CLINICAL CASE

Left renal tumor and right adrenal tumor: laparoscopic approach in a single surgery


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Abstract Synchronous renal and adrenal tumors are an infrequent pathology and there are very few reported cases. Clear cell carcinoma is the most frequent renal tumor, representing 60% of all renal tumors. Adrenal myelolipomas are rare benign neoplasias that are considered hormonally inactive. They are composed of mature fatty tissue and hematopoietic tissues and, with the advent of new radiologic techniques, their incidence is 2%. The synchronous presentation of these two tumors has an incidence of 0.8%. We present herein the case of a patient with left clear cell renal cell carcinoma and right adrenal myelolipoma that was resolved laparoscopically in a single surgery. Left laparoscopic nephrectomy plus right laparoscopic adrenalectomy was performed. Total surgery duration was 420 min with an intraoperative blood loss of 1,300 ml; there were no intraoperative complications. The histopathologic report stated left clear cell renal cell carcinoma, pT3N0M0, Fuhrman 2, and right adrenal myelolipoma.

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Pre-transplantation laparoscopic bilateral nephrectomy: two cases

Introduction

Synchronous renal and adrenal tumors are an uncommon pathology and there are few reports on them in the literature. Up to 25% are diagnosed at the autopsy of patients with clear cell renal cell carcinoma and there is an incidence of 0.8% in the general population. ¹ ² Adrenal myelolipoma are rare benign neoplasias that are considered hormonally inactive and are composed of mature fatty tissue and hematopoietic tissues. The advent of new radiologic techniques has produced an incidence of 2%. ³ Clear cell carcinoma is the most frequent renal tumor at 60%. ⁴ Presented herein is the case of a patient presenting with left clear cell carcinoma with right adrenal myelolipoma that was surgically resolved through laparoscopy.

Case presentation

A 44-year-old man with a history of smoking and alcoholism had illness onset with gross hematuria and pain at the level of the left flank. The abdominopelvic CAT scan showed a lobulated tumor with a 7-cm diameter that was dependent on the lower pole of the left kidney, with some zones of invasion into the perinephric fat, but not affecting the Gerota’s fascia (fig. 1). In addition, there was a fat-containing tumor at the level of the right adrenal gland with a 6-cm diameter and a small calcification related to myelolipoma (fig. 2). Chest x-ray was normal and the preoperative cardiovascular evaluation did not contraindicate the surgical procedure. The patient was programmed for left laparoscopic nephrectomy plus right laparoscopic adrenalectomy.

Surgical technique

Under general anesthesia, the patient was placed in the lumbotomy position with the left side upwards. A 1 cm right pararectal incision was made and blunt dissection to the aponeurosis was performed. The parietal peritoneum was cut and the pararectal trocar was placed using the modified Hasson technique. The 10 mm pararectal trocar was used as the optical trocar and the pneumoperitoneum was insufflated. The 10 mm left subcostal trocar and the 5 mm work trocar in the left iliac fossa were placed under direct vision. Dissection of the fascia of Toldt was performed with LigaSure® until completing the mobilization of the descending colon and exposing Gerota’s capsule. The ureter was then dissected up to its middle third, where it was clamped, cut, and sealed with LigaSure®. The kidney was dissected at its surgical site until the renal hilum was exposed, identifying artery and veins and dissecting them separately. They were clipped with Hem-O-Lok® and cut. The renal specimen was bagged and placed in the pelvic cavity. The patient was re-positioned in the right lumbotomy position. The optical trocar was left in the same place and the 10 mm subcostal trocar was introduced at the right clavicular midline and the 5 mm trocar at the right iliac fossa under direct vision. Right dissection of the fascia of Toldt was performed and the Cattell maneuver was carried out, identifying the kidney unit and the adrenal tumor. The visceral peritoneum was cut at the limit between the upper pole of the kidney and the adrenal tumor. After the posterior muscle plane was exposed, and by moving in a lateral and superior direction, the external portion of the tumor was freed to facilitate its extraction. The adrenal gland was dissected in a medial direction, lifting it with the aspirator-irrigator. The small vessels coming out of the renal hilum

Figure 1 Renal tumor.
were cut with LigaSure® until the vena cava was exposed. The adrenal vein was dissected and clipped with Hem-O-Lok®, after which the tissue joining the gland and the subhepatic plane was dissected with LigaSure®. The tumor was dissected in its entirety. Surgicel® was placed at the surgical site and hemostasis was verified. The adrenal specimen was bagged and both surgical specimens were extracted through the Pfannenstiel incision and the procedure was considered finished. Surgery duration was 420 min, intraoperative blood loss was 1300 ml, requiring a transfusion of one red cell pack, and there were no intraoperative complications. The patient tolerated food on the second postoperative day and was released from the service on the third day.

