ORIGINAL RESEARCH PAPER

Pathology

CO-RELATION OF SERUM PROSTATIC SPECIFIC ANTIGEN AND HISTOPATHOLOGICAL FINDINGS OF PROSTATIC LESION.

KEY WORDS: Adenocarcinoma, Gleason, Prostate

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ABSTRACT

Introduction: Prostatitis, benign nodular hyperplasia of prostate and carcinoma prostate are the common diseases associated with prostate. Prostate cancer is the most common cancer of men in USA and 10th common malignancy in India. PSA is synthesized by normal lining epithelial cells of prostatic glands, cells of hyperplastic glands and malignant epithelial cells of prostatic adenocarcinoma. So there may be increase in serum PSA level in conditions like inflammation, hyperplasia and malignancy. As in most of the cases with PSA less than 04 ng/dl there is very less chances of malignancy and in serum PSA level more than 10 ng/dl possibility of carcinoma prostate is highly suggested.

Material and Methods: This study is conducted in department of Pathology, MGM Medical College Indore. Patients whose serum PSA was available and histopathological examination was requested were included. Histopathological examinations was done and findings were co-related clinical and laboratory findings. Serum PSA level and histopathological co-relation was recorded and analyzed.

Results and observation: Most patients were of 61- 70 years of age group. Benign lesions were more common, constituting 83% of the cases, they included prostatic hyperplasia Prostatitis and other lesions. Serum PSA level was found maximum in cases of malignancy (ranging from 06.10 ng/dl to 144 ng/dl). In inflammation of prostate there is rise in sPSA titre which should always be examined cautiously. Mean serum PSA in malignant cases was found to be 39.38 ng/dl. In prostatic carcinoma most of the patients show Gleason score of 7-8. Most common Gleeson grade was grade 4 in our study.

Conclusion: Prostatism is a very common cause of morbidity among elderly males. Serum PSA levels are important and very useful diagnostic tool in assessment of prostatic lesions. Raised serum PSA should always alarm a clinician and pathologist to examine patient with suspicion. Rise in PSA level is directly proportional to the grade of tumor. Thus histopathological examination and co-relation of serum PSA level with Gleeson grading are most crucial parameters in deciding treatment line of patient.

Introduction:-

Prostate is common organ causing morbidity in older males. Prostatitis, benign nodular hyperplasia of prostate and carcinoma prostate are the common diseases associated with prostate.

Prostate cancer is the most common cancer of men in USA and 10th common malignancy in India [1],[2].

Patients feel apparently well and symptomless unless disease has progressed. This demanded introduction of various screening programs for early diagnosis of prostatic lesions. Approach towards diagnosis of prostatic lesions requires careful clinical, radiological and pathological findings. Digital rectal examination and trans-rectal ultrasonography are common tool for diagnosing prostatic lesions but among all serum Prostate Specific Antigen (PSA) came out as most reliable tool for screening and in management (3,4).

PSA is produced and secreted into seminal fluid at high concentrations. It Chemically PSA is a glycoprotein acting as a serine protease that contains 7 % carbohydrate (Watt et al,1986) and is found almost exclusively in the epithelial cells of the prostate(Armbruster,1993). PSA is normally present in serum of men but its levels are elevated in pathological conditions like of prostatic inflammation, hyperplasia and carcinoma.

PSA is synthesized by normal lining epithelial cells of prostatic glands, cells of hyperplastic glands and malignant epithelial cells of prostatic adenocarcinoma. So there may be increase in serum PSA level in conditions like inflammation, hyperplasia and malignancy. In poorly differentiated carcinoma prostate there is extra production of PSA as compared to a well differentiated prostate carcinoma. Also as the grade of tumor increase the serum PSA level increases proportionally thus its level is higher in high grade malignancy.

Values of serum PSA between 4.0 and 10.0 ng/ml extra can be used to improve the specificity of PSA for prostatic carcinoma [5]. As in most of the cases with PSA less than 04 ng/dl there is very less chances of malignancy and in serum PSA level more than 10 ng/dl possibility of carcinoma prostate is highly suggested.

Material and Methods:

This study is conducted in department of Pathology, MGM Medical College Indore during January 2014 to December 2014. Patients whose serum PSA was available and histopathological examination was requested were included in the study. Total 136 specimens were requested for histopathological examination but serum PSA was available of 86 patients only, so those 86 patients were included in our study. Out of them 55 were from trans urethral resection of prostate, 28 were needle biopsies and 3 were total prostectomy. Specimens were received in 10% neutral buffered formalin then they were examined grossly and after processing 5µ sections were stained with hematoxylin and eosin stain (H & E stain). Histopathological examinations was done and findings were co-related clinical and laboratory findings. Serum PSA level and histopathological co-relation was recorded and analyzed.

Results and observation:

Among 86 cases most of the patients were of 61- 70 years of age group. Youngest patient included in our study was of 43 years and oldest one was 89 years old. (Table 1)

Benign lesions were more common constituting 83% of the cases; they included prostatic hyperplasia Prostatitis and other lesions. Serum PSA level was found maximum in cases of malignancy (ranging from 06.10 ng/dl to 144 ng/dl). In inflammation of prostate there is rise in sPSA titer which should always be examined cautiously. Mean serum PSA in malignant cases was found to be 39.38 ng/dl. (Graph 1) Among cases of prostatic carcinoma most of the patients show Gleason score of 7-8. Most common Gleason grade was grade 4 in our study.(Table 2)

Discussion:

In our study most common age group involved id 61-70 years. Mean age of presentation is 68 years in our study is comparable with studies by other authors [6],[7],[8]. Most common clinical presentation in patients of our study was chronic urinary obstruction of urethra (9) Gleason's score and sPSA level are important and independent prognostic factors in determining the management line for prostatic carcinoma (10). PSA molecule is secreted by prostate but not necessarily only by prostate cancer as abnormal raised levels can be found in various benign lesions also. [11].

