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REVIEW ARTICLE

Estimation of prostate specific antigen (PSA) concentrations in patients with prostatitis by fully automated ELISA technique.

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Abstract

The Aim of this study was to determine Immunogenetic expression of Toll-like receptor gene clusters related to prostatitis, to give acknowledge about Role of TLR in prostatitis immunity in men from Basrah and Maysan provinces. A case–control study included 135 confirmed prostatitis patients And 50 persons as a control group. Data about age, marital status, working, infertility, family history and personal information like (Infection, Allergy, Steroid therapy, Residency, Smoking, Alcohol Drinking, Blood group, Body max index (BMI) and the clinical finding for all patients of Prostatitis were collected. This study shows the effect of PSA level in patients with prostatitis and control group, with P-value <0.0001 therefore the study shows a positive significant between elevated PSA levels and Prostatitis.

Keywords: prostatitis, prostate specific antigen, ELISA

1 | INTRODUCTION

Prostatitis is an inflammation of the prostate gland. There are four various categories of prostatitis will be described in this review and the classification of these types depends on the symptoms and the manifestation of the condition Johnson (2017) . Three of these types are symptomatic and one is an asymptomatic. The first type is Acute bacterial prostatitis (category I) occur because of a bacterial infection, usually of a gram negative bacteria such as *Escherichia coli*, and the patients who have symptoms that includes significant pelvic pain, dysuria because of prostatic swelling and systemic fever. And there are scarcely long term side effects of this type of prostatitis after antibiotic therapy Krieger et al. (1999) and **Palapattu et al. (2005)** .One of the difficulties in determining the mechanisms of prostatitis is that the categories I and II prostatitis are caused by bacteria Pontari and Ruggieri (2008) , including *Escherichia coli, Klebsiella, Enterobacter and Pseudomonas*, greater numbers of cases are category III, for that etiology and pathogenesis are unknown Weidner et al. (1991).

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PSA This enzyme is secreted into the alveoli and is ultimately incorporated into seminal fluid. The alveoli secretion is pumped into the prostatic urethra during ejaculation by contraction of the fibromuscular tissue of the prostate. The fibrinolysin in the secretion serves to liquefy the semen. Normal individuals have a low serum concentration of PSA. Circulating PSA is produced by the liver, not by the prostate gland, which in normal individuals, releases PSA only into prostatic secretion. **Wang (2008) . Man et al. (2012)** conclude that the aggressiveness and extent of prostatic inflammation in asymptomatic prostatitis patients are significantly correlated with the level of serum PSA, which may help pathologists to avoid unnecessary repeated biopsies for patients with high-grade prostatitis. Sindhwani and Wilson (2005) they say acute prostatitis can lead to an increase in PSA, which usually returns to normal levels with appropriate antibiotics within 1 to 3 months, patients with chronic prostatitis have a less well – defined decrease in PSA after an antibiotic course. Alsaimary (2014) E (2011) E (2012)

2 | MATERIALS AND METHODS

Sampling

This case control study was conducted between October 2019 to July 2020 in Basrah and Missan province. During collection process data about each patient were reported in the paper questionnaire for each one, which included age, marital status, infertility, family history, personal information and clinical finding of the diseases. Blood samples were collected from peoples that are symptomatic and asymptomatic patient in various hospitals of Basrah and Missan province. From a total number of (135) patients with prostatitis were taken from two provinces from the Basrah teaching hospital and Missan teaching hospital that included in the present study and the age of patients was between 40 - >70 years and (50) individuals regarded as a control group without any urological problems were also studied.

Fully automated ELISA specific kit to detect t-PSA.

Table (2-4) show the components and reagent of. ELISA kit that was used for determining the levels of PSA in patients. As seen in the table (1).

TABLE 1: The components andreagents of ELISA kit.

Reagent	Volume
T PSA Calibrators	1 ml/vial – Icon A-F
T PSA Enzyme reagent	13 ml/vial – Icon
Streptavidin coated plate	96wells – Icon
Wash solution concentrates	20 ml/vial – Icon
Positive serum	1 X 0.5 ml (1 X) freeze dried
Substrate A	7 ml/vial – Icon
Substrate B	7 ml/vial – Icon
Stop solution	8 ml/vial – Icon

Statistical analysis

Statistical analysis is performed with SAS JMP Pro statistical program version 13.2.1 and Microsoft Excel 2013. Numerical data were described as mean, standard deviation of the mean. Logistic regression was used for comparison between various groups. The lowest level of accepted statistical significant difference is below or equal to 0.0001.

Results: Table (2) show concentration of PSA among various age groups of patients with prostatitis , that found age group 40-49 years 23 patients with PSA average 3.52 ng/dl and in the control group of same age was 36 patients with PSA average 0.84 ng/dl , and in the age group 50-59 years was 46 patients with PSA average 8.62 ng/dl , in the same group in only 3 patients of Prostitis PSA average was 65.25 ng/dl and in control group was 18person with PSA average 0.72 ng/dl ., third age group 60-69 years show 25 patients of Prostatitis with PSA average 8.11 ng/dl , 7 patients of Prostitis with PSA average 52.79 ng/dl and control group for same age group was 3 persons with PSA average 2.20ng/dl , finally age group >70 years show 15patients of Prostatitis with PSA average 2.96 ng/dl and 8 patients of Prostitis with PSA average 54.26 ng/dl . P-value <0.0001. As in the following table (2).

