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Research Article

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Prostatic Adenocarcinoma, Diagnosis "Gleason Score"

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Abstract

Prostate Cancer is the one of the leading causes of death in the world among men, and one of the cancers that management has the most evolved in recent years. Indeed, the incidence of prostate cancer is increasing with diagnoses made more in younger patients. Prostate cancer is before all a pathological diagnosis. It is always based on a histological examination and or cytology.

The variant, score and grade also the differentiation have to be correct and sure for an effective therapy. The only criterion that Gleason's score depends is the architecture that is based on this last.

Keywords: Prostatic adenocarcinoma, Gleason score, grade groups, WHO Classification of Tumours of the Urinary System and Male Genital Organs

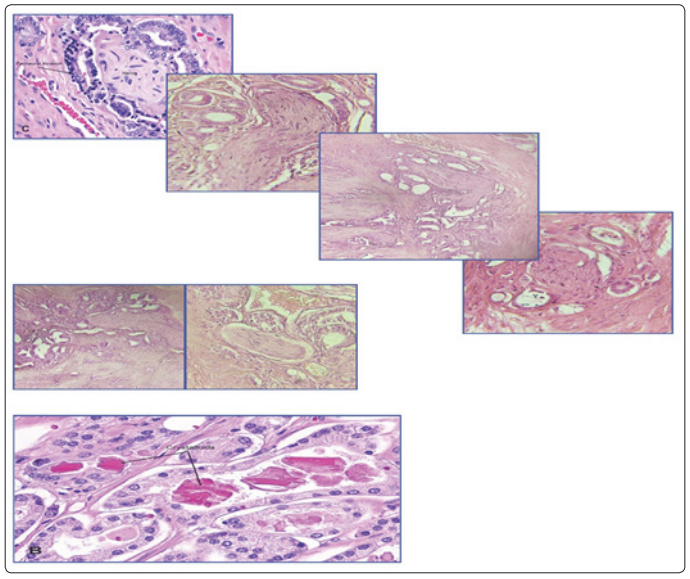
Introduction

Prostate cancer has become the most common cancer and the second leading cause of cancer death in humans. This public health problem is becoming more and more important because of the increased life Expectancy.

Currently, one in eight men is at risk of developing prostate cancer in their lifetime. Prostate cancer screening aims to detect prostate cancer at an early stage and asymptomatic, the earlier the diagnosis of cancer is made, the heigher the chances of recovery of patients. Prostate cancer screening in men over the age of 50 with a rectal examination performed routinely every year and perhaps an opportunity to question and explore a man who is still young and has no maturation problems, thus promoting early diagnosis. Numerous retrospective but also prospective epidemiological studies have Shawn that screening would reduce prostate cancer MOR tality. Prostatic adenocarcinoma is a malignant glandular proliferation of luminal cells of prostatic glands infiltrating prostatic parenchyma. Often of varied architecture at the origin of Gleason's description of the score. The diagnosis is based on a set of morphological criteria; their analysis is done in comparison with the adja.

The diagnostic criteria

The diagnosis is made on a bundle of arguments:
*Major criterion:
**Architectural:
Architectural disorganization and infiltration of prostatic tissue
** Cytological:
Nuclear modification with nuclear volume increase and prominent nucleolus. Disappearance of the basal seat, which can be confirmed by immunohistochemistry (absence of cytoplasmic staining with CK and nuclear with p63).



