ORIGINAL RESEARCH PAPER

Biochemistry

STUDY OF SERUM HS-CRP AND PROSTATE SPECIFIC ANTIGEN IN BENIGN ENLARGEMENT OF PROSTATE AND CARCINOMA OF PROSTATE.

KEY WORDS:

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ABSTRACT

Introduction: Benign prostatic hyperplasia is the most common neoplastic disorder affecting the aging male population orldwide. A positive correlation between serum CRP and tumor stage is observed in prostate cancer patients. A correlation is also observed between the rise in CRP and faster progression of the tumor. This result proves that inflammation participates in tumor progression [3,4]In light of these findings, we analyzed hs-CRP to know role of inflammation in BEP and cancer prostate

Aims and Objectives: To study levels of serum hs-CRP levels , correlation of serum hs-CRP and Serum PSA levels in patients of benign enlargement of prostate and cancer of prostate .

Material and Methods: The present study was carried out in Department of Biochemistry in collaboration with Central Laboratory and Department of Urology, MGM Medical College, Aurangabad from November 2015 to November 2017. hs-CRP was estimated by turbidimetric immunoassay using Quantia CRP US kit based on principle of agglutination reaction on microlab 300 [9].Serum PSA levels were measured on VITROUS 5600 by Enhanced Chemiluminescence method. [10] The mean hs-CRP in Group B was 10.29±3.47 mg/dl which was comparatively higher than Group A. In Group A it was 4.61±0.73 mg/dl. This mean difference of hs-CRP between two groups was found to be statistically significant. PSA level was correlated with hs-CRP level it was found to be positively correlated with each other. And this correlation between prostate specific antigen (PSA) level and hs-CRP level was statistically significant.

Summary and Conclusion: In this study, a positive correlation between plasma hs-CRP levels and serum PSA levels was observed in the benign and malignant group both suggesting a potential correlation between prostate inflammation and prostate cancer.

INTRODUCTION

Benign prostatic hyperplasia is the most common neoplastic disorder affecting the aging male population worldwide. Screening programs for prostate cancer will increase the percentage of localized prostate cancer, which can be cured by radical prostatectomy.[1,2]

A positive correlation between serum CRP and tumor stage is observed in prostate cancer patients. A correlation is also observed between the rise in CRP and faster progression of the tumor. This result proves that inflammation participates in tumor progression.[3,4] Also, CRP is reported to have usability as a biomarker in urologic cancer. For example, elevation of CRP levels, which indicates the presence of a cancer-associated systemic inflammatory response, is linked to lower survival in patients with urologic cancers, including renal cell carcinoma and cancers of upper urinary tract, bladder, and prostate. [5]

In light of these findings, we analyzed hs-CRP to know role of inflammation in BEP and cancer prostate Moreover, we have investigated whether a correlation exists between hs-CRP and PSA levels in serum.

AIMS AND OBJECTIVES

1. To study levels of serum hs-CRP levels in patients of benign enlargement of prostate and cancer of prostate.
2. To study correlation of serum hs-CRP and Serum PSA levels in patients of Benign enlargement of prostate and cancer of prostate.

MATERIALS AND METHODS

The present study was carried out in Department of Biochemistry in collaboration with Central Laboratory and Department of Urology, MGM Medical College, Aurangabad. The Study was approved by Institutional Ethical and Research Committee to use human subjects in research study. Informed consent was taken from patient / relative conducted after getting ethical committee clearance from MGM MC and Hospital ethical committee. The study was conducted from November 2015 to November 2017.

Eligibility Criteria :a) Inclusion Criteria :Newly diagnosed Patients of BEP and prostate cancer medically and histopathologically diagnosed.

a. Serum PSA levels > 4 ng/ml
b. Age Group >55 years.
c. Those who are willing to participate in study.

b) Exclusion Criteria: According to history given by patient

a. Acute infections
b. Rheumatoid arthritis
c. Gout
d. Asthma
e. Chronic lung disease
f. Myocardial infarction

STUDY DESIGN : It is an observational cross sectional study.A total of 114 patients were enrolled in this present study. These were divided in two groups .Each group contain 57 patients. Group A : Benign enlargement of prostate (BEP) n= 57 Group B: Carcinoma prostate n= 57

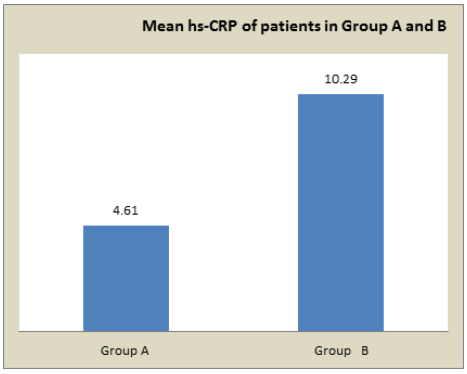
Collection of Blood Sample and Laboratory Method :

