# Poorly Differentiated Prostatic Adenocarcinoma in a Patient with Low PSA and Hydronephrosis: Case Report

Manuela Enciu[1,2], I. C. Iorga[1,2]
[1] *Faculty of Medicine, "Ovidius" University, Constanța*
[2] *Saint Apostle Andrew Emergency County Hospital, Constanța*

**Abstract**

**Introduction**. Prostate cancer is the second most common cancer in men in Europe and the third in frequency among all malignant neoplasms. The rate of diagnosis is due to screening performed using serum prostatic specific antigen (PSA), whose normal ranges between 0-4 ng/ml and shows variations according to age. PSA is a specific prostatic marker but not a specific marker for detecting prostate cancer and raised values can be found not only in prostate cancer but also in pseudoneoplastic lesions as small acinar proliferations, inflammations and benign hyperplasia. In this respect there is not a cutoff value stating that the patient certainly does not present cancer.
**Materials and Methods.** We report the case of a patient who was diagnosed with poorly differentiated prostate adenocarcinoma - Gleason score 10, with low PSA values, bilateral hydronephrosis associated, urinary symptoms faded and modifications to digital rectal examination.
**Conclusions.** The diagnosis of prostate cancer is limited by specificity of PSA and requires corroboration with other methods of investigation and further study of new markers with greater specificity in diagnosis.

**Keywords**: prostate, adenocarcinoma, Prostatic specific antigen (PSA)

Correspondenc to: Dr. Manuela Enciu,
Faculty of Medicine "Ovidius" University of Constanta
Mamaia Boulevard, no. 124 University Avenue no 1
Tel: +40767745497
E-mail iftimemanuela@yahoo.com

## Introduction

The incidence of prostate cancer has increased worldwide due to the male population screening performed by determining prostate specific antigen (PSA) serum in asymptomatic patients but also the digital rectal examination [1]. PSA is a marker of screening, clinical diagnosis, prognostic factor which can be also assessed immunohistochemical in prostate cancer [2].

## Matherials and methods

We present the case of a 53 years old patient who presented to the emergency room for vomiting, loss of appetite and fatigability. Abdominopelvic ultrasound showed bilateral hydronephrosis. The digital rectal examination revealed a slightly enlarged prostate with nodules of increased consistently. The patient did not present urinary symptoms nor signs of kidney failure. Serum PSA had a value of 1,23 ng/dl.

Transurethral resection of the prostate surgery was performed in the Department of Urology of Saint Apostle Andrew Emergency County Hospital of Constanta. The histopathologycal technique was performed in the Clinical Service of Pathology. The specimen was fixed in 10% formalin and included in a block. The sections were stained with Hematoxylin-Eosin and van Gieson. Microscopic images were taken with a Nikon Camera using a Nikon Eclipse E600 Microscope. Based on the histopathological result, oncologic treatment was initiated consisting of hormonotherapy.

## Results

Macroscopic exam revealed the presence of multiple fragments with variable diameters, which measures overall 3/2,5/0,5 cm, gray-yellowish colored and low consistency.

Histopathological examination identified an acinar adenocarcinoma with a 10 = 5+5 Gleason score on more than 5% of the fragments examined represented by a solid contingent of neoplastic cells as trabeculae (fig. 1) and signet ring cells (fig. 2).

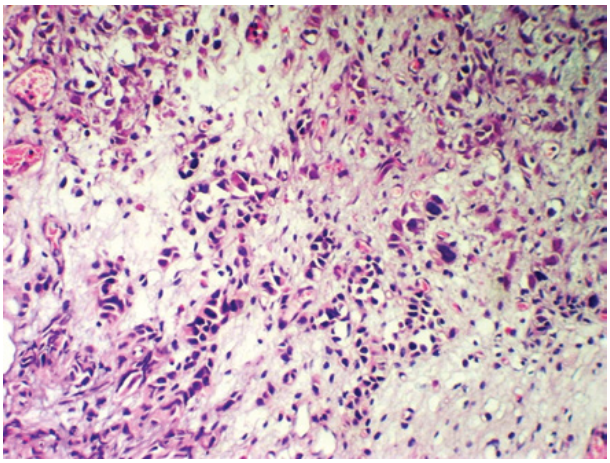


*Fig. 1 – Gleason pattern 5 adenocarcinoma of the prostate - cells proliferated as cords and trabeculae – (H&Ex100)*

