Impact of transrectal biopsy of the prostate on erectile function


Department of Urology, Centro Médico Nacional 20 de Noviembre, Mexico City, Mexico

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Abstract

Background: The procedure of transrectal biopsy of the prostate (TRBP) is not exempt from complications. Between 1.0-6.9% of men that undergo TRBP present with adverse effects such as hematuria, hematospermia, dysuria, or fever, and 0.5%-5% will present with septicemia. Aim: To evaluate erectile function in Mexican men that underwent TRBP.

Methods: A total of 324 patients underwent TRBP. All the patients were evaluated through the International Index of Erectile Function (IIEF-5) questionnaire. All patients that had a positive result for cancer and that presented with erectile dysfunction at the initial evaluation were excluded from the study. Ninety-three patients were included and were evaluated with the IIEF-5 before the biopsy and at 4, 12, and 24 weeks after TRBP.

Results: At the baseline IIEF-5 evaluation, 100% of the 93 patients were potent. At post-TRBP week 4, the mean IIEF-5 score was 22 points (range: 11-25). Significant difference was found when the groups were evaluated (p = 0.001), given that > 30% presented with some grade of erectile dysfunction, compared with the baseline evaluation. At week 24, only 7.52% of the patients presented with some grade of erectile dysfunction.

Conclusions: After TRBP, the decrease in the IIEF-5 scores and the presence of erectile dysfunction were temporary and transitory, having a greater effect during the first month after the procedure. There was improvement after the first month and an almost complete recovery at 6 months.

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All the authors have made substantial intellectual contributions to the work, they meet the criteria of authorship, and have approved the final version of the article. In their names, I hereby state that the article is original, has not been published previously, and is not being considered for publication by any other journal.

† Corresponding author at: Av. Félix Cuevas 540, Col. del Valle, C.P. 03229, Delegación Benito Juárez, México. D.F.
Email: marcelapelayo@hotmail.com (M. Pelayo-Nieto).
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Introduction

Ultrasound-guided transrectal biopsy of the prostate (TRBP) has become the criterion standard for the diagnosis of prostate adenocarcinoma since its introduction by Hodge et al. in 1989.1 Millions of men have undergone TRBP worldwide. Every year close to one million biopsies are performed in the United States and the number has been on the rise.2-3 Of the men that undergo TRBP, close to 50% will be diagnosed with prostate cancer (CaP).4

TRBP is not a complication-free procedure. Between 1-6.9% of men that undergo TRBP will present with adverse effects, such as hematuria, hemospermia, dysuria, and fever, and 0.5-5% will present with septicemia.5-6 Nevertheless, it is considered a relatively safe procedure.

Erectile dysfunction (ED) as a complication of TRBP was observed in 2001.7 The repercussion of TRBP on erectile function is not described as one of the main adverse effects, such as hematuria, hemospermia, dysuria, and fever, and 0.5-5% will present with septicemia.5-6 Nevertheless, it is considered a relatively safe procedure. However, a group of patients that had no ED prior to TRBP and whose histopathologic results for CaP were negative.

Aim

To evaluate erectile function in Mexican patients that underwent transrectal biopsy of the prostate.

Methods

A total of 324 patients underwent TRBP that was performed by various urologists within the time frame of November 2013 and June 2015. Institutional approval was previously obtained for the study and the patients that were included signed statements of informed consent.

Ninety-three men were identified that met the inclusion criteria: prostate-specific antigen level > 3 ng/ml, abnormal digital rectal examination, sufficient literacy to be able to comprehend and fill-out the International Index of Erectile Function (IIEF-5) questionnaire and a negative result for CaP. Patients that presented with a positive result for CaP were excluded. TRBP was performed under local anesthesia with 2.5 cc of 2% xylocaine in the right and left periprostatic plexus and the right and left apex, with a 22 Ga/20 Chiba Tip® Echotip Skinny Needle. Twelve cores were obtained in all cases, excluding those patients that underwent saturation biopsy. The prostate volume was determined with the following formula: Volume (ml) = 0.524 x (length x height x width).

Results:

De un total de 93 pacientes, durante la evaluación basal con el cuestionario IIEF-5 el 100% presentó un IIEF-5 de 23 puntos (22-25). Al evaluar los grupos se identificó una diferencia significativa (p = 0.001), ya que más del 30% presentaron cierto grado de disfunción eréctil, en comparación con la evaluación basal. A las 24 semanas solo el 7.25% de los pacientes presentó cierto grado de disfunción eréctil.

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The statistical analysis was done with the IBM SPSS Statistics 19® software and the variables were correlated using the Student’s t test.

Results

The mean age of the patients was 59 years (45-73), the mean prostate-specific antigen value was 6.7 ng/ml, and the mean prostatic volume was 59 ml.

