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Report of a case and review of the literature

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Synchronous right nephrectomy, left kindey tumorectomy, right lateral sectorectomy and inferior vena cava thrombectomy for metastatic clear clee renal carcinoma. Report of a case and review of the literature

The prognosis of stage IV renal cell carcinoma is very poor, since non-operative modalities for advanced renal carcinoma have failed to yield effective results. In fact, there is no indication for radiotherapy and systemic chemotherapy is not effective. Surgery, when indicated, seems to be the only therapeutic option possible.. Hepatectomy for metastatic renal cell carcinoma is very rarely reported, because multiple organ metastases ordinarily coexist. We report a case of a 61-year-old woman with a bilateral renal clear cell carcinoma, two synchronous liver metastasisi synchronous hepatic metastasis that were treated simultaneously with radical right nephrectomy, left upper pole kidney tumorectomy and right lateral liver sectorectomy. To the best of our knowledge this is the first case of a double liver metastasis and double renal carcinomas treated simultaneously. We discuss the specific features concerning the treatment of this unusual case.

KEY WORDS: Hepatectomy, Liver metastases, Nephrectomy, Renal cell carcinoma

Introduction

Hepatectomy for metastatic renal cell carcinoma (RCC) is very rarely reported, because multiple organ metastases ordinarily coexist when hepatic metastases are found out RCC in fact tends to metastasize to the lungs in 70% of patients, lymph nodes in 50% of patients, the skeleton in 40% of patients, and to the liver in 20% of patients [1]. Only 1-2% of patients with metastatic renal cell carcinoma have operable liver metastases. In this particular subset of patient an aggressive surgical approach seems to be very appropriated since these tumors tend to be resistant to radiotherapy and systemic chemotherapy, and studies involving floxuridine and immunotherapy have reported only a 15% to 20% response rates [1].

We report a case of a synchronous right nephrectomy, left upper pole kidney tumorectomy, vena cava thrombectomy right lateral liver sectoriectomy for metastatic renal cell

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carcinoma , the second one performed in our Institution, and review the main features of this situation.

Case report

A 61 years old female patient was referred to our Depatment for a five month history of vague abdominal pain. Her past medical history showed only hypertension for which she was under medical therapy. On the admission the physical examination showed an abdomen soft, not tender and a palpable mass in the right flank which proved moderately painful on deep palpation. Common blood test were normal

The patient underwent ultrasound scan that revealed a right kidney tumour with liver metastasis and soon after a computed tomography scan that confirmed the presence of a 9,3 x 9 cm mass in the right kidney with a a non homogenous contrast enanchement due to hypodense necrotic –colliquative areas in it, a neoplastic trombous in the inferior vena cava, and two hypodense lesion compatible with metastasis in the VI and VII liver segments. The CT scan reveal also a 2 cm hypodense lesion in the upper pole left kidney (Figg. 1-3).

With a diagnosis of a double renal cancer with two metacrhonous liver metastasis the patient underwent surgery. At laparotomy intraoperative liver ultrasound was performed and the presence of two liver metastasis in the VI and VII segment was confirmed. A right lateral sectoriectomy was perfomerd. A voluminous right kidney mass 10 cm in diameter was found and consequently a right radical nefrectomy was performed The operation continued with a cavotomy and the extraction of the intracaval neoplastic thrombus and with a upper pole right kidney tumorectomy.

The pathology report showed a G4 clear cell carcinoma, extensively invading the renal parenchyma with an invasion of the renal vein. The tumour did not pas the Gerota fascia and did not invade the renal pelvis. The left kidney mass was identified as a G3 clear cell carcinoma with disease free resection margins. Finally the pathological examination of the right lateral liver sector confirmed the presence of two clear cell carcinoma metastasis.

The post-operative course was uneventfull and the patient was discharged on postoperative day 15 and is still alive and disease free after 6 months follow up.

