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CASUISTRY

Renal cell carcinoma with vascular invasion: Mortality and prognostic factors☆

M.A. Rodríguez-Cabello[a,*], I. Laso-García[a], F. Donis-Canet[a], V. Gómez-Dos-Santos[a], C. Varona-Crespo[b], F.J. Burgos-Revilla[a]

[a] *Servicios de Urología, Hospital Universitario Ramón y Cajal, Madrid, Spain*
[b] *Servicios de Anatomía Patológica, Hospital Universitario Ramón y Cajal, Madrid, Spain*

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KEYWORDS
Renal cell carcinoma;
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Abstract

Objective: Analysis of the results of patients who had been operated of renal cell carcinoma with vascular invasion in our institution, evaluation of prognostic factors and complications.
Methods: Retrospective observational study of 37 patients diagnosed of renal cell carcinoma with vascular invasion operated between May 1999 and July 2013. We used the method of Kaplan–Meier survival analysis and the Mantel–Haenszel's test (log rank) and the Cox's proportional hazards analysis test to analyse the risk factors of mortality.
Results: The median age was 60 years. Mean follow-up period was 42.1 months. The median overall survival and disease-free survival were 53.8 and 36.3 months, respectively. There was statistical association between overall survival and American Society of Anesthesiologists Classification score ($p = 0.047$), tumor stage ($p = 0.003$), lymph node involvement ($p = 0.024$), presence of metastases ($p = 0.013$), level of tumor thrombus ($p = 0.05$) and histological type ($p = 0.001$). 14 patients had grade IIIb complications or higher according to the Clavien Dindo classification, the most frequent was bleeding.
Conclusions: Renal cell carcinoma with vascular invasion is a disease with high rate of mortality. Surgery is a therapeutic option that can be curative. The number of complications is important. Survival is conditioned by the American Society of Anesthesiologists Classification score, tumor stage, the level of tumor thrombus, lymph node involvement, metastasis and histological type.

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* Corresponding author.
E-mail address: mrcabello.uro@gmail.com (M.A. Rodríguez-Cabello).

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Carcinoma de células renales con invasión vascular: mortalidad y factores pronósticos

Resumen

Objetivo: Análisis de los resultados obtenidos en el seguimiento de los pacientes intervenidos de carcinoma renal con invasión vascular en nuestro centro, evaluación de los factores pronósticos y de las complicaciones.

Material y métodos: Estudio observacional retrospectivo de 37 pacientes diagnosticados de carcinoma renal con invasión vascular intervenidos entre mayo de 1999 y julio de 2013. Se emplean el método de Kaplan–Meier para el análisis de supervivencias y la prueba de Mantel-Haenszel (LogRank) y el modelo de riesgos proporcionales de Cox para el análisis de los factores de riesgo de mortalidad.

Resultados: La mediana de edad fue de 60 años. El tiempo de seguimiento medio de 42,1 meses. Las medianas de supervivencia global y supervivencia libre de enfermedad fueron de 53,8 y 36,3 meses respectivamente. Existe asociación estadística entre supervivencia global y el American Society of Anesthesiologists Classification score ($p = 0{,}047$), estadio tumoral ($p = 0{,}003$), la afectación ganglionar ($p = 0{,}024$), la presencia de metástasis ($p = 0{,}013$), el nivel de trombo tumoral ($p = 0{,}05$) y el tipo histológico ($p = 0{,}001$). Catorce pacientes presentaron complicaciones grado IIIb o mayor según la clasificación de Clavien-Dindo, siendo la más frecuente el sangrado.

Conclusiones: El carcinoma renal con invasión vascular es una enfermedad con alta tasa de mortalidad. La cirugía es una opción terapéutica que puede resultar curativa. El número de complicaciones es importante. La supervivencia está condicionada por el American Society of Anesthesiologists Classification score, el estadio tumoral, el nivel de trombo tumoral, la afectación ganglionar, las metástasis y el tipo histológico.

Introduction

Renal cell carcinoma (RCC) is the third most frequent urological tumor (2–3% of all solid cancers).[1] 30% of these tumors begin as locally advanced or metastatic at diagnosis.[2]

The most characteristic spread is through the venous system, with involvement of the renal vein or the inferior vena cava in up to 4–10% of these patients,[2] often being symptomatic.

In recent years there has been an increase in global incidence and a migration of the RCC to earlier stages of the disease thanks to advances in the field of imaging in medicine. The low frequency of large tumor thrombi, as well as the various forms of clinical presentation that will condition the diagnostic and therapeutic approach, make the natural history and oncological results very variable.[2]

The main objective of the study is to analyze survival in patients undergoing RCC with vascular involvement in our center. In addition, we evaluated the prognostic factors involved, as well as the complications that derive from the treatment.

Material and methods

Retrospective descriptive study of the results obtained in the surgical treatment of a current series (1999–2013) of 37 patients diagnosed with RCC and tumor venous involvement.

The TNM classification 2009 was used,[3,4] reclassifying the patients operated before this date.[5,6] For the histopathological description, the classifications of Heidelberg[7] and Fuhrman[8] were used, and we used the classification of Neves and Zincke to define the level of tumor thrombus (LTT).[9] All patients included in the study had confirmed tumor venous involvement.

For the diagnosis of tumor extension, computerized axial tomography was used. Magnetic resonance imaging was used in 16 patients (43.2%) for the study of the LTT and the possible vascular involvement, a reference test until the appearance of multislice CT, using transesophageal ultrasound in 10 patients (27%). Bone scintigraphy was used in 6 patients (16.2%) on suspicion of secondary deposits at the bone level.

The surgical approach, use of cardiopulmonary bypass, cavectomy, vascular prosthetic replacement, and the use of preoperative renal embolization are shown in Table 1

. The transperitoneal laparoscopic approach was performed in a patient with LTT 1, enabling its clamping and extraction at the ostium level. Sternotomy was performed in patients with LTT 4 (10.8%), requiring cardiopulmonary bypass to access the right atrium.

We analyzed the clinical characteristics and risk factors presented by patients prior to surgery (Table 1). Complications according to the Clavien-Dindo classification are described.[10]

For the analysis of overall survival (OS), cancer-specific survival (CSS) and disease-free survival (DFS), the Kaplan–Meier method was used. The mortality risk factors were analyzed using the Mantel–Haenszel (LogRank) test and the Cox proportional hazards model. We considered the statistical significance with $p < 0.05$.

Results

The median follow-up was 22.6 months (0.1–151.4). The median OS and disease-free survival were 53.8 and 36.3