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Original article

Accuracy of the contemporary Epstein criteria to predict insignificant prostate cancer in North African Man

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Abstract
Objective: To determine the accuracy of the contemporary Epstein criteria for predicting insignificant and organ-confined prostate cancer in a North African ethnic group of patients who were eligible for active surveillance based on these criteria, but had been subjected to radical prostatectomy.
Patients and methods: A total of 340 North African men underwent radical prostatectomy for clinically localized prostate cancer at two academic institutions between January 2006 and September 2013. In 74 of these patients (21.76%), prostate cancer had been assumed to be insignificant based on the contemporary Epstein criteria. The radical prostatectomy specimens were analyzed in order to identify the rate of pathologically unfavorable prostate cancer, defined as either pathologic Gleason score 7–10 and/or a tumor volume > 0.5 cc, and/or non-organ-confined disease (stage ≥ pT3a and/or pN1 and/or positive surgical margins).

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Results: Gleason sum upgrading (≥7) was necessary in 16 (21.6%) and upstaging of the radical prostatectomy specimens in 18 patients (24.3%). Simultaneous upstaging and upgrading of the specimens was observed in 12 patients (16%). A tumor volume ≤ 0.5 cc was found in 42 patients (57%). The rate of multifocality of prostate cancer (≥2 foci) was 59.5%. The accuracy of the contemporary Epstein criteria for predicting insignificant prostate cancer was 57%, while it predicted organ-confined disease in 85%.
Conclusion: The contemporary Epstein criteria used for the identification of clinically insignificant prostate cancer have been found to underestimate the real state of prostate cancer in as many as 43% of our patients. They were a good tool for predicting organ-confined rather than insignificant prostate cancer in our North African patients. Therefore, caution is advised when the decision on the implementation of active surveillance or focal therapy is solely based on these criteria.

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Introduction

As a consequence of the widespread use of assessment of the prostate-specific antigen (PSA) and digital rectal examination (DRE) in combination with extended-core prostate biopsy strategies, there is some concern about the risk of overdiagnosis and overtreatment of some forms of prostate cancer which have a protracted natural history and pose little threat to the patients during their lifetime. Stage migration resulting from aggressive PSA screening has progressively increased the proportion of patients who fall into the "favorable-risk" category; they now account for more than half of all newly diagnosed prostate cancer (PCa) patients in western countries [1–4]. As a consequence, the concept of insignificant prostate cancer (Ins-PCa) has progressively emerged in the last two decades, and alternative treatment options for these patients such as active surveillance (AS) and organ-sparing focal therapies (FT) have been implemented. However, the major obstacle to the widespread use of these conservative therapies remains the difficulty in precisely identifying low-risk PCa patients based on their pre-treatment clinical and pathologic features only [5,6].

For the period 2010–2019 Morocco has adopted the National Plan for Prevention and Cancer Control (NPPCC). The mean goal of the NPPCC is to reduce cancer-related morbidity and mortality and to improve the patients' quality of life. However, data on PCa in Moroccan men are rare, and there is only a limited number of studies providing relevant epidemiologic and prognostic information. According to the cancer registries of the cities of Rabat (2006–2008) and Casablanca (2004–2007), PCa is the second most common malignancy in Moroccan men (10.5–15.5%) after lung cancer (19.1–22.1%) [7,8]. The age-standardized incidence rate (ASIR) and the age-standardized mortality rate (ASMR) of PCa in Morocco (18.5 per 100,000 and 12.9 per 100,000, respectively, based on GLOBOCAN 2012 data [9]), have constantly increased during the last decades and are among the highest in the Middle East and North Africa (MENA Region). In contrast to western and developed countries where nowadays the usefulness of PSA screening is being questioned, the upward trends in incidence and mortality due to PCa and the high rate of advanced disease in newly diagnosed patients in Morocco and the MENA region will inevitably result in a widespread use of PSA screening and extended-core prostate biopsy. However, in the near future, practitioners in this region of the world will also be increasingly confronted with the problem of how to manage low-risk PCa. The Epstein criteria are among the most commonly used tools to identify patients with Ins-PCa who will be eligible for AS [10].

Our aim is to determine the accuracy of the contemporary Epstein criteria in predicting Ins-PCa and organ-confined disease in a North African ethnic group of patients who were eligible to AS according to these criteria but were treated with radical prostatectomy (RP).

Subjects and methods

Patient population

In total, 340 radical prostatectomies were performed at two academic Moroccan institutions (Mohammed V Military Hospital of Rabat and Moulay Ismail Military Hospital of Meknes) between January 2006 and September 2013. Out of this group, 74 patients (21.7%) fulfilled the contemporary Epstein criteria for clinically Ins-PCa after extended 10–18 core prostate biopsy: stage T1c, PSA density ≤ 0.15, Gleason score ≤ 6, fewer than three biopsies with prostate cancer, and up to 50% of cancer involvement in any core. The data of these patients were reviewed in order to assess the rate of unfavorable PCa patterns in the prostatectomy specimens. Unfavorable pathologic characteristics were defined as a Gleason sum > 6 (7–10) and/or non-organ-confined disease and/or a tumor volume > 0.5 cc. Non-organ-confined disease included extraprostatic extension, a stage ≥ pT3a and/or lymph-node involvement and/or positive surgical margins. Ins-PCa was defined as organ-confined disease, a tumor volume ≤ 0.5 cc and a Gleason sum ≤ 6.

Clinical and pathological evaluation

The clinical stage was assigned according to the 2002 TNM staging system, and pre-treatment PSA was measured before DRE and transrectal ultrasonography (TRUS). None of the patients received neoadjuvant androgen deprivation therapy. The prostate volume was assessed using TRUS with a 7.5-MHz ultrasound probe (General Electric Healthcare, Milwaukee, USA). PSA density was calculated by dividing the PSA value by the prostate volume measured on TRUS. Biopsy cores were obtained under TRUS guidance and embedded separately in multiple containers. The biopsy and radical prostatectomy specimens were staged and graded by three experienced genitourinary pathologists (A.AB., F. G. and S. M) who used standardized protocols and reporting templates. The extent of

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