Unusual metastasis of clear cell renal cell carcinoma
Metástasis poco frecuente del cáncer renal de células claras

Aylhin J. López Marcano, José M. Ramia Ángel, Roberto De la Plaza Llamas, Farah Al-Swely, Begoña González Sierra, Alba M. Vázquez

ABSTRACT

The falciform ligament is a peritoneal reflection that attaches the liver to the anterior abdominal wall; its lower edge contains the round ligament (RL). Single lesions in the RL are rare and usually correspond to perivascular epithelioid cell tumors. We present a case report of a single metastasis in the RL in a patient with clear cell renal cell carcinoma who underwent surgery five years ago. We conducted a literature review to identify similar cases and we found two case reports of single metastasis in the RL. Our patient was a 71-year-old man with a history of renal cell carcinoma who underwent left laparoscopic radical nephrectomy (stage pT3a), laparoscopic right adrenalectomy and total thyroidectomy due to multinodular goiter. The pathological examination revealed metastasis of renal cell carcinoma. A computed tomography (CT) scan performed at 5-year follow-up showed a focal lesion in segment IVa with no FDG uptake in the PET scan, but as malignancy was suspected, the patient underwent exploratory laparatomy with no evidence of peritoneal implants. A 1-cm node was found in the round ligament that was completely resected. The pathological examination revealed metastatic clear cell renal cell carcinoma. The RL is involved in cases of peritoneal carcinomatosis and only two cases of single metastasis have been reported: in one patient with papillary renal cell carcinoma pT1aN0 and another one with left breast adenocarcinoma.

Keywords: metastasis, round ligament, renal cell carcinoma.

RESUMEN

El ligamento falciforme es una reflexión peritoneal abdominal relacionada con la superficie anterior del hígado, que en su borde inferior libre contiene el ligamento redondo (LR); las lesiones únicas en este son infrecuentes. Presentamos un caso de metástasis única en el ligamento redondo en un paciente con antecedente de carcinoma renal de células claras. Realizamos una búsqueda bibliográfica para identificar casos similares. Nuestro paciente es un varón de 71 años con antecedente de carcinoma renal de células tratado con nefrectomía radical izquierda laparoscópica (estadio pT3a). En tomografía computarizada (TC) control a los 5 años se evidencia lesión focal en la periferia del segmento IVa, ante la sospecha de malignidad, se realiza laparatomía exploradora revisando toda la cavidad abdominal sin evidenciar otros implantes peritoneales. Se halla un nódulo de 1 cm en el ligamento redondo y se realiza su exéresis completa, con diagnóstico anatomopatológico de metástasis de células claras. El LR generalmente está afectado en casos de carcinomatosis peritoneal y solo existen dos casos publicados de metástasis únicas.

Palabras clave: metástasis, ligamento redondo, carcinoma de células renales.

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The falciform ligament is a peritoneal reflection that attaches the liver to the anterior abdominal wall; its lower edge contains the round ligament (RL)1. Round ligament lesions are rare, usually localized, and correspond to perivascular epithelioid cell tumors1. We present a case report of a single metastasis in the RL in a patient with clear cell renal cell carcinoma (CCRCC) and we conducted a review of the literature.

A 71-year-old male patient with a history of a 70 x 63 mm left renal mass underwent left laparoscopic radical nephrectomy five years ago. The pathological examination revealed a CCRCC with a size of 6.5 cm involving the segmental branch of the renal vein, stage pT3a, Fuhrman nuclear grade 2 and free margins.

Six months later, a computed tomography (CT) scan showed a right adrenal gland node suggestive of metastasis. A positron emission tomography (PET) scan was negative for metastasis; yet, as the mass increased in size, laparoscopic right adrenalectomy was performed. The pathological diagnosis was metastasis of CCRCC with a size of 2.8 cm.

Two years later, the patient underwent total thyroidectomy due to multinodular goiter, with pathological diagnosis of multiple metastases of renal cell carcinoma.

A CT scan performed at 5-year follow-up revealed a focal lesion in segment IVa with no FDG uptake in the PET scan (Fig. 1). However, as malignancy was suspected, the patient underwent exploratory laparatomy. The entire abdominal cavity was explored with no evidence of peritoneal implants. A 1-cm node was found in the round ligament that was completely
resected. The pathological examination revealed metastatic CCRCC.