Histopathologic report

The study reported a 310 g left kidney with a 6 cm tumor mass with bloody, whitish areas, identified as clear cell adenocarcinoma extending into the perinephric fat (pT3N0M0, Fuhrman grade 2) and a light brown 7 cm tumor on the right adrenal gland with areas of orange (fig. 3) that microscopically showed myeloid cell proliferation in a diffuse pattern, megakaryocytes with abundant fatty tissue and nuclei with no atypia that was consistent with adrenal myelolipoma.

Discussion

Synchronous renal and adrenal tumors are uncommon. It is reported that approximately 80 to 85% of the renal masses are due to clear cell renal cell carcinoma and the detection of synchronous adrenal masses together with renal cell carcinoma are considered metastatic rather than a primary tumor. Another perspective has been gained through the autopsy reports of patients with asymptomatic renal and adrenal tumors larger than 1 cm in which incidence is from 1.5 to 7% of the cases. The advances in imaging studies have made it possible to accurately and opportunistically diagnose these pathologies, and an increase in prevalence of this disease is expected to be seen within the coming years. Studies by A. Bahrami et al. found that the combination of clear cell carcinoma and synchronous adrenal myelolipoma is 0.1%, with adrenal cortical adenoma being the most frequent at 19%. CAT is regarded as the study with the greatest sensitivity for detecting tumors with fat density (-30 to -100 HU), generally showing a well-circumscribed tumor in its capsule that may or may not have calcifications with irregular or diffuse contours. In the majority of the reports, myelolipoma does not appear to have a preference for either sex. However, Han et al. reported a man/woman ratio of 2:3, a greater incidence in the 5th and 6th decades of life, and a 2.7 to 1 preference for the right side. There are various theories as to the origin of myelolipoma, such as embryonic remains of the bone marrow, bone marrow cell embolism, and metaplasia of the adrenal cortical cells that have recovered their hematopoietic potentiality. The most accepted theory is that it is due to metaplastic changes in the reticuloendothelial cells of the blood vessels, in response to stimuli that include necrosis, infection, and stress. Myelolipoma is usually asymptomatic, presenting with symptoms in the cases of large tumors or when there is retroperitoneal bleeding. Upon diagnosis, close to 25% of the patients that have clear cell renal cell carcinoma, already present with metastasis to the lung, liver, lymph nodes, bone, and in last place, the adrenal gland. In the case of our patient that presented with primary left renal and right adrenal tumors, the laparoscopic approach was decided upon because reports state that laparoscopic adrenalectomy is the criterion standard since the first procedure was performed in 1992 by Garner, considerably reducing hospital stay, postoperative pain, convalescence, and providing better cosmetic results. In the management of adrenal neoplasias, in accordance with international experience, the surgery is recommended for all lesions larger than 6 cm, given that 35% of those patients will have malignant neoplasias. Observation is recommended for patients with tumors smaller than 3.5 cm. Management is
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References

controversial for those patients with lesions from 3.5 to 6 cm, and radiology follow-up every six months is recommended.5,7 If adrenal myelolipoma is widely suspected and it is confirmed by biochemical and radiodiagnostic studies, other additional indications for its surgical treatment would be the presence of high blood pressure, which has been seen to involute after surgical resection, large tumors causing pain, or the possibility of spontaneous retroperitoneal bleeding in cases of large tumors.5 Clear cell renal cell tumors represent 3% of the tumors in adults. It is the third most frequent tumor after prostate cancer and bladder cancer and the clear cell tumor is the most frequent at 60%. The black race is the most affected and generally at above the age of 40 years. Smoking, obesity, end-stage chronic kidney failure, and hypertension are predisposing factors. It is postulated that they originate from the epithelial cell of the proximal convoluted tubule.4,8 Laparoscopic radical nephrectomy is also presently considered the criterion standard in tumors smaller than 10 cm up to stage T2b, having better results in relation to blood loss, cosmetics, hospital stay, and morbidity.8 Our patient underwent the pure laparoscopic approach with excellent results.

Conclusions
The laparoscopic approach for synchronous contralateral renal and adrenal tumors is a safe method that reduces hospital stay, surgery duration, intraoperative blood loss, and associated morbidity and mortality, compared with the open procedure for each of the pathologies, separately. It has the advantages of a minimally invasive surgery.

Figure 3 Renal and adrenal tumors.