Discussion

Multivisceral resection has been extensively described. Simultaneous colectomy and hepatectomy for metastatic colon cancer can be performed safely, with encouraging results [2]. D'Angelica and colleagues [3] demonstrated that major hepatectomy can be performed simultaneously with pancreatectomy in carefully selected patients with accept-

Fig. 1: CT scan showing right kidney malignancy.

Fig. 2: CT scan showing left kidney upper pole tumour.

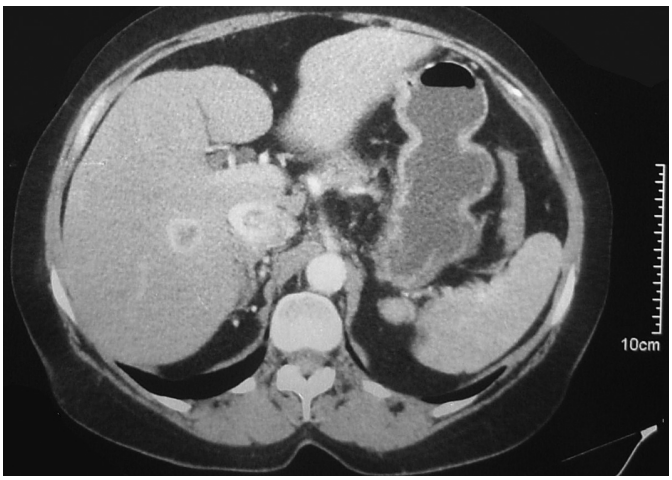

Fig. 3: CT scan showing liver metastasis and caval thrombosis.

able postoperative mortality and morbidity. Sakaguchi and colleagues [4] first demonstrated the feasibility of simultaneous liver resection and nephrectomy for a large RCC with caval thrombus in 1992 in a case study. Since then, several other investigators described their experiences with NMH, demonstrating acceptable postoperative morbidity and mortality [5-8].

Potential indications for combined liver and kidney resection include neoplastic disease, traumatic injury, polycystic disease, or rare combined kidney and liver transplantation for conditions such as hepatorenal syndrome and polycystic disease [9,10].

The physiologic interactions of the liver and kidneys make combined resection of these organs particularly interesting and challenging. Theoretically the effects of combining these procedures are poorly understood because the existing knowledge comes from case reports [5-8]. Ideologically, the procedures are performed using conflicting hemodynamic techniques. During nephrectomy, a euvolemic or hypervolemic state is preferred to preserve an adequate volume to the contralateral kidney, with the aim of maximizing renal plasma flow to the remnant kidney [11]. By contrast, relative hypovolemia is desired during major hepatic resection (low central venous pressure technique) to limit blood loss during the parenchymal transection phase of the operation [12,13]. Beyond the conflicting approaches to perioperative fluid management, the loss of both renal and hepatic function combined with the stress of aggressive surgical therapy pose theoretical risks of substantial postoperative complications including possible hepatorenal syndrome.

As a result of these considerations, after determining that the operation is technically feasible, coordination among surgical and anesthesiological teams is imperative, especially with regard to fluid and electrolyte management. Volume loading in the preoperative period may interfere with low CVP anesthetic technique for partial hepatectomy, and underhydration may result in impaired renal function postoperatively. For this reason, we advocate commencing with liver resection in most situations. Appropriate rehydration may be achieved after hepatic parenchymal transaction. Proper communication between surgical and anesthetic team members is therefore critical.

Despite these considerations a substantial fact must be stated: the best treatment option of metastatic renal neoplasm is aggressive surgery since there is no indication for radiotherapy except for palliative treatment of symptomatic bone metastasis and systemic chemotherapy and immunotherapy are not very effective. This is particularly true for lung metastasis since unfortunately liver metastasis are often not resectable for their multiple location and for their association with metastasis to other organs.