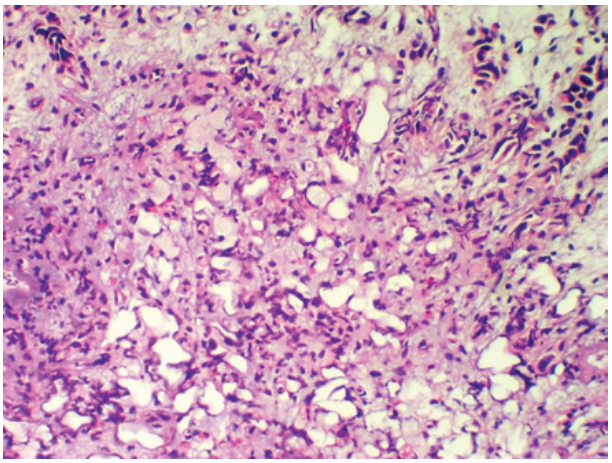


*Fig.2 – Adenocarcinoma of the prostate with signet ring cells (H&Ex100)*

Ceoplastic cells were characterized by increased nucleo-cytoplasmic ratio, pleomorphic nuclei and atypical mitotic figures (fig. 3). Angio-lymphatic invasion was also present (fig. 4). Perineural infiltration was absent in examined fragments.

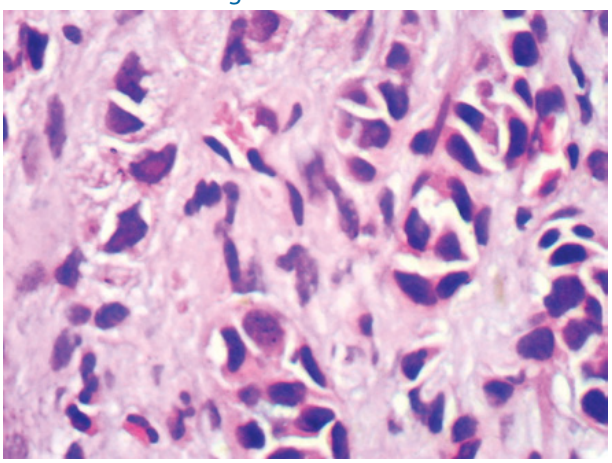


*Fig. 3 – Nuclear details of malignant neoplastic proliferation: pleomorphic, large nuclei with visible nucleoli (H&Ex400)*

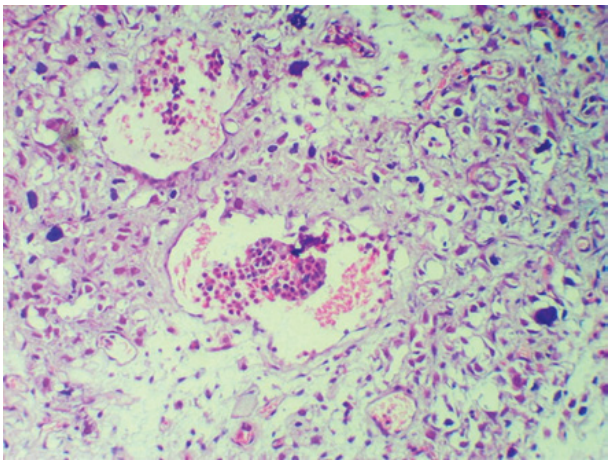


*Fig. 4 – Vascular neoplastic emboli (H&Ex100)*

**Discussions**

Prostate cancer can sometimes have slow growth and the risk of developing the disease increases exponentially with every decade of life and also is not considered a direct cause of death [3].

Although appeared other markers, PSA and digital rectal screening examinations are the primary methods in current urologic practice, which is why biopsy indication depends on their modifications and it is the only method that establishes the diagnosis of malignancy. In a patient with low life expectancy and diseases associated risk of being subjected to a biopsy is too high. [4].

PSA is a kallikrein related serine protease produced by prostatic secretory epithelium and drained by ductal system in normal prostate tissue or in different lesions with origin at this level, such as benign hyperplasia, cancer, inflammation, heart, prostate massage, cystoscopy and proliferative lesions with small glands [5].

The literature has revealed that its value increases above 4 ng/ml in prostate adenocarcinomas. It was found that the value of PSA up to 10 ng/ml rate of a cancer diagnosis to biopsy increase by 25% the conditions of a normal digital rectal exam and below 2 ng/ml values the chance to diagnose a cancer is less than 2%. According to the literature, reference values are 2,5 ng/ml for 40-49 age group, 3,5 ng/ml for 50-59 years and 4,5 ng/ml for ages 60 to 69 [6, 7]. Also at low PSA values up to 3 ng/ml, any increase in PSA is a really warning sign [8].

However, even if values greater than 4 ng/ml correlates with an increased risk of prostate cancer to detect, there are no lower values under which we can say with certainty that there is no risk of prostate cancer, regardless of tumor grade [9].

So the cutoff PSA alone is not clearly defined to indicate the group of patients with prostate needle biopsy indication reason why a man may have prostate cancer to values between 0 and 4 ng/ml. In a patient with poorly differentiated adenocarcinoma with 10 Gleason score we expect to notice elevated PSA value, but it is within normal limits.

