

## ASSOCIATION OF URINE CULTURE AND BLOOD CULTURE RESULTS WITH RECTAL SWAP CULTURE RESULTS IN FEBRILE CASES WITH FLUOROCINOLONE-RESISTANT BACTERIA AFTER PROSTATE BIOPSY

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### ABSTRACT

**Background:** Prostate biopsy is an invasive method for diagnosis of prostate diseases requiring antibiotic use. This study was performed to determine the association of urine culture and blood culture results with rectal swap culture results in febrile cases with fluorocinolone-resistant bacteria after prostate biopsy.

**Methods and materials:** In this observational study that was performed as a cross-sectional analytical survey, 316 febrile among 620 cases with fluorocinolone-resistant bacteria (50.1%) after prostate biopsy were enrolled and the associations of urine culture and blood culture results with rectal swap culture results were determined.

**Results:** In this study, according to swap results, 25.9% had coinfection of staphylococcus and streptococcus, 65.2% had *E. Coli*, 2.5% had pseudomonas, and 6.3% had staphylococcus Aureus alone infection. Among them according to urine culture, eight subjects had pseudomonas and 9 patients had *E. Coli* infection in urine culture and 8 patients had pseudomonas and 10 subjects had *E. Coli* infection in blood culture. Both urine and blood cultures were related to rectal swap culture results ( $P=0.0001$ ). The sensitivity, specificity, PPV, and NPV were 95%, 83%, 98%, and 92%, respectively for urine culture. The sensitivity, specificity, PPV, and NPV were 90%, 82%, 91%, and 84%, respectively for blood culture.

**Conclusions:** Finally, according to our findings, it may be concluded that there is significant association between urine culture and blood culture results with rectal swap culture results in febrile cases with fluorocinolone-resistant bacteria after prostate biopsy and each one may be predictive.

**Keywords:** Urine culture, Blood culture, Rectal swap culture, Fluorocinolone-resistant bacteria

### INTRODUCTION

Transrectal ultrasound guided prostate needle biopsy (TRUSBP) is a novel screening method to assess the men suspected to have prostate cancer with high serum prostate-specific antigen (PSA). Hematuria and hematospermia are two important adverse effects and also blood and urinary infections may be seen [(Rodriguez, Terris, 2008); (Djavan, Waldert, Zlotta, 2011); (Raajmakers, Kirkels, Roobol, Wildhagen, and Schroder, 2002)]. Some studies have shown that fluorocinolone may result in decrease in infectious complications [(Aron, Rajeev, and Gupta 2000), (Sieber, Rommel, Augusta, Breslin, Huffnagle, Harpster, 1997), (Kapoor, Klimberg, Malek, 1998)]. Aron (2000) reported that fluorocinolone would result in decreased rate of infection after TRUSBP (Rodriguez, Terris, 2008). Other studies had also same results

with lower rate of infection up to four times [(Raajimakers, Kirkels, Roobol, Wildhagen, and Schroder, 2002)]. Extensive use of fluorocinolone has led to increased antibiotic resistance [(Tal, Livne, Lask, and Baniel 2003); (Otrock, Oghlakian, Salamoun, Haddad, and Bizri 2004); (Binsaleh, Al-Assiri, Aronson, and Steinber, 2004); (Hoshi, Nitta, Hongoh, 2006)]. Previous history TRUSBP and immunosuppressive agent use are some risk factors in this era [(Liss, Chang, 2011), (Feliciano J, Teper E, Ferrandino 2008 )].

Hence determination of contributing factors would result in better programming to reduce the burden of problem. Hence this study was performed to determine the association of urine culture and blood culture results with rectal swap culture results in febrile cases with fluorocinolone-resistant bacteria after prostate biopsy.

## **METHODS AND MATERIALS**

In this observational study that was performed as a cross-sectional analytical survey, 316 febrile among 620 consecutive cases with fluorocinolone-resistant bacteria (50.1%) after prostate biopsy were enrolled and the associations of urine culture and blood culture results with rectal swap culture results were determined in resistant cases with fever who were eighteen patients.