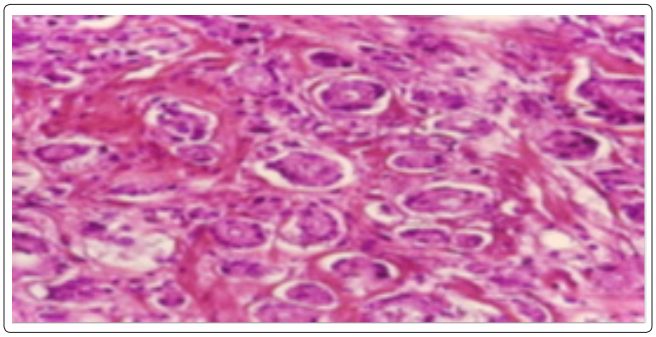
Gleason Score

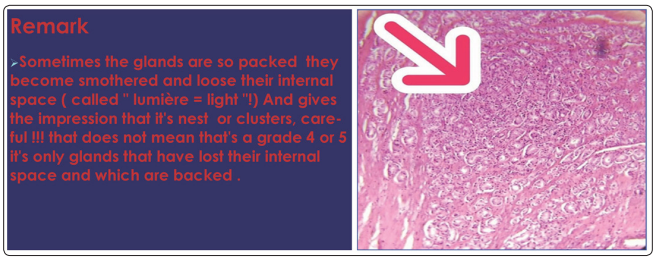
Prostate cancer is classified according to: the score of Gleason 5 decreasing differentiation grades, numbered from 1 to 5. Gleason score is determined by the sum of 2 grades: the most represented, if there is only one grade, the score is obtained by multiplying by 2 the grades (ex: grade 3, score = (3 + 3) = 6. The first digit of the sum is the most represented grade in the tumour. If there are more than 2 grades, we add the highest grade and most represented grade.

GRADE 1: although it's still illustrating on the modified Gleason schema in 2014 drawing on Gleason's initial schematic scratches no longer exists! And it's not used any more. It corresponds to a focus of adenosis "atypical adenomatous hyperplasia" mainly found in the transition zone of the gland. It is a Weil limited nodule made of Weil individualized regular compressed glands separated by collagen.

GRADE 2: It is a very difficult grade to diagnose, made by regularly and uniform of tumoral glands separated by a little stroma. There are no normal glands.

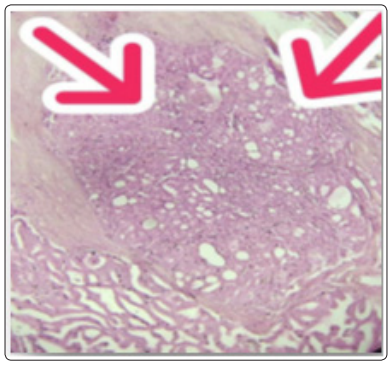
GRADE 3: Most common grade, poorly limited on the periphery, made of tumour gland infiltrating parenchyma prostatic between normal glands. Tumour gland Weil formed, of small size, rounded or sometimes irregular, making groups together or sometimes separated from each ether by stroma.





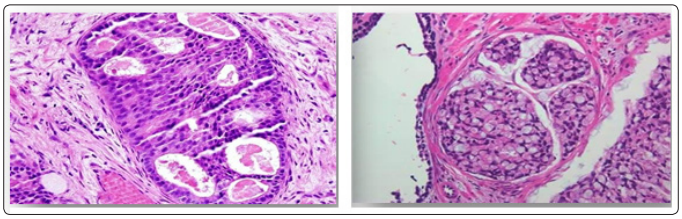
GRADE 4: Loss of individualization and fusion of glands that adopt different architectures can be cribriform, papillary, Glomeruloid or simply mal formed glands. An infiltrating cribriform appearance regardless of its size and contours it is a grade 4. Conditions for scoring a grade 4: it takes a cluster of more than S badly trained glands to conclude a grade 4.

But if we find some malformed gland around well-formed gland will be classified GRADE 3 and if more than S bad shaped glands are distanced from weil shape of one will be class as grade 4 so the condition is the distance between weil and bad shaped glands and their number tao.



GRADE 5

ferentiation of the tumor, the tumor celis are single adopt an architecture like layer of ribbon or a clusters (made at least by 20 cells) and totally lose their glandular architecture With the pres ence of full massifs centered by necrosis.



Particularity of the Score on Total Prostatectomy

- Originally we talked about the main focus and the largest focus currently is important to describe aggressive and bulky homes and make a Gleason score for each one.
- Small sites of law score can be ignored (law prognosis value).
-The score is established by summing the two grades indicating the most frequent first.
-The existence of a second quota in very small quantities of less than $S^{0}1o$ is mentioned unless it is a hight grade (4 or S).
- In case of presence of three grade with a third minority quota of higher grade , the percentage must be assessed in relation to ($S^{0}1o$) if it is greater than $S^{0}1o$ it is included in the score and if it is less than $S^{0}1o$ the recommendation is to make a comment on the latter (minor high grade).