We conducted a literature review using a PubMed search without search limits, updated on March 31, 2018, with the following search strategy: [(Clear-cell metastatic renal cell carcinoma) OR (Adenocarcinoma, Clear Cell) OR (Carcinoma, Renal)] OR [(Neoplasm Metastasis) OR (Metastases, Neoplasm) OR (Neoplasm Metastases) OR (Metastases) OR (Metastasis, Neoplasm)] AND [(Round Ligament of Liver) OR (Falciform ligament)]. A total of 52 articles were retrieved. The abstracts and texts of the related articles were analyzed. We found only two cases of single metastasis in the RL but none of them originated in a CCRCC (Table 1).

Single lesions in the RL are rare. The most common neoplasms found belong to the perivascular epithelioid cell family of tumors (PEComas)\(^2\). However, single metastases in the RL are exceptional. Only two cases have been reported: one patient with a type 2 papillary renal cell carcinoma pT1aN0\(^3\) and another patient with left breast adenocarcinoma\(^4\).

Our patient constitutes the first case reported of metastatic CCRCC involving the RL. The RL can be site of multiple metastases of renal cell carcinoma or peritoneal carcinomatosis\(^1\).

The incidence of CCRCC is increasing due to the higher number of CT scans performed\(^2\). Thirty-percent of patients have synchronous metastatic disease at presentation and other 30% will present metachronous metastases; some cases have occurred more than 20 years after nephrectomy\(^2\).

Peritoneal metastases are rare, estimated in 2% of autopsies of patients with metastatic CCRCC. Only 2% of the primary tumors that metastasize to the peritoneum are renal cell carcinomas\(^5\).

The sensitivity of CT to detect liver metastases is 85% but decreases to 50% to detect implants in serous membranes or peritoneum. The origin of a RL implant cannot always be determined, as its close relationship

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**TABLE 1**

<table>
<thead>
<tr>
<th>Case reports of single metastasis in the round ligament</th>
<th>Prete FP et al. (^1)</th>
<th>Abellán et al. (^4)</th>
<th>López A et al.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary tumor</strong></td>
<td>Breast adenocarcinoma</td>
<td>Type 2 papillary renal cell carcinoma pT1aN0</td>
<td>Clear cell renal cell carcinoma pT3a</td>
</tr>
<tr>
<td><strong>Sex/Age</strong></td>
<td>Woman/69 y</td>
<td>Man/76 y</td>
<td>Man/71 y</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Epigastric pain</td>
<td>Acute abdominal pain (hemoperitoneum)</td>
<td>Asymptomatic</td>
</tr>
<tr>
<td><strong>Timing of occurrence from resection of the primary tumor</strong></td>
<td>2 years</td>
<td>6 months</td>
<td>5 years</td>
</tr>
<tr>
<td><strong>Localization</strong></td>
<td>Round ligament</td>
<td>Round ligament</td>
<td>Round ligament</td>
</tr>
<tr>
<td><strong>Size</strong></td>
<td>10 cm</td>
<td>10 cm</td>
<td>1 cm</td>
</tr>
<tr>
<td><strong>Biomarkers</strong></td>
<td>Elevated CA 15-3 antigen levels (117 U / mL S)</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td><strong>Adjuvant treatment</strong></td>
<td>Chemotherapy (6 cycles of epirubicin plus docetaxel)</td>
<td>Chemotherapy (NS)</td>
<td>No</td>
</tr>
<tr>
<td><strong>Synchronous/Metachronous metastatic</strong></td>
<td>Brain Metastases (RT)</td>
<td>NS</td>
<td>Right adrenal gland (6 months) Thyroid gland (2 years)</td>
</tr>
<tr>
<td><strong>Follow-up</strong></td>
<td>Death after treatment withdrawal</td>
<td>NS</td>
<td>NS</td>
</tr>
</tbody>
</table>

NS: Not specified.
with the liver parenchyma makes its precise location difficult. The prognosis of patients with CCRCC depends on the site of metastasis. The pattern of metastasis is unpredictable: the possible pathways for dissemination include hematogenous dissemination, neovessel formation, penetration of surrounding tissues, venous retrograde flow and lymphatic dissemination. Direct invasion through mesenteric reflections and peritoneal recesses is possible due to gravity and negative subdiaphragmatic pressure, producing metastases in atypical sites with variable symptoms.

Surgical resection of metastasis is associated with control of the disease and improves survival. Patients who have resectable primary CCRCC and a solitary site of metastasis, or a solitary recurrence after prolonged disease-free interval following nephrectomy benefit from surgical resection. Despite most patients present recurrence, survival has increased in these patients. Response to chemotherapy and radiotherapy is low, limiting the treatment of systemic disease.

The presence of a solitary lesion in the RL in patients with a history of cancer must be considered malignant.

References