High grade foamy gland prostatic adenocarcinoma, a rare pathological variant treated with radical prostatectomy

Malhasi Gunawardena¹, Umesh Jayarajah², Susantha de Silva³, Serozsha Goonewardena⁴, Chandu de Silva¹
¹Department of Pathology, Faculty of Medicine, University of Colombo, Colombo, Sri Lanka
²Department of Urology, National Hospital of Sri Lanka, Colombo, Sri Lanka

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Introduction
Prostatic adenocarcinoma is one of the commonest internal malignancies among men and its incidence is increasing with age [1]. Foamy gland carcinoma is one of the variants usually seen in combination with small acinar or usual adenocarcinoma and the pure form is rare (0.2-2%) [1, 2]. It is usually assigned as a low-grade tumour; the most common Gleason score being 7, although some authors have described it as 6 [1, 2]. We describe a rare high-grade, pure foamy gland adenocarcinoma occurring in a relatively young patient.

Case Presentation
A 49-year old male presented with acute urinary retention. He had a preceding history of poor flow of urine for 1-year duration associated with frequency, nocturia and nocturnal enuresis. He was catheterised by the general surgical team and was referred to the urology unit for further care. Digital rectal examination revealed a clinically malignant, hard irregular prostate with obliterated medium groove. His initial serum creatinine was 254 µmol/L which gradually declined to 124 µmol/L after catheterization. His other basic biochemistry and complete blood count were unremarkable. Ultrasonography showed normal kidneys without any hydronephrosis or hydroureter. The bladder wall thickness was 6mm. The prostate size was 39 cm³. The prostate-specific antigen level was 1.5 ng/ml.

Cystoscopic examination showed enlarged lateral prostatic lobes which were almost meeting in the midline. The bladder was trabeculated with a high neck. He underwent transurethral resection of the prostate. Microscopic examination revealed prostatic tissue containing a small acinar type prostatic carcinoma predominantly composed of poorly formed and fused nests of tumour cells with foamy cytoplasm (Gleason score 5) (figure 1). The nuclei were enlarged and round with prominent nucleoli. Necrosis was not seen. There was focal perineural invasion (figure S1). Lymphovascular invasion and prostatic intraepithelial neoplasia were absent. Thus the histological findings were in
accurate diagnosis of prostatic cancer [1, 3]. The clinical
behaviour of this variant is usually aggressive despite the
benign histologic appearance, although Hudson et al. has
reported 100 cases of foamy gland adenocarcinoma without a
significant difference in prognosis compared with usual
acinar adenocarcinoma [3].

Koca et al have studied 56 cases of foamy gland
adenocarcinoma of the prostate based on core needle prostate
biopsies. They found that these foamy gland
adenocarcinomas had similar features to conventional
prostatic adenocarcinoma (acinar type) in relation to clinical
features such as age, biochemical features such as prostate-
specific antigen titres and histological characteristics such as
the presence of high grade prostatic intraepithelial neoplasia
and Gleason's score [4]. The prostate-specific antigen serves
as a useful immunohistochemical marker for prostatic
epithelium with a great degree of specificity and sensitivity [1,
2]. It is useful in confirming a difficult diagnosis such as
foamy gland carcinoma, although it does not distinguish
benign and malignant processes in prostate [1].

It is demonstrated that estrogens are required for prostate
development and carcinogenesis [5]. The ER-β
immunostaining gives a strong nuclear positivity in low-grade
prostatic adenocarcinoma and it was negative in some high-
grade carcinomas [5]. ER-α expression in stroma could play
protective roles to reduce prostatic cancer development by
decreasing androgen production [5]. Selective estrogen
receptor modulators may potentially be used in combination
with current therapies in the treatment of prostatic carcinoma
[5].

It is important to highlight that in the presence of a normal
serum PSA value (<4 ng/mL) only a digital rectal
examination by an experienced finger could clinch an accurate clinical
diagnosis. A clinically benign prostate on digital rectal
examination, in this case, would have led to pharmacological
treatment precluding a tissue diagnosis.

Discussion

Foamy gland carcinoma is characterized by abundant foamy
cytoplasm and often pyknotic nuclei [1, 2]. The nucleoli are
usually inconspicuous and the cytological atypia is minimal
[1, 2].

Zhao et al have reported a series of 55 patients with similar
histological morphology, in which enlarged nuclei and
prominent nucleoli were reported in approximately 80% and
70%, respectively [2]. The commonest morphological
patterns were cribriform (73%) and poorly defined (fused)
glands (55%). Less common patterns were cords single cells/ cords and solid sheets [2].

Certain variants of high-grade foamy gland adenocarcinoma
of the prostate were found to be difficult to diagnose as scanty
amounts of bland foamy glands were seen scattered within a
dense sclerosed desmoplastic stroma [2]. Diagnostic
awareness of the existence of this variant is important for
accurate diagnosis of prostatic cancer [1, 3]. The clinical
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Conclusion

Awareness of the occurrence of rare high-grade type foamy
gland carcinoma will help to prevent misdiagnosis of this
entity as a non-prostatic malignancy, such as urothelial
carcinoma or metastatic deposits, especially when PSA is low.
Furthermore, it is important to highlight that in the presence of
a normal serum PSA value, only a digital rectal examination
by an experienced finger could clinch an accurate clinical
diagnosis. Stromal ER could play a protective role to reduce
invasion of prostatic carcinoma and selective ER modulators
may be used to treat prostatic carcinoma.
Learning Points:

- High-grade, pure foamy gland adenocarcinoma can rarely occur in young patients
- Clinicians should be aware of this rare variety to prevent misdiagnosis of this entity as a non-prostatic malignancy
- Digital rectal examination by an experienced finger is needed to clinch an accurate clinical diagnosis in the absence of elevated PSA levels.

References


Abbreviations

ISUP : International Society of Urological Pathology
PSA : Prostate specific antigen
ER : Estrogen receptor
MRI : Magnetic resonance imagine