Data regarding hepatic resection of metastatic renal cell carcinoma are limited to case reports and small series. We have already described a case of nephrectomy and right hepatectomy [5] in this case we described a case in which we were more aggressive in the kidney resection and relatively less aggressive with the hepatic resection. Reviewing the literature it is possible to find two noteworthy paper concerning this issue. The first is by Yezhelyev et al [14] who descrived a series of 20 patients with a mean age of 57 years studied in a 13 year period. Most kidney neoplasm were renal cell carcinoma. Eight patients also underwent inferior vena cava thrombectomy. The most common indications for hepatectomy were direct liver invasion in eight patients and distant hepatic metastases in nine. Ten patients (50%) suffered complications in the postoperative period; three of these suffered major complications, resulting in one perioperative death (5%). Mean hospital stay was 12 days. Overall survival was 25 months (range 0 to 34 months). Thelen et [15] described a 18 years experience of 31 patients who underwent liver resection for kidney metastases from renal cell carcinoma. The overall 1-, 3- and 5-year survival rates were 82.2%, 54.3%, and 38.9%, respectively. One patient was deceased and 4 developed complications during the postoperative course. In the univariate analysis, site of the primary tumor , disease-free interval , and resection margins showed significant influence on long-term survival. In the multivariate analysis, only the resection margins were identified as an independent prognostic factor after liver resection.

Alves es al described as a positive prognostic factors an interval of more than 24 months between nephrectomy and diagnosis of liver metastasis, while metastasis diameter > 50mm, absence of adequate liver resection margins and coexistence of lung metastasis were associated with a worst prognosis [16]. Other authors stated the even the histological type of renal tumour is associated with prognosis, in fact chromophobe cell carcinoma, Wilms tumour carcinoma and renal sarcoma are associated with a better prognosis than clear cell carcinoma [17].

Another peculiarity of this case is that we found a bilateral renal cancer. This finding is important since patients with bilateral multifocal renal cell carcinoma are at increased risk of developing locally recurrent or de novo tumors after nephron-sparing procedures. When dealing with recurrent renal masses the options are limited to observation, total nephrectomy, ablation, or repeat surgical intervention. The main reason for recurrence after nephron-sparing surgery is likely to be the presence of multifocal disease, which is identified in 4.3-25.0% of radical nephrectomy specimen. Bilateral renal involvement is seen in almost 90% of cases of multifocal renal carcinoma, and conversely the majority of patients with bilateral disease will have multifocal tumors [18]. Many patients who are treated for multifocal disease, therefore, may require subsequent surgical interventions so a strict follow up should be followed. We described a case in which two kidney tumour and two liver metastasis were treated simultaneously. An aggressive surgical approach with right nephrectomy, left kidney tumorectomy, right

liver sectoriectomy and caval trombectomy was possible because liver metastasis were well localised. To the best of our knowledge we did not find in literature a case with these feature (double renal cancer and double liver metastasis trated simultaneously). Though the patient had unfavourable prognostic factor such as presentation of the tumour with synchronous metastasis, a clear cell carcinoma hystological type, we believe, considering the feasibility of the operation, and the lack of any affective alternative to surgey, that the surgical approach was the only therapeutic option we could reasonably offer to our patient. We should keep this patient under strict follow up since her high risk of liver and kidney recurrence.

Riassunto

La prognosi del carcinoma renale allo stadio IV è molto severa. Questo infatti non risponde a trattamenti complementari non chirurgici come la chemioterapia, la radioterapia e l'immunoterapia. Per tale motivo la chirurgia, quando indicata, sembra essere l'unica opzione terapeutica possibile. Resezioni epatiche per carcinoma renale metastatico sono raramente descritte, perchè di solito la malattia metastatica si presenta in più organi. Presentiamo il caso di una donna di 61 anni con una neoplasia a cellule chiare bilaterale e due metastasi epatiche sincrone trattata simultaneamente con una nefrectomia radicale destra, resezione parziale del polo superiore del rene sinistro e segmentectomia laterale sinistra. Per quanto ci è stato possibile constatare, questa è la prima descrizione in letteratura di un trattamento simultaneo di neoplasia renale bilaterale con doppia metastasi epatica. Nel nostro lavoro discutiamo le caratteristiche peculiari di questo insolito caso.

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