TABLE 2: illustrateConcentration of PSA among various age groups of patients with prostatitis.

Age group	Prostatitis	Prostitis	Control	P –value
40 -49year	23	0	36	
PSA Average	3.52 ng/dl	0	0.84 ng/dl	0.0005
50 -59year	46	3	18	
PSA Average	8.62 ng/dl	65.25 ng/dl	0.72 ng/dl	0.0006
60 -69year	25	7	3	
PSA Average	8.11ng/dl	52.79 ng/dl	2.20 ng/dl	0.0444
➢ 70year	15	8	0	
PSA Average	2.96 ng/dl	54.26 ng/dl	0	0.0003

P <0.0001

FIGURE 1: the means of PSA in patients with Prostatitis.

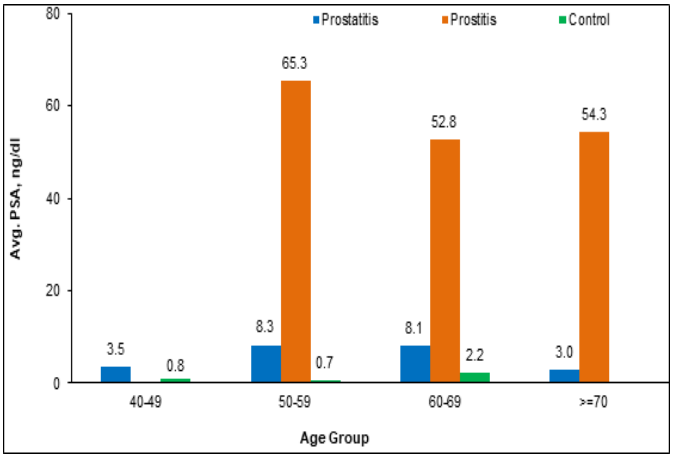

Figure (1) Show the PSA Average among various age groups of patients with prostatitis.

FIGURE 2: the numbers of patients with prostatitis invarious age group.

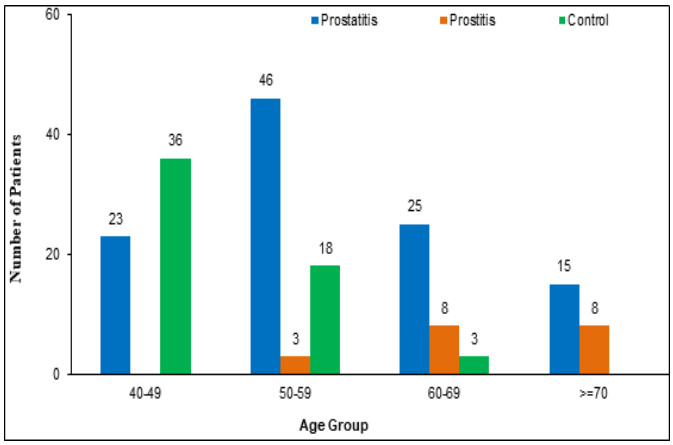

Figure (2) Show number of patients with prostatitis in various age groups.

3 | DISCUSSION:

This study show the effect of PSA level on patients with prostatitis and control group , The majority of patients with high PSA level belong to age group 50-59 years was 46 patients with PSA average 8.62 ng/dl , in the same group there are only 3 patients of Prostitis with PSA average 65.25 ng/dl and in control group was 18persons with PSA average 0.72 ng/dl , followed by age group 60-69 years show 25 patients of Prostatitis with PSA average 8.11 ng/dl , 7 patients of Prostitis with PSA average 52.79 ng/dl and control group for same age group was 3 persons with PSA average 2.20ng/dl ,with P-value <0.0001 therefore the study show a positive significant between elevated PSA levels and Prostatitis , the results ranged from normal individuals with PSA level below or equal to 4.0 ng/ml that represent normal limit for normal person , and higher PSA levels found in individual with prostatitis also some patients with Prostitis and this results corresponds with Salih et al. (2012) and with rapid rise in PSA may signal prostatitis by **Laino (2006).** Their results show very clearly increasing in age and PSA level reveal the progression of diseases to prostate cancer even with small number of samples and incredible elevation of PSA levels.as in Coker and Dierfeldt (2016) when say that Prostate-specific antigen (PSA) levels are not indicated in the workup of acute bacterial prostatitis. Brede and Shoskes (2011) **and Touma and Nickel (2011) .** Approximately 70% of men will have a spurious PSA elevation due to disruption of prostatic architecture caused by inflammation. **Ludwig (2008)** Elevated PSA levels can persist for one to two months after treatment. **Brede and Shoskes (2011)** If PSA levels remain elevated for more than two months, prostate cancer should be considered because 20% of persistent elevations are associated with malignancy. **Ludwig (2008)**

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