Particularity of the score on biopsy

In 2005 than in 2014 the International-Society of UroPathology "ISUP" provided a clarification on how to establish the score of Gleason on biopsy.

Rules

* scoring is done by summing the two grades (the most frequent is first).
*regardless of the percentage of the aggressive grade 4 or 5 must be indicated.
*if several grades are presented we mention the most frequent first and the most aggressive second regardless of the percentage of the lateter.

- For each biopsy, it should be noted:
-The length in mm
-The tumor percentage
-The score
-The percentage of each grade
-Presence or absence of PIN of high grade
Other associated lesions (prostitutes, PBH ...)

Classification in Histopronostic groups "WHO 2016"

- ISUP in 2015/2016 consists to complete the Gleason score with grade group histopronostic

Gleason score	Grade ISUP
6 (3+3)	Grade 1
7 (3+4)	Grade 2
7 (4+3)	Grade 3
8 (4+4) et 8 (5+3) et 8 (3+5)	Grade 4
9 et 10	Grade 5

- These groups histopronostic have to be mentioned in the report (biopsy, adenomectomy, transurethral prostatic resection, and prostatectomy) in addition to the Gleason score modified.
- Interest of this classification:

Better understood by patients *reflects better the prognostic value of the Gleason score Allows for a better stratification of patients in therapeutic and prognostic studies should be adopted by pathologists urologist and oncologist.

Note: the ISUP grade has been validated for biopsies but not for prostatectomy

Important Point to Remember

-The grade of Gleason has been changed so:
Grade 1: Doesn't exist anymore.
Grade 2: Rare grade only in transition Area Cancer (RTUP and Adenomectomy)
Grade 3: Most frequent grade in the peripheral area (biopsy prostatectomy) the tumor glands in V or Y does not mean a fusion but a grade 3, sorne malformed gland in a grade 3 area are considered us grade 3.
Grade 4: Any home of malformed or fused gland or cribriform or glomeruloide.

- Requires a minimum of 5 bad shaped glands to consider them in grade 4, especially if they are in a grade 3 sector

NEWS

There are 5 grades already described according to Gleason grade 1, 2, 3, 4 and 5, but in practice we use the grade 3, 4 and 5 grades 1 and 2 are no longer use. The difficulty arises on the difference between normal prostatic glands and a Gleason score of grade 3.

The only difference who can help us to make a distinction between normal glands and tumoral glands especially grade (3) is the absence of myoepithelial cells which we can confirm their absence by a negativity of P63 or we can do it only by a good histological observation.

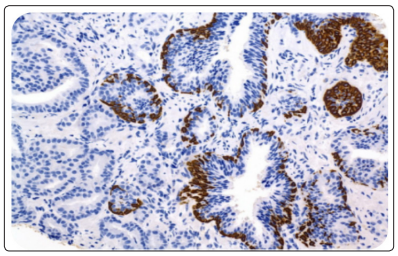
About PIN Hight grade

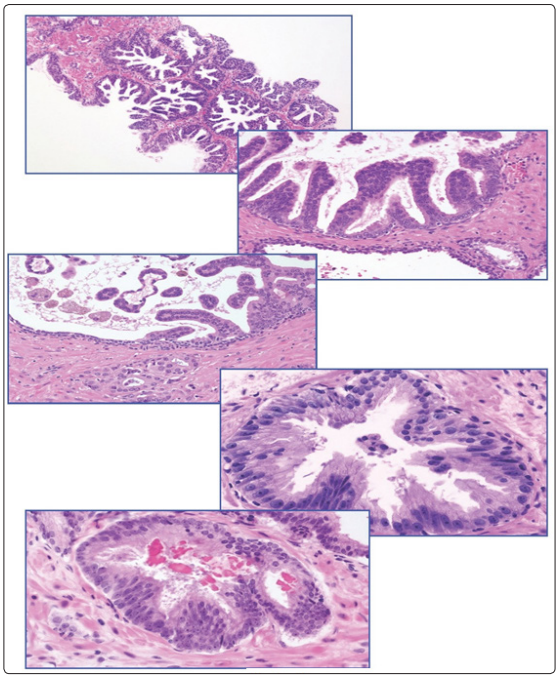
Only if the high-grade PIN is associated lt has a higher risk of cancer and should be mentioned in the reports. In case of multifocalite, the realization of new biopsies in the following year is recommended.