Serum PSA was found to proportionate with the differentiation of tumor. We found that prostatic adenocarcinoma with high gleason grading also have very high sPSA levels as compared to low gleason grade tumor. It is proposed that malignant cells of prostate produces more PSA than normal cells that causes high PSA secretion in poorly differentiated carcinomas resulting in their increased PSA levels compared to well differentiated counterpart (12).

Conclusion:

Prostatism is among most common cause of morbidity among elderly males. Serum PSA levels are important and very useful diagnostic tool in assessment of prostatic lesions. Raise serum PSA should always alarm a clinician and pathologist to examine patient with suspicion. Raise in PSA level is directly proportional to the grade of tumor. Thus histopathological examination and co-relation of serum PSA level with gleason grading are most crucial parameters in deciding treatment line of patient.

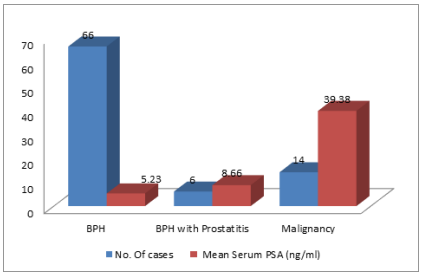
Table: 1 Distribution of lesions with age

Age (in years)	Total cases	BPH	Prostatis and other	Malignant
41-50	05	04	01	00
51-60	18	15	02	01
61-70	37	27	05	05
>70	26	15	03	08
	86	61	11	14

Table 2: Gleason grading and serum PSA level

Predominant grade	No. Of cases	Mean serum PSA ng/dl
Gleason grade 1	00	-
Gleason grade 2	01	5.66
Gleason grade 3	01	12.65
Gleason grade 4	08	42.74
Gleason grade 5	04	64.20
Total	14	

Graph: 01



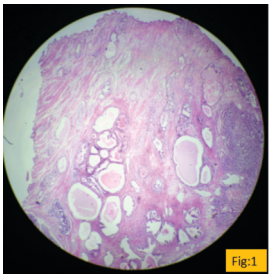


Figure 1 : Benign Prostatic Hyperplasia (BPH)

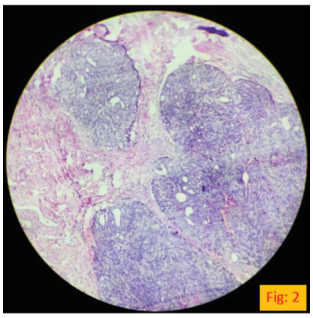


Figure 2: Prostatic adenocarcinoma (low power)

References:

1. Http://www.cdc.gov/dcpc/data/men.htm. Accessed on 29/08/2013.
2. Dubey D. The early use of prostate specific antigen for early detection of cancer prostate in India: Is it justified? Indian JUrol 2009;25:177-84.
3. Loeb S, Kettermann A, Carter HB, Ferrucci L, Metter EJ, Walsh PC. Does prostate growth confound PSA velocity? Data from the Baltimore longitudinal study of aging.J Urol 2008;180:1314-7.
4. Karazanashvili G, Abrahamsson PA. Prostate specific antigen and human glandular kallikrein 2 in early detection of prostate cancer. J Urol 2003;169:445-57.
5. Alpesh M Maru, et al. Prostate specific antigen in different prostatic pathology. International Journal of Medical Science and Public Health 6:735-737, 2014.
6. Mawakyoma H A, Mabandi J L. Prostate cancer; Correlation of Gleason's score and pretreatment prostate specific antigen in patients. Professional Med J 2010;17:235-40.
7. Jackson LA , McGrowder DA, Lindo RA. Prostate specific antigen and Gleason score in men with prostate cancer at a private diagnostic radiology centre in western Jamaica. Asian Pacific J Cancer Prev 2012;13:1453–6.
8. Okolo CA, Akinosun OM, Shittu OB, Olaopa OO, Okeke LI, Akang EU. Correlation of serum PSA and Gleason score in Nigerian men with Prostate Cancer. African journal of urology 2008;14:15-22.
9. Mansoor I. Pattern of prostatic diseases in Saudi Arabia. The Internet journal of Pathology. TMISSN. 2003;2(2):1528-8307.
10. Partin AW, Yoo J, Carter HB, Pearson JD, Chan DW, Epstein JI, et al.. The use of prostate specific antigen, clinical stage and Gleason score to predict pathological stage in men with localized prostate cancer. J Urol. 1993 Jul;150(1):110-4.
11. Lakhey M et al. Correlation of serum free prostate-specific antigen level with histological findings in patients with prostatic disease. Kathmandu University Medical Journal 8:158-163, 2010.
12. Shih WJ, Gross K, Mitchell B, Collins J, Wierzbinski B, Maqoun S et al. Prostate adenocarcinoma using Gleason scores correlates with prostate specific antigen and prostate acid phosphatase measurements. J Natl Med Assoc 1992;84:1049-50.