

Assessment of p16 Expression with Different Grades of Prostate Cancer among Sudanese Patients

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Abstract:

Prostate cancer is major health problem throughout the developed world, immunohistochemistry play very important role in diagnosis of prostatic adeanocarcinoma, expression of p16 tumor marker is one of most important prognostic factor.

Aim of this study evaluation of p16 as prognostic factor by using immunohistochemistry technique and correlate with Gleason's score.

Method: 30 cases of formalin-fixed paraffin embedded blocks of Sudanese male with prostate cancer with different grades from Ibn Sena hospital, Department of histopathology (Sudan).

Result: p16 had significant correlation with tumor grade p.value 0,00, but had no significant correlation with age group p. value 0.575. This result after quantitatively evaluated (percentage of positive cell / field) by pathologist.

Conclusion: expression of p16 marker and histological grade showed highly significant difference in prostate cancer p.value 0.00 .

Key words: p16, prostate cancer, Sudanese patients

1. INTRODUCTION:

Prostate cancer recognized worldwide as a major health problem, [1,2] that leading to cancer related death and it is the second diagnosed cancer in males after lung cancer [3,4,5].

In 2012, prostate cancer is the second most frequently diagnosed cancer at 15% of all male Cancers) and the sixth leading cause of cancer death in males worldwide. In Europe in 2012 it was the 3rd most diagnosed cancer after breast and colorectal. Prostate cancer in Sudan according to study done in Ibn Sina Hospital, prostate cancer was found to affect Sudanese patients at elderly age groups (above 50 years old).so in these study we aim to evaluate the relationship between P16 tumor marker and prostate arcinoma in Sudanese patients.

p16 (also known as **cyclin-dependent kinase inhibitor 2A, multiple tumor suppressor 1** and as several other synonyms), is a tumor suppressor protein, that in humans is encoded by the *CDKN2A* gene. p16 plays an important role in cell cycle regulation by decelerating cells progression from G1 phase to S phase, and therefore acts as a tumor suppressor that is implicated in the prevention of cancers, notably melanoma, oropharyngeal squamous cell carcinoma, cervical cancer, and esophageal cancer. p16 can be used to improve the histological diagnostic accuracy of CIN3. The *CDKN2A* gene is frequently mutated or deleted in a wide variety of tumors.

p16 is an inhibitor of cyclin dependent kinases such as CDK4 and CDK6. These latter kinases phosphorylate retinoblastoma protein (pRB) which eventually results in progression from G1 phase to S phase.p16 was originally found in an “open reading frame of 148 amino acids encoding a protein of molecular weight 15,845 comprising four ankyrin

repeats. p16Ink4A is named after its molecular weight and its role in inhibiting CDK4.

2. MATERIALS AND METHODS:

2.1. Materials:

2.1.1. Subjects:

Diagnosed patients with prostate carcinoma grouped according to age for two groups (50 -70) years old and (71 – 90) years old, obtained from the department of pathology, at Ibn sena hospital during the period from January 2015 to January 2016 were chosen for this study.

2.1.2. Samples:

A total of 30 prostate needle biopsy specimens, including prostate needle biopsy specimens with prostatic adenocarcinoma The diagnosis of prostate cancer was established from: Examination of multiple levels of H&E-stained sections and was confirmed by two pathologists.

2.2. Methods:

2.2.1. Immunohistochemical Analysis

Immunohistochemical staining was achieved using streptoavidin-biotin immunoperoxidase technique (thermo fisher). Three to five micrometer thick sections, cut from formalin fixed paraffin embedded blocks, were deparaffinized in Xylene and rehydrated in graded alcohol(absolute – 90% -70%). The mounted sections were immersed in the retrieval solution, tris buffer EDTA (PH 9.0), then boiled in this solution in PT link for 20 min and then washed in phosphate buffer saline (pH 7.2).Then the slides were incubated 20 minute using a polyclonal anti-P16 antibody ready to use thermofisher), After a

buffer rinse, bound antibodies were detected with the thermo Envision System. Slides were counterstained with hematoxylin, and rinsed again. The slides were allowed to air dry and were cover slipped with permanent mounting media. Negative controls, in which the primary antibodies were replaced by PBS, were carried out for each primary antibody For P16, prostate carcinoma was used as positive internal control.

Immunohistochemical Evaluation:

Evaluation of P16:

- Results obtained from two sections were detected by the researchers and confirmed by experienced histopathologist.

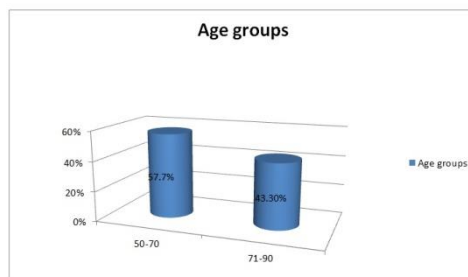
- Negative and positive controls were used for evaluation of the test sections.

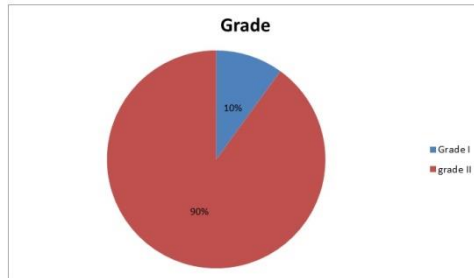
2.2.2. Statistical analysis

The results of the study were statistically analyzed using SPSS version15 statistical program. Data were expressed as mean± SD for quantitative variables, numbers and percentage. For categorical variables, student t test was used. For statistical analysis of Gleason's grading Spearman's statistical test was used. $P < 0.05$ was considered the significant limit.

3. RESULTS:-

3.1. Staining results with P16:





| Age | P16 | | Total |
|-------|----------|----------|-------|
| | positive | negative | |
| 50-70 | 16 | 1 | 17 |
| 71-90 | 11 | 2 | 13 |
| Total | 27 | 3 | 30 |

P value. 0.575

| Grade | P16 | | Total |
|---------|----------|----------|-------|
| | positive | negative | |
| gradeII | 0 | 3 | 3 |
| gradeIi | 27 | 0 | 27 |
| Total | 27 | 3 | 30 |

P value 0.00

4. DISCUSSION:

Prostate cancer is one of more serious type of cancer, in this study expression of p16 in 30 cases of postatic adenocarcinoma was evaluated the predictive value of labege index by p16 has special important diagnostic role in this type of cancer .

In our study found no significant correlation between age and expression of p16 p. value 0.575 ,while there was significant correlation with grate of cancer and expression of p16 p .value 0.00.

5. Acknowledgement:

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