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CASE REPORT

Prolonged antibiotic therapy increases risk of infection after transrectal prostate biopsy: A case report after pancreasectomy and review of the literature

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Summary *Infection due to prostate biopsy afflicted more than 5% of patients and is the most common reason for hospitalization. A large series from US SEER-Medicare reported that men undergoing biopsy were 2.26 times more likely to be hospitalized for infectious complications within 30 days compared with randomly selected controls. The factors predicting a higher susceptibility to infection remain largely unknown but some authors have higlighted in the etiopathogenesis the importance of the augmented prevalence of ciprofloxacin resistant variant of bacteria in the rectum flora. We present one case of sepsis after transrectal prostate biopsy in a patient with history of pancreatic surgery. Based on our experience patients candidated to prostate biopsy with transrectal technique with history of recent major surgery represent an high risk category for infective complication. Also major pancreatic surgery should be consider an high risk category for infection. A transperineal approach and preventive measures (such as rectal swab) should be adopted to reduce biopsy driven infection.*

KEY WORDS: *Prostate; Biopsy; Infection; Sepsis; Abdominal surgery.*

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INTRODUCTION

Prostate biopsy presents a significant percentage of complication. The infection afflicted more than 5% of patients submitted to prostate biopsy (1) and is the most common reason for hospitalization for prostate biopsy (2, 3). The factors predicting a higher susceptibility to infection remain largely unknown but some Authors have highlighted in the etiopathogenesis the importance of augmented prevalence of ciprofloxacin resistant bacterial strains (*E. coli*) in the rectum flora. We present one case of sepsis after transrectal prostate biopsy in patient with history of pancreatic surgery due to a carcinoma of *Vater* papilla.

MATERIAL AND METHODS

A 53 years-old men was admitted in January 2014 by access in emergency ward with fever not responsive to antibiotics presented 9 days after 12 core transrectal prostate biopsy. Ciprofloxacin 1000 mg extended release was given before biopsy according local guidelines (4), preoperative urine culture was negative. The patient was submitted in the June 2013 to cephalo-pancreatic-duodenectomy and reconstructive surgery due to a carcinoma of *Vater* papilla; surgical recovery was complicated by infection and treated with attention. During hospitalization he was treated with prolonged antibiotics (imipenem-cilastatin). We consider a review of the literature to establish factors associated with higher susceptibility to infection and to highlight possible relationship between pancreatic surgery and risk of infective complications during prostate biopsy. *Pubmed* search was performed using key words: prostate biopsy; urosepsis; pancreatitis and pancreatic surgery, 76 papers were retrieved and 25 were considered as pertinent to our aim.

RESULT

The infective course showed 2 episodes of recurrence with fever and urine culture positive for *E. coli* with multidrug resistant. The first hospital admission: after an empiric therapy with ciprofloxacin the patient was treated with i.v. association (ceftriaxone and piperacillin-tazobactam) for 10 days, then discharged with oral antibiotics. After 15 days, the second hospital admission was due to fever (39°C) and urinary symptoms and the hospital stay was 5 days. Transrectal ultrasound was negative for abscess or significant post-void urinary residue. A second cycle of i.v. antibiotic association (ceftriaxone and piperacillin-tazobactam) resolved the fever. Further follow-up was uneventful.

DISCUSSION

Several reports have recently suggested an increased rate of infective complications following transrectal prostate biopsy in both North America (5) and Europe (6).

The reasons for this increase and the factors associated with a higher susceptibility to infection remain largely unknown. Based on our experience, candidates to transrectal prostate biopsy with anamnesis of recent major

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surgery represent an high risk category for infective complication. So this category should be consider to reducing risk of sepsis by bacteria resistant to the common antibiotics adopted in prophylaxis. A transperineal approach should be chosen for this reason in such cases. In prospective multinational study on infective complications after prostate biopsy *Florian et al.* (7) supports the findings that the presence of fecal fluoroquinolone-resistant bacteria is the most important risk factor. Strategies to identify fluoroquinolone-resistant bacteria should be sought so as to decrease infective complications. Multivariate analysis did not identify any patient subgroups with a significantly higher risk of infection after prostate biopsy. Causative organisms were isolated in 10 cases (37%) with 6 resistant to fluoroquinolones. Fluoroquinolone resistance has increased globally, and the presence of fluoroquinolone-resistant organisms on rectal swab culture is a significant predictor of infection after prostate biopsy (8).

A rectal swab has been proposed at the visit preceding prostate biopsy and is plated on *MacConkey agar* containing ciprofloxacin (9). Patients with ciprofloxacin sensitive bacteria can then receive ciprofloxacin prophylaxis, while culture results can guide an alternative selection for those with resistance. A few non-randomized studies have examined the results of targeted prophylaxis with results in accordance. To date, there are no randomized studies showing that targeted prophylaxis using rectal swabs results reduces infection and cost compared with standard or expanded prophylaxis.

In the specific population represented by patient afflicted with acute necrotic pancreatitis result changing the bowel, like alteration of pH, that conduce to a selection in some germs (e.g.: *E. coli*) to the disadvantage of the usual dominant microorganism (*bifidus*). This may represent the cause of an increased growth of opportunist pathogenous (10). Besides the exposition to prolonged antibiotic prophylaxis or prolonged antibiotic therapy (like is usual in patient submitted to major surgery) is the cause of the selection of species drug resistant (11). It not well understood if the change in enteric-biliar circule resulting by pancreatic surgery could be also a cause of the develop of drug resistence of the enteric flora. Therefore in this patient group it may be useful to perform a fecal swab before transrectal prostate biopsy to verify bacterial resistence and consider an adequate antibiotic prophylaxis alternative to fluoroquinolones. History of a previous surgery of the pancreas with consequent exposure to prolonged antibiotic therapy might suggest to use transperineal approach to perform prostate biopsy for reduce dissemination of bacteria present in the rectum.

The prolonged antibiotic therapy performed after prosthetic or major surgery changes the enteric flora and select multi-resistant strains (12). Literature does not investigate if the enterohepatic bile alteration secondary to pancreatic surgery could further contribute to antibiotic resistance of the bacteria flora.

Conclusion

Prolonged antibiotic therapy associate with major pancreatic surgery may increase the risk of infective complications after prostate biopsy. This result is linked to fecal fluoroquinolone-resistant bacteria that increase after prolonged antibiotic therapy. The transperineal approach should be considered in this category of patients. In addition preoperative rectal swab are suggested to identify antibiotic resistance in bacterial strains.

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