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ORIGINAL ARTICLE

High-intensity focused ultrasound therapy for the treatment of prostate cancer: Medium-term experience☆

A. Durán-Rivera[a,*], A. Montoliu García[b], J. Juan Escudero[a], P. Garrido Abad[c], M. Fernández Arjona[c], E. López Alcina[a]

[a] *Hospital General Universitario de Valencia, Valencia, Spain*
[b] *Hospital Universitario de La Plana, Villareal, Castellón, Spain*
[c] *Hospital Universitario del Henares, Coslada, Madrid, Spain*

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KEYWORDS
Localized prostate cancer;
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Abstract
Introduction: The treatment of localized prostate cancer seeks to minimize the impact on sexual function and urinary continence. In this respect, therapy with high-intensity focused ultrasound offers important results. We present our experience with this technique in 2 Spanish centers.
Material and methods: We conducted a retrospective review of 75 patients with localized prostate cancer treated with high-intensity focused ultrasound between March 2007 and July 2016. The oncological results and perioperative complications were assessed, as well as the impact on sexual function and continence.
Results: A total of 67 patients were analyzed. The mean follow-up was 7.2 years. The PSA nadir was 0.2 ng/ml (0–3), 24 patients (35.5%) presented biochemical recurrence, and 18 underwent a further biopsy, with 10 cases (55.5%) presenting disease recurrence. The overall biochemical relapse-free survival at 5 and 8 years was 93.2 and 80.5%, respectively. The cancer-specific survival at 5 and 8 years was 96% in both cases. In the postoperative period, 50 patients (74.6%) were continent, 16 (23.9%) reported mild incontinence, and one (1.5%) reported moderate incontinence. The median International Index of Erectile Function-5 before and after the surgery was 17 (5–25) and 16 (2–23) points, respectively. Nine patients reported de novo erectile dysfunction (13.5%).

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* Corresponding author.
E-mail address: andreajduran@gmail.com (A. Durán-Rivera).

Conclusion: High-intensity focused ultrasound appears to be a safe alternative for the treatment of localized prostate cancer, especially for low-risk localized prostate cancer. In our experience, this technique offers advantages in preserving urinary continence, and the medium-term oncological results are encouraging. Given the natural progression of prostate cancer, long-term studies with a larger number of cases are needed to corroborate these results.

PALABRAS CLAVE
Cáncer de próstata localizado;
Terapia con ultrasonido focalizado de alta intensidad;
Continencia urinaria;
Función sexual

Terapia ultrasonido focalizado de alta intensidad (HIFU) para el tratamiento del cáncer de próstata: Experiencia a medio plazo

Resumen
Introducción: Hoy en día, el tratamiento del cáncer de próstata localizado busca minimizar el impacto en la función sexual y la continencia urinaria. En este sentido, la terapia con ultrasonido de alta intensidad ofrece resultados interesantes. Presentamos nuestra experiencia con esta técnica en 2 centros españoles.
Material y métodos: Revisión retrospectiva de 75 pacientes con cáncer de próstata localizado tratados con terapia con ultrasonido de alta intensidad entre marzo de 2007 y julio de 2016. Se evaluaron los resultados oncológicos y las complicaciones perioperatorias, así como el impacto en la función sexual y la continencia.
Resultados: Sesenta y siete pacientes fueron analizados. El seguimiento medio fue de 7,2 años. El PSA nadir fue de 0,2 ng/ml (0-3); 24 pacientes (35,5%) presentaron recidiva bioquímica y en 18 se realizó una nueva biopsia, evidenciando 10 casos (55,5%) con recidiva anatomopatológica. La supervivencia libre de recidiva bioquímica global a 5 y 8 años fue de 93,2 y 80,5%, respectivamente. La supervivencia específica para cáncer a 5 y 8 años fue en ambos casos de un 96%. En el postoperatorio, 50 pacientes (74,6%) eran continentes, 16 (23,9%) reportaban incontinencia leve y uno (1,5%), moderada. La mediana del International Index of Erectile Function-5 previa y postratamiento fue de 17 (5-25) y 16 (2-23) puntos, respectivamente. Reportaron disfunción eréctil de novo 9 pacientes (13,5%).
Conclusión: La terapia con ultrasonido de alta intensidad parece ser una alternativa segura para el tratamiento del cáncer de próstata localizado, especialmente de bajo riesgo. En nuestra experiencia, esta técnica ofrece ventajas en la conservación de la continencia urinaria, y los resultados oncológicos parecen ser alentadores a medio plazo. Dada la evolución natural del cáncer de próstata, se requieren estudios a largo plazo y con mayor casuística que corroboren estos resultados.

Introduction

The management of localized prostate cancer is constantly evolving. The continuous search for treatments adjusted to patient profiles has expanded the therapeutic possibilities[1] and has led to the individualization of the treatment. From classic therapies such as radical prostatectomy and radiotherapy, the therapeutic arsenal has been extended to possibilities such as active surveillance or focal treatments.

In 1995[2] high-intensity focal ultrasound (HIFU) emerged as a therapeutic alternative, subsequently approved by the FDA in 2016 and included with recommendation C in the guidelines of the European Association of Urology.[3]

HIFU technology is based on the production of ultrasound waves emitted by a transducer; these increase the temperature of the target tissues above 100 °C, causing protein denaturation and coagulative necrosis of the tumor tissue, while causing minimal damage to the surrounding tissue.[4]

There are 2 types of devices available for HIFU: Ablatherm® (EDAP-TMS S.A., Vaux-en-Velin, France) and Sonablate® (Focus Surgery Inc., Indianapolis, USA). Although the principle of operation is the same, Sonablate® is a more flexible technology that, among other advantages, has decreased the incidence of rectourethral fistulas by keeping the rectal wall below 22 °C, in addition to allowing control in real time of the treatment administered.[5,6]

Despite the many existing publications on the use of this technique,[7,8] HIFU is a therapy that must be offered within the framework of a clinical trial, given the lack of long-term results.

In this paper, we present the medium-term results of our experience with the use of the HIFU Sonablate® device in 2 Spanish centers for the treatment of localized prostate cancer.