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ORIGINAL ARTICLE

Clinical performance of transperineal template guided mapping biopsy for therapeutic decision making in low risk prostate cancer☆

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KEYWORDS
Active surveillance;
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Abstract

Objectives: To evaluate the role of transperineal template guided mapping biopsy (TTMB) in determining the management strategy in patients with low risk prostate cancer (PCa).

Methods: We retrospectively evaluated 169 patients who underwent TTMB at our institution from February 2008 to June 2011. Ninety eight of them harbored indolent PCa defined as: Prostate Specific Antigen < 10 ng/ml, Gleason score 6 or less, clinical stage T2a or less, unilateral disease and a maximum of one-third positive cores at first biopsy and <50% of the core involved. TTMB results were analyzed for Gleason score upgrading and upstaging as compared to initial transrectal ultrasound (TRUS) biopsies and its influence on the change in the treatment decisions.

Results: TTMB detected cancer in 64 (65%) patients. The upgrade, upstage and both were noted in 33% ($n = 21$), 12% ($n = 8$) and 7% ($n = 5$) respectively of the detected cancers. The disease characteristics were similar to initial TRUS in 30 (48%) patients and TTMB was negative in 34 (35%) patients. Prostate volume was significantly smaller in patients with upgrade and/or upstage noted at TTMB (45.4 vs 37.9; $p = 0.03$). TTMB results influenced 73.5% of upgraded and/or upstaged patients to receive radical treatment while 81% of the patients with unmodified stage and/or grade continued active surveillance or focal therapy.

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Conclusions: In patients with low risk PCa diagnosed by TRUS, subsequent TTMB demonstrated cancer upgrade and/or upstage in about one-third of the patients and resulted in eventual change in treatment decision.

PALABRAS CLAVE
Vigilancia activa;
Cáncer de próstata;
Biopsia prostática;
Biopsia transperineal;
Biopsia guiada por plantilla

Rendimiento clínico de biopsia de mapeo guiada por plantilla transperineal para la toma de decisiones terapéuticas en el cáncer de próstata de bajo riesgo

Resumen

Objetivos: Evaluar el papel de la biopsia de mapeo guiada por plantilla transperineal (TTMB) en la determinación de la estrategia de manejo en pacientes con cáncer de próstata (CaP) de bajo riesgo.

Métodos: Evaluamos retrospectivamente 169 pacientes que se sometieron a TTMB en nuestra institución entre febrero de 2008 y junio de 2011. Noventa y ocho de ellos albergaban CaP indolente definido como: antígeno prostático específico < 10 ng/ml, puntuación de Gleason 6 o menos, estadio clínico T2a o menos, enfermedad unilateral y un máximo de un tercio de núcleos positivos en la primera biopsia y < 50% del núcleo en cuestión. Se analizaron los resultados TTMB para clasificación al alza y estadificación al alza de puntuación de Gleason en comparación con las biopsias iniciales de ecografía transrectal (ETR) y su influencia en el cambio en las decisiones de tratamiento.

Resultados: TTMB detectó el cáncer en 64 (65%) pacientes. La clasificación al alza y estadidificación al alza se observaron en el 33% (n = 21), 12% (n = 8) y 7% (n = 5), respectivamente, de los cánceres detectados. Las características de la enfermedad fueron similares a la ETR inicial en 30 (48%) pacientes y TTMB fue negativa en 34 (35%) pacientes. El volumen de la próstata fue significativamente menor en los pacientes con clasificación al alza y/o estadificación al alza observado en TTMB (45,4 vs 37,9; p = 0,03). Los resultados de TTMB influenciaron en el 73,5% de los pacientes clasificación al alza y/o estadificación al alza para recibir tratamiento radical, mientras que el 81% de los pacientes con estadio y/o grado sin modificar continuaron la vigilancia activa o terapia focal.

Conclusiones: En los pacientes con CaP de bajo riesgo diagnosticados por ETR, una posterior TTMB demostró clasificación al alza y/o estadificación al alza en aproximadamente un tercio de los pacientes, y dio lugar a un cambio final en la decisión de tratamiento.

Introduction

Early detection of prostate cancer (PCa) has evolved over the past 20 years. Although Prostate Specific Antigen (PSA) screening increases the PCa detection, it also adversely leads to the identification of small, low-grade tumors.[1] PSA screening has also resulted in lower prostate cancer mortality.[2,3] However, radical prostatectomy did not reduce prostate-cancer or all-cause mortality more than observation in men with localized prostate cancer after at least 12 years of follow-up.[4] Better understanding of the prostate cancer has widened the treatment options with Active Surveillance (AS) and Focal Therapy (FT) being increasingly used. Long-term studies have shown that patients based on TRUS results alone in Active Surveillance had a 20–40% risk of detecting significant cancer and 20–30% patients had bilateral disease at focal therapy.[5,6] Thus, prostate biopsy should be as accurate as possible in order to precisely evaluate the prostate cancer stage, grade and volume.

In 1989, Hodge et al. first described the transrectal ultrasound-guided sextant biopsy as the standard tool for PCa diagnosis and later underwent several modifications.[7] Nowadays, it has been shown that the most widely used bisextant approach can have high false-negative rates (30%) and we also know that increasing the number of cores taken improves the PCa detection in approximately 40%.[8–10] Moreover, extended biopsy approaches have been shown to be superior to sextant biopsy schemes in high-grade PCa diagnosis.[10] TTMB is an exhaustive biomechanical engineering approach that uses brachytherapy grid and transperineal approach to overcome the limitations of conventional TRUS biopsy. Several authors have published the advantages of this technique in specific clinical situations including prior to AS.[11]

In the present study, we evaluated the clinical use of TTMB in re-stratifying cancer risk in patients designated with low-risk disease by TRUS biopsy, according to D'Amico criteria (Gleason score $\leq$ 6, PSA < 10 ng/ml and clinical