



ORIGINAL ARTICLE

Rectal culture-directed antibiotic prophylaxis before transrectal prostate biopsy: Reduced infectious complications and healthcare costs[☆]



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KEYWORDS

Transrectal ultrasound-guided prostate biopsy;
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Empiric prophylaxis;
Rectal cultures;
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Abstract

Background: Transrectal ultrasound-guided prostate biopsy (TUPB) is associated with infectious complications (ICs), which are related to a greater prevalence of ciprofloxacin-resistant bacteria (CRB) in rectal flora. We examined the ICs that occurred in 2 groups: A guided antibiotic prophylaxis (GP) group and an empiric prophylaxis (EP) group. We assessed the financial impact of GP.

Material and methods: The GP group was studied prospectively (June 2013 to July 2014). We collected rectal cultures (RCs) before the TUPB, which were seeded on selective media with ciprofloxacin to determine the presence of CRB. The patients with sensitive bacteria were administered ciprofloxacin. Patients with resistant bacteria were administered GP according to the RC antibiogram.

The EP group was studied retrospectively (January 2011 to June 2009). RCs were not performed, and all patients were treated with ciprofloxacin as prophylaxis.

The ICs in both groups were recorded during a period no longer than 30 days following TUPB (electronic medical history).

Results: Three hundred patients underwent TUPB, 145 underwent GP, and 155 underwent EP. In the GP group, 23 patients (15.86%) presented CRB in the RCs. Only one patient (0.7%) experienced a UTI. In the EP group, 26 patients (16.8%) experienced multiple ICs (including 2 cases of sepsis) ($p < .005$). The estimated total cost, including the management of the ICs, was €57,076 with EP versus €4802.33 with GP.

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PALABRAS CLAVE

Biopsia prostática transrectal ecográficamente dirigida;
Complicaciones infecciosas;
Profilaxis dirigida;
Profilaxis empírica;
Cultivos rectales;
Bacterias ciprofloxacino-resistentes

The average cost per patient with EP was €368.23 versus €33.11 with GP. GP achieved an estimated total savings of €52,273.67. Six patients had to undergo GP to prevent an IC.

Conclusions: GP is associated with a marked decrease in the incidence of ICs caused by CRB and reduced healthcare costs.

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Profilaxis antibiótica «dirigida» por cultivos rectales antes de la biopsia prostática transrectal: reducción de complicaciones infecciosas y costes de atención sanitaria

Resumen

Introducción: La biopsia prostática transrectal ecográficamente dirigida (BPTe) se asocia a complicaciones infecciosas (CI). Las CI están relacionadas con un incremento de la prevalencia de bacterias ciprofloxacino-resistentes (BCR) en la flora rectal. Estudiamos las CI ocurridas en 2 grupos. Grupo de profilaxis antibiótica «dirigida» (GPD) vs. grupo de profilaxis empírica (GPE). Evaluamos el impacto económico que supone la profilaxis antibiótica «dirigida» (PD).

Material y métodos: El GPD se estudió prospectivamente (junio 2013-julio 2014). Se recogieron cultivos rectales (CR) antes de BPTe y se sembraron en medios selectivos con ciprofloxacino para determinar la presencia de BCR. Los pacientes con bacterias sensibles recibieron ciprofloxacino. Pacientes con bacterias resistentes recibieron PD según antibiograma del CR.

El GPE se estudió retrospectivamente (enero 2011-junio 2009). El CR no se realizó y todos los pacientes recibieron ciprofloxacino como profilaxis.

Las CI ocurridas en ambos grupos se registraron en un periodo no superior a 30 días después de BPTe (historia clínica electrónica).

Resultados: Trescientos pacientes fueron sometidos a BPTe, 145 recibieron PD y 155 PE. En el GPD, 23 pacientes (15,86%) presentaron BCR en CR. Solo un paciente (0,7%) experimentó ITU. En el GPE, 26 pacientes (16,8%) experimentaron múltiples CI (incluidas 2 sepsis) ($p < 0,005$). El coste total estimado, incluido el manejo de las CI, fue de 57.076€ con PE vs. 4.802,33€ con PD. El coste promedio/paciente con PE fue de 368,23€ vs. 33,11€ con PD. La PD logró un ahorro total estimado de 52.273,67€. Es necesario que 6 pacientes se sometieran a PD para prevenir una CI.

Conclusiones: La PD se asoció a un notable descenso de la incidencia de CI causadas por BCR y redujo los costos de atención sanitaria.

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Introduction

Transrectal ultrasound-guided prostate biopsy (TUPB) is considered a safe diagnostic procedure for prostate cancer. However, there are studies that warn about the increase in the incidence of infectious complications (IC) after TUPB¹⁻³ and the costs of health care.^{4,5}

Fluoroquinolones are the antibiotics most commonly used as prophylaxis. The European Association of Urology (EAU) recommends them in their clinical guidelines, but warns about the increase in the prevalence of IC in recent years.⁶

ICs have been associated with bacteria resistant to fluoroquinolones present in the rectal flora of patients undergoing TUPB.^{7,8}

Liss et al. demonstrated that rectal colonization by ciprofloxacin-resistant bacteria (CRB) correlates with a high risk of suffering from IC that require hospitalization, especially in those patients who only receive prophylaxis with fluoroquinolones.⁹

Understanding the pathophysiological mechanisms of post-TUPB IC can help optimize their prevention.¹⁰

Objective: To evaluate ICs after TUPB in 2 study groups: “directed” antibiotic prophylaxis group (DPG) and empirical prophylaxis group (EPG) and estimate the economic impact of “directed” antibiotic prophylaxis.

Material and methods

The DPG was studied prospectively from June 2013 to July 2014; no exclusion criteria were used.

The patients were cited in a period between 15 and 28 days before the TUPB. The risks and benefits of directed prophylaxis (DP) were explained. All the patients included signed informed consents. A urinary culture and another one of the rectal mucosa (sterile-swab) were collected both before the TUPB and a referral note was given for urine culture, which would be carried out on the 4th post-TUPB day in the health center, allowing to evaluate the post-TUPB urinary colonization.

Two days before the TUPB, pre-TUPB cultures (urinary and rectal) were reviewed. Patients with positive urine cultures were questioned by telephone about lower urinary

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