PROSTATE CANCER

The future of TRUS-guided biopsy antibiotic prophylaxis?

Transrectal ultrasonography (TRUS)-guided biopsy is the recommended tool for the diagnosis of prostate cancer. However, it is associated with a risk of sepsis caused by the transfer of bowel flora into the bloodstream during the biopsy procedure, as well as other complications including hematuria, hematospermia, UTI and prostatitis.

With around 800,000 TRUS-guided biopsies carried out in the USA every year, this complication rate represents a serious source of morbidity in men who are being investigated for prostate cancer. Studies suggest that without antibiotic prophylaxis, 75% of men undergoing TRUS-guided biopsy will have positive blood cultures only 5 min after their procedure. The most commonly used prophylactic antibiotic is currently fluoroquinolone, owing to its broad-spectrum activity. However, this same characteristic can increase the emergence of multidrug-resistant strains and fluoroquinolone resistance in men with postbiopsy infection is a growing public health problem. In addition to the infection risks associated with TRUS-guided biopsy, many men find the procedure and postbiopsy period painful. Thus, periprostatic injection of a local anesthetic, such as lidocaine, is often also administered before the biopsy takes place.

Two recent studies have attempted to address the problem of infection, investigating novel concepts that could be used for prebiopsy antibiotic prophylaxis.

In their study in *International Urology and Nephrology*, Pace *et al.* investigated the effect of periprostatic injection of prophylactic cephalosporins, administered at the same time as a preoperative anesthesia, on postbiopsy infection rates and pain. 150 men were enrolled in the prospective, double-blind study, and received a prebiopsy periprostatic injection of either 1% lidocaine or 1 g ceftriaxone dissolved in 1% lidocaine. Both groups also received oral antibiotic prophylaxis using 1 g ciprofloxacin. At the end of the biopsy procedure, patients

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completed a visual analogue scale to assess their pain level, and late complications were determined via telephone interview at 3 and 6 days after the biopsy. Four men in the lidocaine-only group experienced septic complications that required subsequent hospitalization, but no cases of sepsis were recorded amongst the men who received periprostatic ceftriaxone. Pain scores were not statistically different between those receiving ceftriaxone and those on lidocaine alone (1.73 ± 1.26 versus 2.76 ± 1.69 , respectively; $P = 0.08$), suggesting that the addition of ceftriaxone to the anesthetic injection did not affect its efficacy.

The authors assert that this is the first study to investigate the effect of periprostatic anesthesia combined with cephalosporin prophylaxis; their results suggest that this method could be used effectively in patients to prevent urosepsis. In this cohort, rectal swabs collected before biopsy suggested that almost all infections were caused by coliforms and a strong correlation was seen between prebiopsy rectal swab isolates and the infection-causing bacteria, supporting previous data that suggest prebiopsy rectal swab culture should be carried out in all men in order to tailor the choice of antimicrobial used for prophylaxis.

This concept was the thrust of an article published in the March issue of *Urology*. A team led by Chris Duplessis at the Naval Hospital, San Diego, investigated whether a targeted rectal screening program could be used to personalize the choice of antibiotic prophylaxis and reduce postbiopsy infection rates without the need for broad-spectrum antibiotics.

“Acknowledging that most of the infections were fluoroquinolone-resistant enteric *E. coli*, it made sense to screen for this with a rectal culture, in order to better shepherd antimicrobial prescribing in prophylaxis prior to the procedure,” explains Duplessis.

235 rectal swabs were collected and cultured on plates containing $10 \mu\text{g/ml}$ ciprofloxacin and patients were offered a personalized prophylactic regimen based on the microbe isolated. Infection rates during the screening period were historically compared to the rates during the previous 4 months.

32 patient samples (14%) grew fluoroquinolone-resistant isolates, and these patients were offered alternative prophylactic treatments. No postbiopsy infections were diagnosed in men who underwent the prebiopsy screening swab, compared with three cases of infectious complications out of 103 biopsies in the previous 4 months.

This method appears, therefore, to be an effective way of preventing postbiopsy complications. Duplessis and his team are now investigating whether complications could be further reduced by using prebiopsy enemas and povidone iodine disinfectant on the rectal mucosa prior to the biopsy procedure.

“I believe strongly that there will be an institutional change in practice with implementation of this protocol prior to prostatic biopsies”, comments Duplessis.

These concepts certainly have the potential to be used in clinical practice, together or in combination, and could slow the rise of fluoroquinolone resistance and reduce distress caused by postbiopsy pain and infection.

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Original articles Pace, G. *et al.* Cephalosporins periprostatic injection: are really effective on infections following prostate biopsy? *Int. Urol. Nephrol.* doi:10.1007/s11255-012-0160-x | Duplessis, C. A. *et al.* Rectal cultures before transrectal ultrasound-guided prostate biopsy reduce post-prostatic biopsy infection rates. *Urology* 79, 556–563 (2012)