The patients were those with high PSA level who had abnormal findings in physical examination underwent prostate biopsy. Those who had fever after biopsy were enrolled. Also the association with other factors such as smoking and immunodeficiency with resistance to fluorocinolone was determined.

Data analysis was performed among all cases by SPSS (version 13.0) software [Statistical Procedures for Social Sciences; Chicago, Illinois, USA]. Chi-Square, Fisher, and ANOVA tests were used for analysis and were considered statistically significant at P values less than 0.05.

## **RESULTS**

The mean age was  $64.22 \pm 7.6$  years. Smoking, immunodeficiency, and positive family history were seen in 14.2%, 0.9%, and 2.8%, respectively. Obesity and overweight were seen in 44.7%. In this study, according to swap results, 25.9% had coinfection of staphylococcus and streptococcus, 65.2% had E. Coli, 2.5% had pseudomonas, and 6.3% had staphylococcus Aureus alone infection.

Among them according to urine culture, eight subjects had pseudomonas and 9 patients had E. Coli infection in urine culture and 8 patients had pseudomonas and 10 subjects had E. Coli infection in blood culture. The smokers had significantly higher rate of coinfection ( $P=0.002$ ). The immunodeficiency, BMI, and family history were not related to rectal culture ( $P > 0.05$ ). Also higher age was related to rectal culture with pseudomonas results ( $P=0.0001$ ).

Both urine and blood cultures were related to rectal swap culture results ( $P=0.0001$ ). The sensitivity, specificity, PPV, and NPV were 95%, 83%, 98%, and 92%, respectively for urine culture. The sensitivity, specificity, PPV, and NPV were 90%, 82%, 91%, and 84%, respectively for blood culture.

## **DISCUSSION**

Since definite diagnosis of cancer is with biopsy, development of some strategies for better results and less adverse effects would be promising. Urinary and prostate infections are common side effects in cases under transrectal prostate biopsy leading to long-term use of

antibiotics. Antibiotic prophylaxis would help to reduce the infection rate . Antibiotic is usually used systematically via oral route . In this study all cases were febrile resistant patients with 26 percent rate of coinfection with staphylococcus and streptococcus. In our study the blood and urine culture results were related to rectal results with a sensitivity rate of 90 and 95 percent respectively.

Feliciano et al (2008) reported fluorocinolone-resistance rate of 1.8 percent who had also resistance to other antibiotics. But they reported that simultaneous use of other antibiotics would help to decrease the infection rate. However it resulted in increased resistance rate to fluorocinolone. Liss et al (2011) reported that 22 percent of patients under prostate biopsy had infection after biopsy. They found that Asian ethnicity, diabetes history, previous biopsy in same regions were risk factors for infection. They reported that only five patients had new fever after biopsy that one was resistant to fluorocinolone. It is lower than our study. This matter demonstrates the necessity for assessment in different setting for better programming goals.

Presti et al (2000) reported 2.1 percent rate for febrile infections among them twenty patients were positive for E. Coli that 11 were fluorocinolone-resistant. They reported that fluorocinolone is best therapeutic choice. Also the prophylaxis would result in reduced infection rate after biopsy but also would result in higher rate antibiotic resistance as well as our study. Lindstedt et al (2006) reported that single antibiotic dose would result in reduced infection rate to 0.9 percent. But this rate would be lower in our study regarding the resistance rate.

Sieber et al (1997) reported that eight 500 mg doses of ciprofloxacin would result in significant decrease of infection after prostate biopsy. But with consideration of high rate of resistance in our study it is not possible in our setting. Kapoor et al (21) reported that ciprofloxacin has higher prophylactic effect to reduce the infection rate after trans-rectal prostate biopsy. It is not in congruence with our study. Aron et al reported that tinidazole ciprofloxacin combination would result in reduced infection rate after transrectal prostate biopsy and regarding our results suggestion of combined antibiotic therapy is rational.

Finally, according to our findings, it may be concluded that there is significant association between urine culture and blood culture results with rectal swap culture results in febrile cases with fluorocinolone-resistant bacteria after prostate biopsy and each one may be predictive.

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