ORIGINAL ARTICLE

Role of Antibiotics in Reduction of Raised Serum PSA Levels and Avoidance of Unnecessary Prostatic Biopsies

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ABSTRACT

Objectives: To compare PSA level in patients before and after four weeks of antibiotic therapy and to avoid unnecessary TRUS guided prostatic biopsies.

Study Design: Prospective cross-sectional

Place and Duration of Study: Urology Department, Shaikh Zayed Hospital Lahore from 1st January 2013 to 31st July 2013.

Materials and Methods: A total of 50 cases were included. Detailed history, general physical and systemic examination including digital rectal examination (DRE) was done. Urine was collected for routine examination, culture and sensitivity (C/S) after prostatic massage. The sample for serum PSA was collected before DRE and was analyzed by ELISA technique. If PSA level was raised > 4ng/ml then antibiotic therapy was given according to urine C/S. Those cases which showed no organism on C/S, empirically Tab. Ciprofloxacin 500mg BD PO was given for four weeks. Serum PSA level was repeated after completion of four weeks of antibiotic therapy. Transrectal ultrasonographic (TRUS) guided prostatic biopsy was performed in those cases, still having serum PSA level > 4ng/ml.

Results: Mean age of patients was 64.0 (45-85) years. Urine culture revealed no growth in 32 (64.0%) patients, while 18 (36%) showed variety of organisms on c/s. Out of 50, PSA level returned to normal in 26 (52.0%) patients, while no significant change in serum PSA level was observed in 24 (48.00%) patients. The non-responder patients underwent TRUS guided prostatic biopsy. Histopathology revealed moderately differentiated adenocarcinoma of the prostate in 5(10%) patients. Before treatment serum PSA level was 10.45±5.38 ng/ml after treatment PSA decreased to 5.47±4.49 ng/ml.

Conclusion: Antibiotics treatment for a period of minimum four weeks in patients with raised serum PSA level > 4ng/ml may reduce serum PSA level significantly. This may help us in avoiding un-necessary prostatic biopsies and related complications.

Keywords: Prostate-specific antigen, Prostatitis, Antibiotics

INTRODUCTION

In men of all ages, acute and chronic prostatitis are common, although some controversy still exists concerning the importance of the role that bacteria can play in the causing of symptoms and the causes of bacteria.[1,2] A definitive diagnosis is by culture of a particular organism for the low urinary tract infection. Antibiotics are commonly used as first line therapy in patients who have a lower urinary tract infection. Due to the large range of UTI-causing pathogenic and recent trends in increasingly gram-positive pathogenes, a culture-specific antibiotic would be appropriate.[3,4]

Prostate tissue produces prostate-specific antigen which is a serine protease. It is prostate specific but not cancer specific. Normal prostate-specific antigen value is considered less than four ng/ml. Prostate-specific antigen is prostate specific and not cancer specific, therefore different approaches have been used to lessen the chances of negative biopsies. It is generally believed that asymptomatic patients with raised serum PSA and normal digital rectal examination, repeat serum PSA should be done after two to three weeks.[5]It has been also suggested that antibiotics treatment should be an initial regimen in such patients before repeat of serum PSA. Main advantage of giving antibiotic is to prevent unnecessary prostatic biopsies[6] and can differentiate patients with benign and malignant disease.[7,8]

Several studies have related to lower inflammation of the urinary tract and an improved PSA serum. PSA has now become an effective method for the screening of prostate cancer and men with prostate-specific antigen greater than 4 ng/dl are at higher risk for prostate Cancer [9-11]. But can PSA also include non-cancer disorders, such as benign prostatic hyperplasia and prostatitis. Antibiotic therapy has shown a substantial decrease in the PSA level of these patients. The antibiotic treatment of prostatitis will help to decrease the number of negative biopsies in an economical manner.[12,13] Initial treatment of UTIs can also provide a more appropriate choice for patient who fear transrectal ultrasound guided biopsies.

MATERIALS AND METHODS

This prospective cross-sectional study was carried out at Urology Department Shaikh Zayed Hospital Lahore from 1st January 2013 to 31st July 2013. Fifty patients with LUTS due to enlarge prostate and raised serum PSA level (>4ng/ml) and age above 45 years were included in our study while patients with acute urinary retention and already proven carcinoma (CA) prostate were excluded. Detailed history, general physical and systemic examination including DRE was done. Urine was collected

for routine examination, culture and sensitivity (C/S) after prostatic massage. The sample for serum PSA was collected before DRE and was analyzed by ELISA technique. If PSA level was raised (> 4ng/ml) then antibiotic therapy was given according to urine C/S. Those cases which showed no organism on C/S, empirically Tab. Ciprofloxacin 500mg BD PO was given for four weeks. Serum PSA level was repeated after completion of four weeks of antibiotic therapy. Transrectal ultrasonographic (TRUS) guided prostatic biopsy was performed in those cases, still having serum PSA level > 4ng/ml**.** The data was entered and analyzed by using SPSS-20.

RESULTS

The patient's age ranged between 45-85 and mean age was 64.0±10.1 years (Fig. 1). Urine culture revealed no growth in 32 (64.0%) patients, while 18 (36%) showed variety of organisms on culture. Distribution of patient according to culture and sensitivity is shown in Table 1. The PSA level in 26 (52.0%) patients was normal again, of which 50 patients, while in 24 (48.0%) patients no major changes were found in serum PSA level. Before serum PSA treatment level decreased to 5.47±4.49ng / ml at 10.45±5.38 ng / ml after therapy PSA. TRUS-led prostatic biopsy (Tables 2-3) was performed in non-responding patients. Histopathology has shown that 5 (10 percent) patients had a highly differentiated prostate adenocarcinoma. Detailed biopsy findings are shown in the figure in 24 patients (non-responders). 2. Changes to PSA level were defined by the percentage and percentage of patients who achieved normal PSA level after treatment. < 0.05 was deemed relevant P-value (Table 4).