Histology: Ductal architecture and acineuse is kept with large channels, has light dilated, the coating is multilayered, circumscribed taking architecture in papillary, plan, micro papillary or cribriforme.

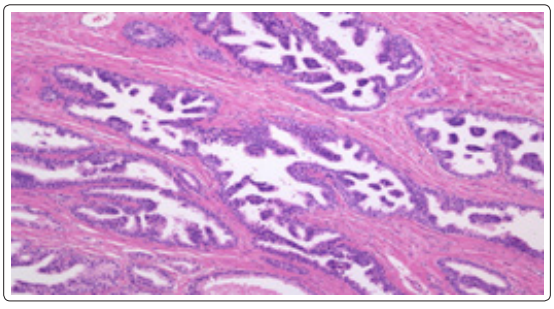
Cytology: The nuclei have the same atypies in ad enocarcinoma (kernel increased volume, highly nucleolus) the basal seat retained.

IHC: Basal cell CK903 + (cytoplasmic), P63 + (nuclear) also cytoplasmic ck5/6: marking may be continuous or discontinuous.





Warning !!!
It's not a PIN's hight grade , they are normal glands of the Central area of the prostare !



Indication of immunohistochemisyry

Currently it is not recommended but there are cases of indication:

1. To confirm the diagnosis of a small cancer home (p63-/p504s +).
2. To differentiate a prostate adenocarcinoma from an urothelial carcinoma invading the prostate (PSA- , P63 +, CK7 +, GATA3+).
3. Searching for a suspect neuroendocrine home
4. To make the diagnosis of the prostatic origin of a metastasis (PSA+, P504S+)

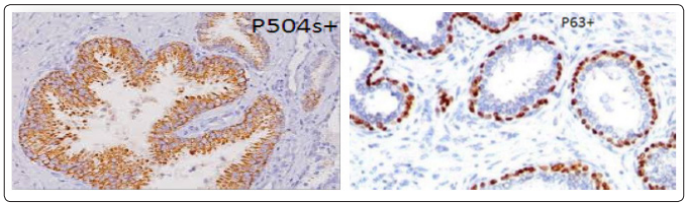
Technical HC

lmmunohistochemistry consists of detecting in the tissues or cells the site of the binding of a specific antibody to the protein against which it is directed. This technique is widely used for the diagnosis and 1 or monitoring of cancer by the detection of cancer cells.

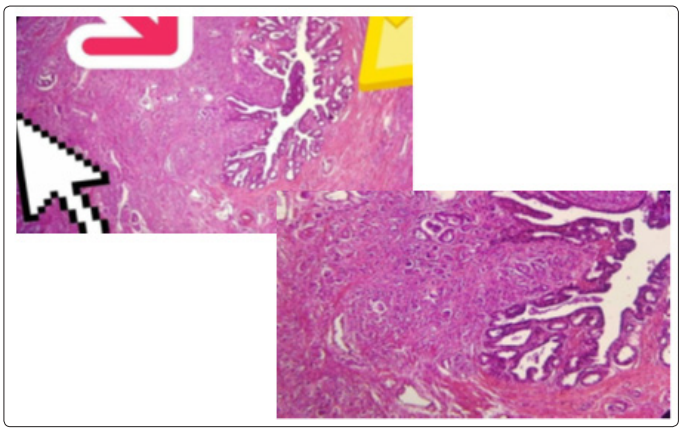
-Marking of basal cells: cytokeratin CKHMW (High molecular weight), cytokeratin 5/6 (cytoplasmic), p63 (nuclear).

- p504S (cytoplasmic granular): expressed in about 80% of cases in cancerous lesions and high grade dysplasia.

The p63 1 p504S coupling increases the detection sensitivity of cancers: P63 + 1 p504S +: high grade PIN.
P63+ 1 p504S-: benign lesion.
p63- 1 p504S +: cancerous lesion.
P63- 1 p504S -: no conclusion.



