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ORIGINAL ARTICLE

Predictors of early, intermediate and late biochemical recurrence after minimally invasive radical prostatectomy in a single-center cohort with a mean follow-up of 8 years☆

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KEYWORDS
Biochemical recurrence;
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Abstract

Objective: To determine the predictors of early, intermediate and late biochemical recurrence (BR) following minimally invasive radical prostatectomy in patients with localized prostate cancer (PC).

Material and methods: We included 6195 patients with cT1-3N0M0 prostate cancer treated using radical laparoscopic prostatectomy (RLP) and radical robot-assisted prostatectomy at our institution between 2000 and 2016. None of the patients underwent adjuvant therapy. BR is defined as PSA levels ≥0.2 ng/dL. The time to BR is divided into terciles to identify the variables associated with early (<12 months), intermediate (12–36 months) and late (>36 months) recurrence. We employed logistic regression models to determine the risk factors associated with each interval.

Results: We identified 1148 (18.3%) patients with BR. The median time to BR was 24 months (IQR, 0.98–53.18). The multivariate analysis showed that preoperative PSA levels, lymph node invasion, positive margins and RLP are associated with early recurrence ($p \leq 0.029$ for all). Laparoscopic surgery was the only predictor of intermediate recurrence ($p = 0.001$). The predictors of late recurrence included a pathological Gleason score ≥7, stage ≥pT3, positive margins and RLP ($p \leq 0.02$ for all).

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Conclusions: The patients with high-risk prostate cancer can develop late recurrence and require long-term follow-up. Identifying patients with higher PSA levels and lymph node invasion has an important predictive role in the first year after surgery. The association between RLP and BR warrants further assessment.

PALABRAS CLAVE
Recidiva bioquímica;
Cáncer de próstata;
Prostatectomía radical mínimamente invasiva

Factores predictivos de recidiva bioquímica temprana, intermedia y tardía tras prostatectomía radical mínimamente invasiva en una cohorte unicéntrica con seguimiento medio de 8 años

Resumen

Objetivo: Determinar factores predictivos de recidiva bioquímica (RB) temprana, intermedia y tardía después de prostatectomía radical mínimamente invasiva en pacientes con cáncer de próstata localizado.

Material y métodos: Se incluyeron 6.195 pacientes con cáncer de próstata cT1-3N0M0 intervenidos mediante prostatectomía radical laparoscópica (PRL) y robótica en nuestra institución entre 2000 y 2016. Ninguno recibió tratamiento adyuvante. La RB se definió como PSA $\geq$ 0,2 ng/dl. El tiempo hasta RB se dividió en terciles para identificar variables asociadas con recidiva temprana (<12 meses), intermedia (12–36 meses) y tardía (>36 meses). Se utilizaron modelos de regresión logística para determinar los factores de riesgo asociados en cada intervalo.

Resultados: Se identificaron 1.148 (18,3%) pacientes con RB. La mediana de tiempo hasta la RB fue de 24 meses (RIQ: 0,98–53,18). El análisis multivariable mostró que el PSA preoperatorio, la invasión ganglionar, los márgenes positivos y la PRL se asociaron con recidiva precoz (todos $p \leq 0{,}029$). La cirugía laparoscópica fue el único predictor de recidiva intermedia ($p = 0{,}001$). Los predictores de recidiva tardía incluyeron un *score* de Gleason patológico $\geq$7, estadio $\geq$pT3, márgenes positivos y PRL (todos con $p \leq 0{,}02$).

Conclusiones: Los pacientes con cáncer de próstata de alto riesgo pueden desarrollar recurrencia tardía y precisar un seguimiento a largo plazo. La identificación de pacientes con mayor PSA e invasión ganglionar tiene un importante papel predictivo en el primer año tras la cirugía. La asociación entre PRL y RB merece una evaluación adicional.

Introduction

Prostate cancer (PCa) is one of the most frequently diagnosed tumors in the developed world.[1,2] In Europe, PCa is the most common solid tumor, with an age-standardized rate of 60.9 cases per 100,000 inhabitants per year. The trend in the incidence of cancer in Europe has been increasing slowly. According to the latest Globocan 2012 report, 1.1 million men worldwide will be diagnosed with PCa, which represents 70% of the cases in developed regions.[3]

The increase in the life expectancy of the population and the high rates of incidence of PCa may lead to an increasing number of patients who develop biochemical relapse (BR) after minimally invasive radical prostatectomy (MIRP).

Around 15–45% of men undergoing radical prostatectomy (RP) will develop BR, of which 20–30% will progress to clinical recurrence or metastasis.[4–9] Most recurrences occur during the first years after RP. Walz et al. published that 58.5% of the BRs occur in the first 2 years after RP[6] and another study indicated that 90% occurred in the first 5 years after RP.[7] However, even after 10 years without relapse of the PSA, patients remain at risk of BR. As reported by Liesenfeld et al., the rates of BR at 10, 15, and 20 years were 34.0%, 44.0%, and 52.7%, respectively.[8]

There are guidelines for follow-up with PSA after RP, but there is no consensus on an optimal strategy.[10,11] Some studies proposed that, after a long time with undetectable PSA, it is possible to decrease the frequency of PSA controls to avoid patient anxiety and develop a surveillance adapted to the tumor risk.[5,12]

Several prognostic models have been developed to identify men at risk of BR.[13,14] Some more recent studies have described nomograms to predict cancer-specific mortality in patients with BR, including time to BR as a predictor of PCa-related mortality,[15,16] and others have analyzed the risk factors associated with early or late BR.[17]

The objective of this study was to identify predictors of early, intermediate, and late BR after MIRP in patients with localized PCa.

Material and methods

A retrospective review of our institutional PCa database was conducted to search for patients undergoing MIRP as first line treatment between January 2000 and July 2016. The