A STUDY ON THE F DIFFERENT BIOMARKERS FOR PROSTATE CANCER

[1]Dr Mamoona, [2]Dr Haaris Ali Arshad, [3]Dr Abdullah

[1]Bahawal Victoria hospital, [2]DHQ Hospital Chiniot, [3]POF Hospital

Abstract:

Objective: In this research study the use of prostate specific antigen (PSA) and it sub type (fPSA %) free fraction of total prostate specific antigen percent, (PSAD) prostate specific antigen density as a bio marker for prostate cancer (PCa) is discussed. This research study was conducted to find diagnostic tool in prostate cancer such that serum totals PSA, fPSA% and PSAD. In terms of their sensitivity, specificity and overall accuracy.*

Methodology: 48 patients of prostate cancer were admitted in Bahawal Victoria Hospital, Bahawalpur from January 2015 to January 2017. To find out the ratio of PSA and fPSA% in serum we used ELISA (Enzyme linked immunosorbent assay) this kit is present anywhere in medical lab. Data related to volume of prostate which is determined by abdominal sonography were used to count prostate specific antigen density and histology of the surgically cut out prostatic organ was conducted for laboratory verification of PCa for a rest of patients. Diagnostic awareness, particularity and accuracy of serum total PSA, fPSA% and PSAD were counted by using basic formulae against microscopic examination of tissue.*

Results: Microscopic study of tissue showed that in 48 patients forty-one suffer from prostate cancer the mean age of patients were 69.2±8.1 years old. In these 39 patient 7 cases are those who suffer from Nodular Hyperplasia of Prostate (NHP) with prostate-specific tumor markers of these patients were commonly in the normal ranges. The awareness, particularity and overall diagnoses accuracy for PCa of serum total PSA (at cut off value of greater than ten ng/ml) were eighty.480%, eighty-eight.900% and 80% for serum free PSA (at cut off value of less than 23%), were 90. 680%, seventy-seven.800 percent and ninety percent and for PSA density (at a cut off value of greater than point fifteen ng/ ml/cm3), were initiate to be 90% eighty-eight.900% and ninety percent individually. Microscopically, twenty-seven (sixty-five point forty-six), thirteen (thirty-one point seventy percent) and one (two.44percent) cases were divided as poorly separated, normally separated and strongly separated carcinoma individually and amazing superiority had very good interaction with all prostate-specific tumor markers.*

Conclusion: These outcomes stress that diverse prostate-specific tumor markers have great diagnostic prediction with fPSA% and PSA Density have normally best diagnostic accuracy as compare to serum tPSA for PCa.*

Keywords: *Microscopically, Prostate-Specific, Interaction, Carcinoma, Diagnostic, Antigen, Biomarker.*

Corresponding author:

Dr. Mamoona,

Bahawal Victoria hospital.

QR code

INTRODUCTION:

PCa is the type of skin cancer mostly common in men and it occurrence is different for every geographic area. From more than fifty years, serum acid phosphatase was considering most common standard to determine the symptom of PCa. Recently, in nineteen sixty-seven [1], Wang and his teammates determine (PSA) from prostate tissue and since PSA consider the standard for the diagnosis and additionally its role in the estimate of microscopic response of PCa. In his study standard and biomarker for PCa was consider PSA. If the level of PSA below in general 4 ng/ ml has no symptom of PCa on the other if the value of PSA is higher than four ng/ml is considered PCa patient [2]. PSA value between four to tin ng/ml indicate the dangerous zone and more than tin ng/ml strongly consider PCa. But as a diagnostic problem, PSA count greater than four ng/ml has also been found among PCa patients and higher range i.e greater than four ng/ml is further correlate with many favorable prostatic circumstances exclusively with nodular hyperplasia of prostate (NHP), it is a frequently present in male age fifty years [3, 4]. That is way, endeavor have been formed to better its diagnostic particularity counting age modification, gland volume modification and sequential assessment [5].