The 2016 WHO classification of tumours of the urinary system and prostate



WHO classification of tumours of the prostate

Epithelial tumours	
Glandular neoplasms	
Acinar adenocarcinoma	8140/3
Atrophic	
Pseudohyperplastic	
Microcystic	
Foamy gland	
Mucinous (colloid)	8480/3
Signet ring–like cell	8490/3
Pleomorphic giant cell	
Sarcomatoid	8572/3
Prostatic intraepithelial neoplasia, high-grade	8148/2
Intraductal carcinoma	8500/2
Ductal adenocarcinoma	8500/3
Cribriform	8201/3
Papillary	8260/3
Solid	8230/3
Urothelial carcinoma	8120/3
Squamous neoplasms	
Adenosquamous carcinoma	8560/3
Squamous cell carcinoma	8070/3
Basal cell carcinoma	8147/3
Neuroendocrine tumours	
Adenocarcinoma with neuroendocrine differentiation	8574/3
Well-differentiated neuroendocrine tumour	8240/3
Small cell neuroendocrine carcinoma	8041/3
Large cell neuroendocrine carcinoma	8013/3
Mesenchymal tumours	
Stromal tumour of uncertain malignant potential	8935/1
Stromal sarcoma	8935/3
Leiomyosarcoma	8890/3
Rhabdomyosarcoma	8900/3
Leiomyoma	8890/0
Angiosarcoma	9120/3
Synovial sarcoma	9040/3
Inflammatory myofibroblastic tumour	8825/1
Osteosarcoma	9180/3
Undifferentiated pleomorphic sarcoma	8802/3
Solitary fibrous tumour	8815/1
Solitary fibrous tumour, malignant	8815/3
Haemangioma	9120/0
Granular cell tumour	9580/0
Haematolymphoid tumours	
Diffuse large B-cell lymphoma	9680/3
Chronic lymphocytic leukaemia / small lymphocytic lymphoma	9823/3
Follicular lymphoma	9690/3
Mantle cell lymphoma	9673/3
Acute myeloid leukaemia	9861/3
B lymphoblastic leukaemia/lymphoma	9811/3
Miscellaneous tumours	
Cystadenoma	8440/0
Nephroblastoma	8960/3
Rhabdoid tumour	8963/3
Germ cell tumours	
Clear cell adenocarcinoma	8310/3
Melanoma	8720/3
Paraganglioma	8693/1
Neuroblastoma	9500/3
Metastatic tumours	
Tumours of the seminal vesicles	
Epithelial tumours	
Adenocarcinoma	8140/3
Squamous cell carcinoma	8070/3
Mixed epithelial and stromal tumours	
Cystadenoma	8440/0
Mesenchymal tumours	
Leiomyoma	8890/0
Schwannoma	9560/0
Mammary-type myofibroblastoma	8825/0
Gastrointestinal stromal tumour, NOS	8936/1
Leiomyosarcoma	8890/3
Angiosarcoma	9120/3
Liposarcoma	8850/3
Solitary fibrous tumour	8815/1
Haemangiopericytoma	9150/1
Miscellaneous tumours	
Choriocarcinoma	9100/3
Seminoma	9061/3
Well-differentiated neuroendocrine tumour / carcinoid tumour	8240/3
Lymphomas	
Ewing sarcoma	9364/3
Metastatic tumours	

The morphology codes are from the International Classification of Diseases for Oncology (ICD-O) (917A). Behaviour is coded /0 for benign tumours; /1 for unspecified, borderline, or uncertain behaviour; /2 for carcinoma in situ and grade III intraepithelial neoplasia; and /3 for malignant tumours. The classification is modified from the previous WHO classification (756A), taking into account changes in our understanding of these lesions.

The role of the pathologist

The pathologist must prepare a complete report containing the following elements:
- Tumour nature (benign or malignant tumour)
- Histological type (WHO Classification OMS 2016)
- Gleason's Score
- Grading (ISUP): histopronostic grade
- TNM stage
- Infiltration or not of the Prostate's Peri space
- Presence or absence of vascular or nerve infiltration
- mention the associated lesions (prostitutes, benign prostatic hyperplasia)

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