Total 5 ml of venous blood sample (fasting) was collected from antecubital vein under all aseptic precautions in plain bulb .It was then allowed to clot and will be then centrifuged for 10 min at 3000 r.p.m. for serum separation. Serum was used for the analysis of hs-CRP and PSA. The tests were carried out on same day after serum separation. hs-CRP was estimated by turbidimetric immunoassay using Quantia CRP US kit based on principle of agglutination reaction on microlab 300 [9].Serum PSA levels were measured on VITROUS 5600 by Enhanced Chemiluminescence method. [10]

OBSERVATIONS AND RESULTS:

Table 1 : Comparison of Mean hs-CRP of patients in group A and B

Mean hs-CRP	Mean±SD(mg/dl)	z-value	p-value
Group A	4.61±0.73	12.07	P<0.0001S
Group B	10.29±3.47		



Bar diagram 1 : Showing mean hs-CRP in Group A and B

In the present study, mean hs-CRP in Group B was 10.29± 3.47 mg/dl which was comparatively higher than Group A. This mean difference of hs-CRP between two groups was found to be statistically significant. (p<0.0001)

Table 2 : Comparison of Mean PSA of patients in Groups

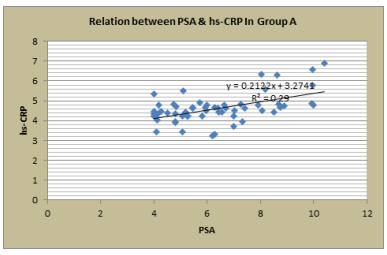
PSA	Mean±SD ng/ml	z-value	p-value
Group A	6.32±2.12	8.07	P<0.0001 S
Group B	19.21±11.95		

Table 3 : Correlation between PSA and hs-CRP in Group A and Group B

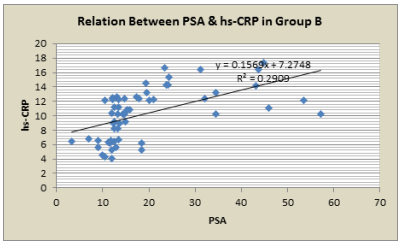
Correlation	Group A r-value and p-value	Group B r-value and p -value
PSA vs hs-CRP	r=0.539 p<0.0001 S	r=0.486 p <0.0001 S

Above table shows, in Group A when PSA level was correlated with hs-CRP level, it was found to be positively correlated with each other. And this correlation between PSA level (ng/ml) and hs-CRP (mg/dl) level was statistically significant (p<0.0001).

In Group B when PSA level was correlated with hs-CRP level it was found to be positively correlated with each other. And this correlation between PSA level and hs-CRP level was statistically significant (p<0.0001).



Graph 1. In Group A when PSA level was correlated with hs-CRP level it was found to be positively correlated with each other. And this correlation between PSA level and hs-CRP level was statistically significant. (p<0.0001).



Graph 2. In Group B when PSA level was correlated with hs-CRP level it was found to be positively correlated with each other. And this correlation between PSA level and hs-CRP level was statistically significant. (p<0.0001).

DISCUSSION

The mean hs-CRP in Group B was 10.29±3.47 mg/dl which was comparatively higher than Group A. In Group A it was 4.61±0.73 mg/dl. This mean difference of hs-CRP between two groups was found to be statistically significant (p<0.0001) (Table 1).According to Youngjun Kim et al (2013)[8] out of 203 patients, 140 patients had BPH, and 63 patients had prostate cancer. The serum CRP level of the prostate cancer group was higher than that of the BPH group. Inflammation may be correlated with prostate cancer according to the serum CRP level. According to Jennifer et al (2009) inflammation may play a role in the development of benign prostatic hyperplasia. Higher levels of C-reactive protein (CRP) may therefore be associated with the development of these outcomes.[6] According to Chang-ChiChang et al (2010) [7] a total of 139 patients with serum PSA levels greater than 4.0 ng/ml were studied and positive correlation between plasma CRP levels and serum PSA levels was observed . Our observations were in accordance with observations of Jennifer et al (2009),[57] Chang-Chi Chang et al (2010)[7] and Youngjun Kim et al (2013).[8]

In Group A when PSA level was correlated with hs-CRP level it was found to be positively correlated with each other. And this correlation between prostate specific antigen (PSA) level and hs-CRP level was statistically significant (p<0.0001)(Table 3). From this we can conclude that if PSA levels increase then hs-CRP level also increases. Our results were in accordance with Chang-ChiChang et al (2010). [7] In Group B when PSA level was correlated with hs-CRP level it was found to be positively correlated with each other. And this correlation between PSA level and hs-CRP level was statistically significant (p<0.0001). From this we can conclude that if PSA levels increase then hs-CRP level also increases.

Elevation of hs-CRP levels indicates the presence of cancer-associated systemic inflammatory response and is linked to lower survival in patients with cancer of prostate.

Summary and Conclusion

In this study, a positive correlation between plasma hs-CRP levels and serum PSA levels was observed in the benign and malignant group both suggesting a potential correlation between prostate inflammation and prostate cancer.

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