Many examinations have proposed that evaluation of free fraction of PSA (fPSA/tPSA multiply hundred) is an advancement of initial PSA range and treated as good non-invasive analyze tool for PCa.6The frequently suggested aspect of free PSA (fPSA) is an combine to PSA in the so called analyze infection zone of PSA. fPSA% is decrease in PCa than other gentle prostatic circumstances and free PSA of twenty five percent show less cause of cancer if it range above twenty five percent the chance of cancer [6]. More ever, the calculation of ratio of the serum to the size of prostate was tPSA ÷ prostate quantity has also been corresponding as a necessary to tPSA for the PCa. PSA density at a cut off value of point fifteen ng/ml/cm3 higher PSA density show more chance of PCa [7].

The most common outcome of our research study to find out the best treatment approach for prostate cancer, the current research was attempted to calculate and compare the diagnostic awareness, particularity and efficiency of serum tPSA, fPSA% and PSA density amid imagined PCa cases.

MATERIAL AND METHOD:

48 patients of prostate cancer were admitted in Bahawal Victoria Hospital, Bahawalpur from January 2015 to January 2017. For the examine we used blood specimen 3 mL of blood was collected and follow the test technique to find the level of PSA the serum from a blood were collected after the rotation of blood up to 400rpm for ten min. Enzyme-linked immunosorbent assay were used to study tPSA test The ELISA for evaluation of PSA was conducted by Ex 808 Multiskan ELISA reader were used for all fifty PCa cases. Two tests are conducted on ELISA one is rabbit anti -PSA antibody directed against and the second was intact PSA for solid state.

The free PSA enzyme-linked immunosorbent assay test was conducted in solid state two-site (sandwiched) immunoassay. An anti-free PSA monoclonal antibody was covered on the front of the micro plate wells and a rabbit anti- PSA antibody classify with horseradish for a tracer peroxidase was used. Prostate quantity (length multiple width multiple anterior posterior diameter multiple point fifty-two) the measured were taken by the help of abdominal ultrasound and PSA density as calculated as follows; PSAD =Serum tPSA Prostate quantity. Removed prostatic tissue of all patients was secure in ten percent natural buffered formalin. The prostate tissue was processed for test and paraffin enclose, four to five micro meter thicken sequential section was made. One piece was formed from every section and stained with Hematoxylin and Eosin (HandE). [No of specimen along true-plus results ÷ (No of specimen along true -plus results + No of specimen along false-mines results)] x hundred; Specificity = [No of specimen along true-mines results ÷ (No of specimen along true-mines results + No of specimen along false-plus results)] x hundred. Diagnostic accuracy = [No of specimen along true-plus results + No of specimen along true-mines results / No of specimen along true-plus results + No of specimen along false-plus results + No of specimen along false-mines results + No of specimen along true-mines results x hundred.

RESULTS:

Table-I shows that age and prostate cancer are proportional the mean age of both sex of the patients was seventy-one.2 ± ten.1 years, with age ranging of fifty to ninety-five years. More than forty percent patients were under the age of seventy-one to eighty years with hundred percent PCa. Hospital study cases in fifty cases fifteen were serum tPSA range from four to ten ng/ml, of which were detected as carcinoma and seven as (NHP). Microscopic study report forty-one out of fifty cases suffer from PCa and the rest of nine were NHP. in Table-II. shown interaction of serum tPSA, fPSA and PSA Density with frequency of PCa is Out of 50 clinically attend cases of PCa, thirty-eight (sixty-nine percent) had

tPSA was greater than ten ng/ml, forty (eighty percent) had fPSA greater than twenty-five percent and thirty-eight (seventy-six percent) had PSA density of greater than point fifteen with regularity of cancer in ninety-seven percent, ninety-five percent and ninety-seven.36 percent individually.

The rest of nine cases of NHP, seven had their fPSA% less than twenty-five percent eight had PSA density greater than point fifteen ng/ml/cm3 but seven cases were in the diagnostic dangerous zone for tPSA. According to Gleason's score were divided as poorly separated, normally separated and strongly separated carcinoma cases were twenty-seven (sixty-five point forty-six), thirteen (thirty-one point seventy percent) and one (two.44 percent) amazing superiority had very good interaction with all prostate-specific tumor markers.

