



Septic Shock Following Transrectal Needle Biopsy of the Prostate

Yi-Cheng Huang, Shou-Hung Tang, Tai-Lung Cha, Guang-Huan Sun,
Shang-Sen Lee, and Sheng-Tang Wu*

*Division of Urology, Department of Surgery, Tri-Service General Hospital, National Defense Medical Center,
Taipei, Taiwan, Republic of China*

Transrectal ultrasound (TRUS)-guided needle biopsy of the prostate is a standard procedure to establish diagnosis in patients who present with suspicion of cancer of the prostate. Minor complications such as hematospermia, urinary tract infection and urinary retention may be observed after the procedure. Major complications are rare. Here, we report a middle-aged man who experienced septic shock and acute respiratory failure within 24 hours of TRUS-guided prostate biopsy.

Key words: transrectal, ultrasound, biopsy, PSA, sepsis

INTRODUCTION

Prostate cancers are diagnosed with either a prostate biopsy procedure or a transurethral resection of the prostate. In the modern, prostate specific antigen (PSA) era, many patients receive prostate biopsy due to an elevated serum PSA value or abnormal digital rectal examination findings. It is the worldwide standard that the biopsy procedures are performed under ultrasound guidance. In most institutes, biopsies are done at an outpatient setting and the incidence of complications following the procedure is low. Minor complications such as hematospermia, fever, urinary tract infection and urinary retention have been observed after the procedure, but major complications are rare. Herein, we report an unusual and serious complication of prostate biopsy.

CASE REPORT

A 50-year-old man received a second TRUS-guided prostate needle biopsy for a persisted elevation of serum PSA level (6.7 ng/mL). The first biopsy procedure was done three months before. After the first biopsy, he was medicated with tamsulosin, 0.2 mg daily. Urine analysis regularly showed no pyuria.

On the night before the second transrectal biopsy, he received bowel preparation and oral 500 mg levofloxacin, as is standard care in our institute. The procedure included a routine cystoscopy and a 10-core needle biopsy. The rectum was sterilized with a betadiene-iodine sponge immediately before the needle puncture. The procedure was smoothly performed in this patient. No immediate excessive bleeding or hematoma were observed.

Eight hours after the biopsy, he began suffering from chilliness and fever of up to 38.9 °C. The laboratory tests showed leukopenia (white blood count 1800/ μ l) with neutrophils predominant (80.2%). No clinical clues of virus infection, such as acute upper respiratory tract infection or acute gastroenteritis could be found. Pyuria was also observed. He was treated with a first-generation cephalosporin plus gentamicin. However, his clinical condition was overwhelming. Thirteen hours later, he was intubated for acute respiratory failure and was then transferred to the intensive care unit. Disseminated intravascular coagulation (DIC) then developed and septic shock was obvious. Blood pressure could only be maintained with inotropic agents. Blood cultures were positive for *Klebsiella pneumoniae*, which was sensitive to cephalothin and gentamicin. Five days later, he was extubated and transferred out of the intensive care unit. The biopsy showed benign prostate tissue.

DISCUSSION

TRUS-guided needle biopsy of the prostate is considered safe and is commonly performed in the examination room for the diagnosis of prostate cancer. In recent years, screening for prostate cancer has become more important because early diagnosis has been greatly improved by

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*Corresponding author: Sheng-Tang Wu, Division of Urology, Department of Surgery, Tri-Service General Hospital, No. 325, Sec. 2, Cheng-Gong Road, Taipei 114, Taiwan, Republic of China. Tel: +886-2-8792-7169; Fax: +886-2-8792-7172; E-mail: thomsonw@ndmctsggh.edu.tw; fshyc@yahoo.com.tw

prostate specific antigen (PSA) testing. Morbidity with this procedure is believed to be low. Prophylactic antibiotics-most use fluoroquinolone, active against both urinary and colorectal flora-are routinely given as a single dose before TRUS-guided prostate biopsy¹. A second dose of fluoroquinolone given after the biopsy procedure for prophylactic purposes is considered standard protocol at the Tri-Service General Hospital. The post-biopsy dose of fluoroquinolone is extended to three to five doses for patients with a high risk of contamination and in immunosuppressed patients. We use first-generation cephalosporin plus gentamicin as an alternative for those with a history of allergy to fluoroquinolone.

Complications of this procedure do occur and biopsy-related mortality has been described in the literature. However, the overall complication rate is generally low. Rietbergen published the results of 1687 biopsies, and the rates of minor complications such as hematospermia, hematuria and rectal bleeding were 45.3%, 23.6% and 1.7% respectively. Major complications are rare; most common were pain (7.5%) and fever (4.2%), and only 52 cases (3.1%) needed treatment with antibiotics and in three cases (0.2%) sepsis was suspected². The positive culture from these three patients showed *Escherichia coli* infection and they recovered within one week. Another study by Rodriguez showed a similar low infection rate (2.5%) after biopsy³.

The possible risk factors identified in the study of Rietbergen included prostatitis, diabetes and prostate cancer, with the associated complication rate of each being greater than 60%². In our case, this middle-aged Chinese man denied any prior systemic disease. A previous prostate biopsy revealed benign prostatic hypertrophy. Prophylactic antibiotic cover with fluoroquinolone was used before this TRUS-guided prostate biopsy. The serum total PSA level before the biopsy was 6.7 ng/mL and his benign prostatic hypertrophy had been routinely treated with the α -1 blocker tamsulosin. Because the abnormal serum total PSA level persisted, a second time TRUS-guided prostate biopsy was suggested. Unfortunately, fulminant septic shock with DIC and acute respiratory failure developed within 24 hours after this second prostatic biopsy.

Reviewing the literature, Hasegawa⁴ and Kato⁵ reported similar complications in Asian populations. The common pathogen was *Escherichia coli* and the complications usually developed more than 48 hours postoperatively. Immediately fatal complications within 24 hours and induced by *Klebsiella pneumoniae* infection following prostatic biopsy are rare. All urologists should be alert to the fact that immediate septic shock and DIC can occur after this minor procedure.

A prolonged course of antibiotic prophylaxis should be considered in high-risk patients who will undergo TRUS-guided prostate biopsy³. Major complications can occur without preexisting urinary tract infection. Therefore, informed consent following detailed explanation of the entire procedure is mandatory in this setting.

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