During the baseline evaluation with the IIEF-5 questionnaire, 100% of the 93 patient total had an IIEF-5 score of 23 points (22-25). At week 4 the score was 22 points (11-25), and at week 24 it was 23 points (17-24). During the evaluation at week 4, 62 (66.66%) patients maintained a score ≥ 22 points, 25 (26.88%) patients were classified with mild ED (17-21), 4 (4.30%) patients with mild-to-moderate ED (12-16), and 2 (2.15%) patients with moderate ED with 11 points. There was a statistically significant difference when these scores were compared with the baseline score (p = 0.001). A total of 30 (33%) patients presented with some grade of ED, compared with the baseline analysis.

During the second evaluation at 12 weeks, 8 (9.1%) patients persisted with ED, of which 3 (3.41%) had mild dysfunction (17-21) and 5 (5.68%) had mild-to-moderate dysfunction (12-16), resulting in a significant difference (p = 0.04). In the third evaluation, there was improvement, given that no patient presented with mild-to-moderate ED (12-16), but 7 (7.52%) patients persisted with mild ED (17-21). These results at 24 weeks were not significant (p = 0.1).

During the 6 months of the evaluation, no patient presented with severe ED and the ED was mild in the majority of the patients presenting with dysfunction, in accordance with the IIEF-5 questionnaire. Change in the IIEF-5 score was not correlated with patient age or prostate-specific antigen level.

Discussion

Ultrasound-guided TRBP is one of the most common urologic practices, with more than one million procedures performed every year in the United States and Europe. Biopsy is typically well tolerated with a low risk for major complications, but minor complications are frequent, such as hematuria or bleeding. Other complications are lower urinary tract symptoms, acute urinary retention, and ED.

Studies show that ED is not more frequent in men with prostate cancer, but data in relation to transrectal biopsy of the prostate and ED are few and heterogeneous. This can be explained by the fact that the majority of studies include patients that have undergone extensive or saturation TRBP and they also include patients with both positive and negative results for CaP.

All the data published up to the present that evaluate the impact of TRBP and ED are made up of populations that range from patients that do not have ED to those that have moderate ED. A few studies analyze patients presenting with a negative result for CaP. To date, ours is the first study to analyze patients with a negative result for CaP and no previous ED. This was done to avoid the anxiety that comes from receiving a cancer diagnosis and that consequently could cause or worsen ED.

In our case series, 100% of the patients were potent at the beginning of the study, 33% had some grade of ED at week 4, but only 9.1% continued to have ED at week 12. In general, there is an increase in ED during the first month after biopsy with statistical significance, as was observed in our study, but the recovery of potency in these patients was also identified; in other words, the majority of patients return to their baseline level. Klein et al. demonstrated that the use of periprostatic block produced higher levels of ED. This did not appear to occur in our study, in which 100% of the patients underwent periprostatic block, currently considered the standard.

We identified a higher and statistically significant level of ED during the first 4 weeks, with mild ED in 26.88% of the patients and moderate ED in only 2 patients. Fujita et al. identified a positive correlation between ED and a higher number of biopsies. It was not possible to evaluate this association in our study because 12 samples were taken in 100% of our patients.

During the second evaluation at 3 months, the patient that had presented with severe ED in the first evaluation recovered, presenting with mild ED. There were no other cases of severe ED. The majority of patients recovered during this second evaluation and the results showed a statistically significant difference.

Chrisofos et al. reported that 8.9% of the patients presented with ED after transrectal biopsy of the prostate, improving 100% 3 months after the analysis and Zisman et al. identified a rate of 9.7%. Both studies included patients with CaP, which is a very important anxiety factor. It has been demonstrated that this anxiety is reduced by 80% in those patients that end up with a negative result. We eliminated this factor in our study, but even so, there were higher levels of ED during the first evaluation in 33% of the patients.

We identified improvement with the passage of time at 12 weeks and at 24 weeks. During the last evaluation only 7.52% of the patients continued to present with ED and all were classified by the IIEF-5 as mild cases. Therefore, we consider that ED affects patients that undergo TRBP. There is a greater effect during the first 3-4 weeks following the procedure, after which there is improvement. A small number of patients continue to present with ED and they should have a longer follow-up period to confirm this.

The cause of ED after prostate biopsy is unknown, but it could be attributed to certain factors, such as temporary inflammation of or injury to the neurovascular plexus, the presence of edema or hematoma, the presence of pelvic pain, prostatitis, or even anxiety.

In our opinion, the impact of TRBP on ED appears to be minimal and often transitory.

Conclusions

The effects of TRBP on erectile function have been underestimated. It is important to advise patients that undergo TRBP about the transitory repercussion of the procedure on erectile function.

After TRBP, the decrease in IIEF-5 scores and the presence of ED were temporary and transitory, with a greater effect during the first month after the procedure. Improvement was shown after the first month, as well as an almost complete recovery at 6 months.
Ethical responsibilities

Protection of persons and animals. The authors declare that no experiments were performed on humans or animals for this study.

Data confidentiality. The authors declare that they have followed the protocols of their work center in relation to the publication of patient data.

Right to privacy and informed consent. The authors have obtained the informed consent of the patients and/or subjects referred to in the article. This document is in the possession of the corresponding author.

Financial disclosure

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Conflict of interest

The authors declare that there is no conflict of interest.

References