them showing the signet ring carcinoma (Figure 1); the typical aspect of the cells was obvious at a higher magnification: round to oval cells, vacuolated cytoplasm, and a peripheral located nucleus (Figure 2). From the architectural point of view, the tumor cells were isolated, scattered between the bundles of muscular and conjunctive cells (Figure 3).

Some isolated prostatic glands were seen amongst the tumor cells and were of a normal appearance; one of these glands had two signet ring cells on the wall (Figure 4).

Angiolymphatic and perineural invasion was not observed in the chips examined.

The slides stained for PAS and mucicarmin were negative.

Discussions

SRPC is a very rare entity in prostate. If present, it is seen more frequently as a minor component of a high malignant prostatic adenocarcinoma.

The pure form of the SRPC is extremely rare; interestingly, we are talking about signet ring cells, but the real nature of the intracytoplasmic vacuole is not mucin, is a lumen [7-10].

There are more definitions for this entity but as a rule of the thumb the diagnosis is assigned when there are present at least 25% of typical cells [4, 8].

Even though this form of adenocarcinoma is not included in the Gleason system, now is accepted as 5 grade of malignancy with a very poor prognosis. So, in a series of 17 cases studied by Saito and Iwaki (cited by [4]) there are 27% survivals at 3 years.

Clinically, the patient with SRPC is diagnosed usually in an advanced stage of disease with a high level of PSA [8].

The differential diagnosis of SRPC can be made with some non-tumoral cells like lymphocytes and stromal cells which can have a signet ring appearance; *in which case, the immunohistochemistry for lymphoid and mesenchymal markers will be useful.* Also, the prostate can be invaded by a secondary SRC (the origin can be the stomach for example), and in this case the clinical history and the level of PSA can be of a great help.

Conclusions

The case presented is one of the rare pure forms of signet ring prostatic carcinoma.

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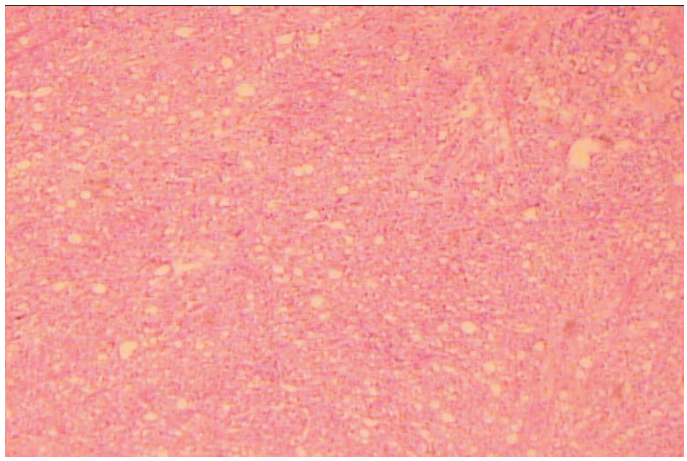

Figure 1 – ***CPCIP, general view (HE staining, ob. ×4)***

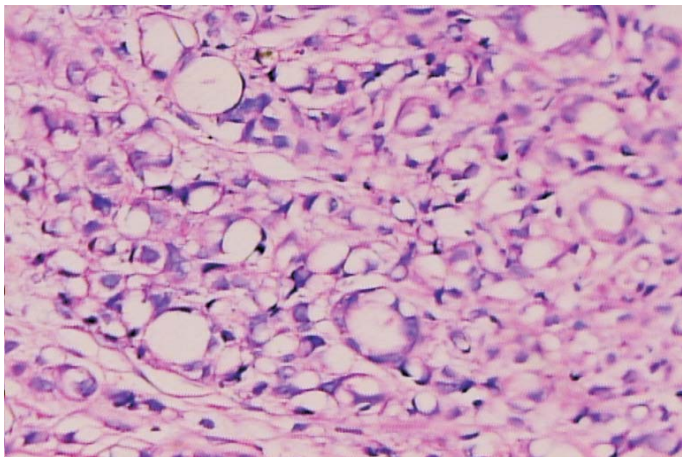

Figure 2 – ***CPCIP. The signet ring cells are dominants (HE staining, ob. ×16)***

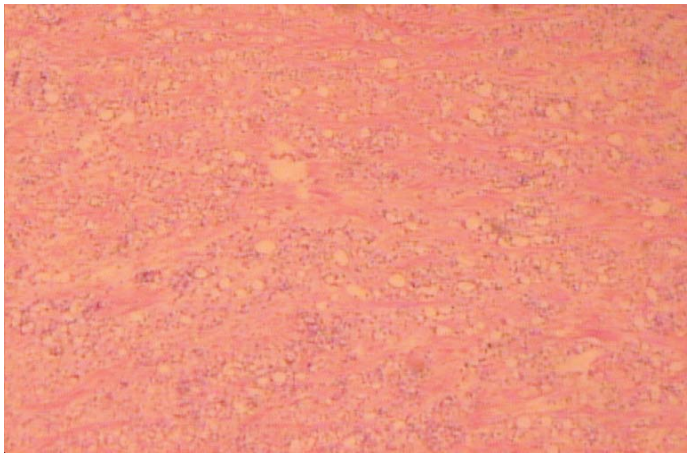

Figure 3 – ***CPCIP. The tumoral cells scattered amongst bundles of muscular and conjunctive cells (HE staining, ob. ×4)***

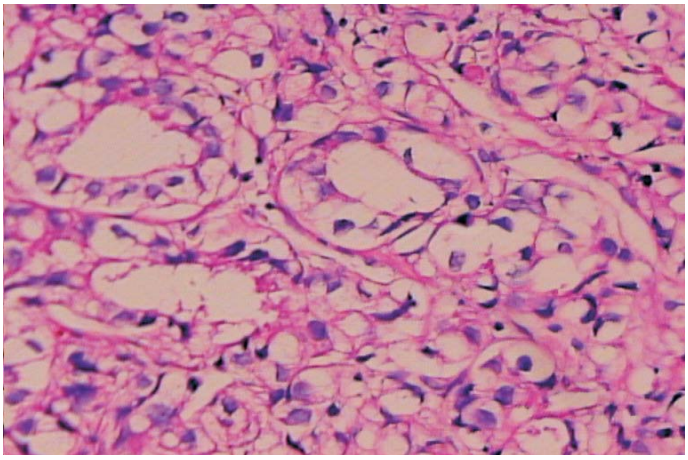

Figure 4 – ***CPCIP. Isolated glands with normal appearance; the gland of the left top has two signet ring cells (arrow) on the wall (HE staining, ob. ×20)***