Prostate cancer screening decreased among pacients older than 50 years old after the 2012 USPSTF US Preventive Services Task Force Recommendation guideline [10].

Currently some urologists use a borderline PSA value of 2.5 ng/ml which is associated with a large number of indications for prostate biopsies [11].

Evaluation of PSA in combination with digital rectal examination is recommended for improving early detection for prostate cancer [12]. Clinical stage, Gleason score and serum prostate specific antigen (PSA) levels are considered independent predictive factors and prognosis in localized cancer without metastases [13].

Have been identified new markers intensely studied, with high specificity like isoforms PSA or PCA3. Free PSA in serum at a rate of 10-30% consists of 3 isoforms pro-PSA, BPSA (benign PSA) and IPSA (intact PSA). PCA3 is highly specific molecule in cancer and metastatic prostate and is dosed in the urinary sediment after prostatic massage [14,15].

**Conclusions**

Low PSA value can not exclude prostate cancer and is necessary corroboration with other methods of investigation and further study of new markers with greater specificity in diagnosis.

**Acknowledgement.** This work benefited from financial support through the project „CERO-CAREER PROFILE: Romanian researchers, contract no. POSDRU/159/1.5/S/135760, a project co-financed by European Social Fund through the Sectoral Operational Programme Human Resources Development 2007-2013".

Note: The authors have equal contributions to publishing the article.

**References**

1. Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray, F. GLOBOCAN 2012 v1.1, *Cancer Incidence and Mortality Worldwide:* IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014.

2. Oh SW1, Kim YM, Kim HJ, Kim SJ, Cho JS, Choi EY. *Point-of-care fluorescence immunoassay for prostate specific antigen* Clin Chim Acta. 2009 Aug;406(1-2):18-22. doi: 10.1016/j.cca.2009.04.013. Epub 2009 Apr 23.
3. Fletcher CDM, *Diagnostic Histopathology of Tumors,* Third Edition, first volume, Churchill Livingstone, Elsevier, 2007, 749-811
4. Robert HG, Alan WP. *Prostate Cancer Tumor Markers.* In: Campbell-Walsh.Urology.10th edition. Saunders:Philadelphia:2011.p.2749-52.
5. Gretzer MB, Partin AW. *PSA markers in prostate cancer detection.* Urol Clin North Am. 2003; 30:677-686
6. Epstein JI, George J. Netto, *Biopsy Interpretation of the prostate,* Fourth edition – Lippincott Williams&Wilkins, 2008
7. Avraham Shtricker, Shai Shefi, Avi Ringel, Gabriel Gillon *PSA Levels of 4.0 – 10 ng/ml and Negative Digital Rectal Examination. Antibiotic Therapy versus Immediate Prostate Biopsy* International Braz J Urol Vol. 35 (5): 551-558, 2009
8. Carter H.B., Pearson Jay D., Metter EJ et al *Longitudinal Evaluation of Prostate-Specific Antigen Levels in Men With and Without Prostate Disease* JAMA. 1992 Apr 22; 267(16): 2215–2220
9. Thompson IM et al. *Prevalence of prostate cancer among men with a prostate-specific antigen level of ≤4 ng per millilitre.* New England Journal of Medicine 2004 350: 2239-2246.
10. Drazer MW1, Huo D1, Eggener SE2. *National Prostate Cancer Screening Rates After the 2012* US Preventive Services Task Force Recommendation Discouraging Prostate-Specific Antigen-Based Screening. J Clin Oncol. 2015 Jun 8. pii: JCO.2015.61.6532.
11. Wright JL, Paul H Lange *Newer Potential Biomarkers in Prostate Cancer* Rev Urol. 2007 Fall; 9(4): 207–213
12. Catalona WJ, Richie JP, Ahmann FR, Hudson MA, Scardino PT, Flanigan RC, deKernion JB, Ratliff TL, Kavoussi LR, Dalkin BL *Comparison of digital rectal examination and serum prostate specific antigen in the early detection of prostate cancer: results of a multicenter clinical trial of 6,630 men.* The Journal of Urology, 1994, 151(5):1283-1290
13. Partin AW, Yoo J, Carter HB, Pearson JD, Chan DW, Epstein JI, Walsh PC The Journal of Urology [1993, 150(1):110-114
14. Flip H. Jansen, Ron H.N. van Schaik , Joep Kurstjens, Wolfgang Horninger et al *Prostate-Specific Antigen (PSA) Isoform p2PSA in Combination with Total PSA and Free PSA Improves Diagnostic Accuracy in Prostate Cancer Detection* European Urology 57 (2010) 921 – 927
15. Khan MA, Sokoll LJ, Chan DV, et al. *Clinical utility of proPSA and "benign" PSA when percent free PSA is less than 15%.* Urology. 2004; 64:1160-1164].