Table-I: Frequency distribution of prostate cancer among different age groups of Patients (n = 48)		
Age in Years	Total Numbers of Patients	Frequency of PCA
Sixty year or less	Three (sex percent)	Three (hundred percent)
Sixty one to seventy	Fifteen (thirty percent)	Seven (forty six percent)
More than sixty eight	Twenty one(forty two percent)	Twenty one(hundred percent)

On x-axis the age of patient and on y-axis is frequency of PCa

Table-II: Detection Rate Of Prostate Cancer By Different Tumor Markers Total No Of Cases 48		
Bio markers	Total cases	No of cancer
serum tPSA Cut-off value is greater than 10	Thirty four (sixty eight %)	Thirty three(ninety seven%)
fPSA cut-off value less than twenty five %	Forty (eighty %)	Thirty eight (ninety five %)
PSA density cut-off value greater than point fifteen	Thirty eight (seventy six %)	Thirty seven(ninety seven.3

Table-III: Sensitivity, Specificity And Efficiency Of All Bio Markers.			
Bio markers	Sensitivity	specificity	Efficiency
Serum tPSA	Eighty.480 percent	Eighty eight.900 %	Eighty two percent
fPSA%	Ninety.680 percent	Seventy seven.8 percent	Ninety percent
PSA density	Ninety percent	Eighty eight.900 percent	Ninety percent

DISCUSSION:

Recently DRE were conducted for the screening of prostate cancer mostly for men who above from 50 year of age the investigation of patient conducted yearly. For more accurate result fPSA and tPSA was combine with DRE to detect the recent attack of PCa. In Table-I showed that the age of patient proportional to the PCa the chance of prostate cancer was more for aged person. The aims of our research study to assess diagnostic awareness, particularity and efficiency of different prostate specific tumor markers, has assess all to be useful for the desire, however [8], fPSA was consider superior tumor marker as compare to tPSA in terms of awareness and efficiency (ninety-two.680 percent vs eighty.480 percent and ninety vs eighty-two percent). These counts are in conformity with others. In ninety-five percent patients of prostate cancer we noted fPSA greater than twenty-five percent except thirty percent patient who had fPSA less than twenty-five percent the mean cut-off value for fPSA for all researchers between tin to twenty-five percent [9].

In the collection of many studies PCa consider in those patients whose cut-value was greater than twenty-five percent our research study are closely compared with them. In examine assessment of fPSA% has been high as compere to tPSA to reduce the difficulty of analysis of infected area i.e [10]. PSA range from four to tin ng/ml and in our research study we examine perfection of fPSA% over tPSA among the analysis of the infected zone case. More ever the role of PSAD for PCa is uneasy, we consider it higher bio marker over tPSA at a cut-off value less than point fifteen ng/ml/cm3 [11]. In the current research, ninety-seven.360 percent PCa was related with PSA density less point fifteen (Table II), which is dependable with many examinations clear that PSA density is frequently higher in PCa compared to nodular hyperplasia of prostate [12].

The aims of our current research study to compere the sensitivity, specificity and diagnostic efficiency with other related study (Table-III) showed the all bio markers and it perimeter in detail [13]. In current study diagnostic accuracy significantly hopeful for each of these tests, the diagnostic efficiency of fPSA (at a cut of value of less than twenty-five percent) and PSA density [14] (at a cut of value of greater than point fifteen ng/ml/cm3) all the value of tumors marker of prostate cancer like PSA, total PSA, free PSA and PSAD and it sub perimeter sensitivity, specificity and diagnostic efficiency are discourse with detailed in the (Table-III) [15].

CONCLUSION:

These outcomes stress that diverse prostate-specific tumor markers have great diagnostic prediction with fPSA% and PSA Density have normally best diagnostic accuracy as compare to serum tPSA for PCa.

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