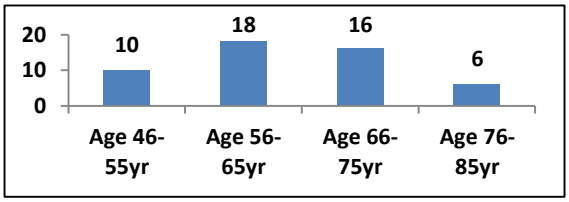

Fig. 1: Distribution of patients by age

Table 1: Distribution of patients by urine C/S (n=50)

Urine C/S	No.	%
No growth	32	64.0
Augmentin	06	12.0
Ciprofloxacin	03	06.0
Levofloxacin	03	06.0
Mixed Growth	04	8.0
Enoxabid	01	2.0
Nitrofurantoin	01	2.0

Table 2: Types of antibiotic given (n=50)

Type of antibiotic	No.	%
Cirofloxacin	40	80.0
Levofloxacin	3	6.0
Augmentin	6	12.0
Nitrofurantoin	1	2.5

Table 3: Change in PSA level (n=50)

Change in PSA	No.	%
Abnormal(>4ng/dl)	26	52.0
Normal(<4ng/dl)	24	48.0

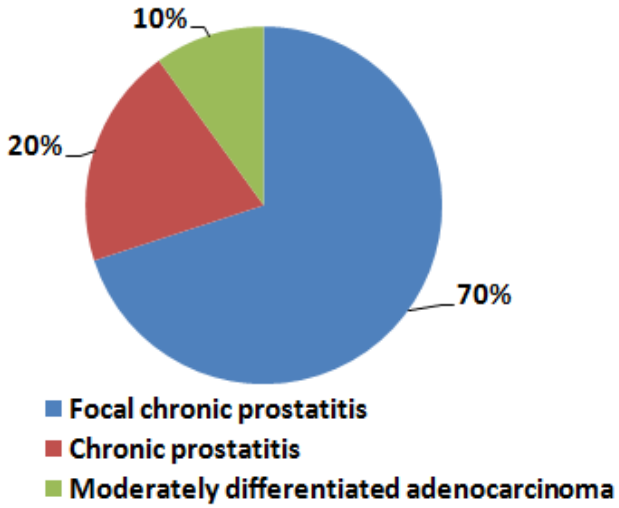

Fig. 2: Outcome of biopsy

Table 4: Comparison of serum PSA (before and after treatment)

Serum PSA	Mean±SD	P value
Before treatment	10.45±5.38	<0.001
After treatment	5.47±4.49	

DISCUSSION

The definition of prostatitis is prostatic inflammation. Prostatitis in clinical practise is a mixture of various conditions that cause prostate symptoms. Bozeman et al[13] pointed that 46% cases have normal values in patients with pathologically proven chronic prostatitis after a trial of non-steroidal anti-inflammatory drugs and antibiotics. Schaeffer et al[14] reported that patients with chronic bacterial infection of prostate after the treatment of antibiotics, 42% of patients have their PSA normalized (<4 ng/mL). Stamely[15] defines the prostate as a debris basket of clinical ignorance since many ill-characterized symptoms are known as prostatitis. The spectrum of prostatitis is so plain, violent bacterial prostatitis that it is not subject to prostate inflammation.[16] Such conditions may include both patients and clinicians.

Hara et al[17] have identified the serum PSA as gamma-immino protein in seminal plasma. Wang et al[18] to be a tumour marker for prostate cancer, and Rao et al[16] have been recorded as the prostate-specific antigen for the early detection and follow-up of prostate cancer patients.

There were very few reports which showed any relation between serum prostate-specific antigen level and inflammatory condition in benign prostatic hyperplasia. According to a Korean study of 39, the return to normal or almost normal after antibiotic therapy is 22 (56.4 %) with bacterial prostatitis serum (PSA and PSA) density. Acute prostate infections are suspected to be one of the key factors in rising serum PSA and PSA density levels in men without clinical evidence of prostate cancer. Thus, in patients with chronic prostatite without any clinical proof of prostate cancer, unnecessary prostate biopsies can be prevented when density in PSA and PSA is reduced following antibiotic therapy.

We treated antibiotic patients for four weeks in his trial, since care can take 4 to 6 weeks during chronic

bacterial prostatitis. In the current research, 64.0±10.0 years of mean age of patients is observed. The mean patient mean of 63.0±10.2 years was seen in a study carried out by Schaeffer et al[14] near the mean age of our sample.

The mean serum PSA levels were 10.45±5.38 ng/dl prior to treatment and reduced to 5.47±4.49 ng/dl following treatment. PSA was down to 47.6% of patients. In its research, Cho et al[19] recorded that PSA levels decreased to normal in 56.4 percent of patients after treatment with antibiotics.

All 48 patients got antibiotics and then biopsies in another Toktas et al[20] report. The anigenic levels of the prostate specific were decreased by 37 percent to below 4 ng/ml and malignancy negative for their biopsies. These results are similar to our analysis.

The clinical use of antibiotics in patients with high serum levels of PSA has not been successful in a study by Scott et al. Likewise, in a study conducted by Kyung et al.[21] Antibiotic in elevated serum PSA patients, the goal does not appear to be achieved.[22]

CONCLUSION

Antibiotics treatment for a period of minimum four weeks in patients with raised serum PSA >4ng/ml especially in patients with acute and chronic bacterial prostatitis, may decrease serum PSA significantly. This may help us in avoiding un-necessary prostatic biopsies and its complications.

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