Classic renal metastatic seminoma
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Abstract

Introduction: Seminoma comprises ~50% of testicular germ cell tumors. Renal metastases are infrequent and are usually diagnosed at necropsy.

Clinical case: A 24-year-old male with a history of left radical orchiectomy and adjuvant radiotherapy due to classic seminoma (stage I) showed elevated levels of β-human chorionic gonadotropin and lactate dehydrogenase during the 11-month follow-up. Computed tomography showed a 9 × 8 cm lobulated, heterogeneous tumor in the left kidney. Histopathological and immunohistochemical assay demonstrated a classical metastatic seminoma.

Conclusions: The majority of renal tumors represent a primary neoplasm; in patients with extra-renal tumors we must consider the possibility of metastatic disease.

Key words: classic seminoma, metastasis, renal.

Introduction

Testicular germ cell (GC) tumors represent the most frequent malignancy in males 15 to 34 years of age.1,2 Fifty percent of the cases of testicular GC tumors correspond to seminoma;3 93% of the cases are of a classic type and the rest are spermatocytic seminomas.4 Metastatic dissemination of the seminoma usually occurs through the lymphatic system to the retroperitoneal lymph nodes.5 The presence of renal metastasis of a testicular primary tumor is most often seen in autopsies of patients who succumb to the disease.6,7

Determining the origin of a tumor is vital in assessing the prognosis of the patients and to plan an appropriate treatment regimen. Diagnosis of metastasis of the GC tumor in an adult, with or without a history of a testicular tumor, can be a real challenge.8 We report a case of renal metastasis of testicular seminoma.

Clinical Case

A 24-year-old male presented with a history of left radical orchiectomy that was carried out in May 2009 due to a classic seminoma. According to the extension studies, it was categorized as stage I. Adjuvant treatment corresponded to 16 fractions of radiation therapy to 3600 cGy that ended in October 2009. During the monitoring period, neither tumor markers or extension studies showed any sign of tumor activity.

In April 2010, the patient complained of left flank pain radiating to the left lumbosacral region; however, urinary symptoms were denied. Physical exam showed Giordano on the left side. Laboratory tests reported the beta fraction of human chorionic gonadotropin (β-hCG) of 13.37 mIU/ml and lactate dehydrogenase (LDH) 615 IU/L.

Abdominopelvic computed tomography with oral and i.v. contrast (Figure 1) showed the left kidney with a 9 × 8 cm lobulated, heterogeneous tumor of 41 Hounsfield Units (HU) on average, which occasionally changed its usual position. There was no lymphadenopathy observed or alterations in the right kidney.

With the suspected diagnosis of a primary renal tumor, the patient underwent a left radical nephrectomy. During surgery we identified a whitish lesion of ~4 × 3 cm, originating in the left kidney and infiltrating the bowel loops.
However, due to the patient’s condition a resection was not performed.

The Department of Pathology received the left kidney with a weight of 980 g, which measured $14 \times 9 \times 8$ cm. The surface incision (Figure 2) showed a lobulated, heterogeneous tumor of $10 \times 8 \times 7$ cm, with yellowish-white solid areas and cystic-hemorrhagic areas of degeneration with involvement of the renal pelvis and capsule rupture. The adrenal gland did not demonstrate any alterations. Histological sections showed a nonencapsulated tumor invading the renal parenchyma (Figure 3) composed of groups of malignant cells bound by septa of connective tissue and lymphocytes (Figure 4). Neoplastic cells had abundant clear cytoplasm, well-defined cell membranes, round or oval nucleus and clear nucleolus, occasionally with atypical mitosis, as well as some syncytiotrophoblast giant cells (Figure 5).

We performed an immunohistochemical marker panel showing intense reactivity at a cytoplasmic level in the neoplastic cells for placental alkaline phosphatase (PLAP) and focally in the syncytiotrophoblast type cells for human chorionic gonadotrophin (hCG) as well as reactivity in the...
In necropsy studies we observed a frequency of 7 to 20% of renal metastases from different organs. In a review of 100 renal tumors, 19 cases were due to metastases and only one case corresponded to a primary testicular tumor. Seminoma metastases have been reported in retro- and intraperitoneal organs; visceral metastases are more common to the lungs, liver and brain. It is considered that 10–20% of patients with stage I seminoma have an occult abdominal condition. Recurrence of the disease was observed between 12 and 41 months after orchiectomy.

Dissemination of seminoma is developed from the lymph nodes that follow the path of the spermatic vein and drain into the retroperitoneal nodes located between the lower thoracic and lumbar vertebrae. Review of histological material from orchiectomy showed the presence of a classic seminoma with extensive vascular permeation, both lymphatic and blood. In the case of our patient, it was probably a hematogenous route from the left spermatic vein that drains into the ipsilateral renal vein, being the route of dissemination to the renal parenchyma.

Follow-up of patients with testicular malignancies requires careful monitoring by measuring tumor markers such as α-fetoprotein, LDH and β-hCG. An increase of β-hCG may precede the clinical and radiological changes, generally considered to reflect a recurrence of the disease. An elevation is all that is needed to establish a chemotherapeutic regime. β-hCG is detected in a serum form in non-seminomatous tumors and in up to 49% of the patients with seminoma. Elevation of this hormone is explained by the presence of giant syncytiotrophoblast cells, as happened in this case.

Metastatic renal disease generally manifests as multiple, bilateral tumors that are usually poorly defined. However, in most of the cases, radiological characteristics do not permit the difference of a metastatic from a renal cell carcinoma (RCC). Evidence suggests that in patients with extra-renal malignancy without evidence of disease elsewhere in the body, a kidney tumor is with great certainty an RCC; nevertheless, in patients with extra-renal malignancy and with extra-renal metastases, renal tumor should not be assumed as a metastasis.

One of the indications to conduct a percutaneous renal biopsy is the presence of a solitary tumor and a history of prior malignant neoplasm. Percutaneous biopsy permits us to differentiate between a surgically resectable RCC and a metastases; however, if a tumor shows signs of malignancy, a surgical resection can be performed without a preoperative biopsy. In our patient, computed tomography of the abdomen showed a single tumor that replaced the renal parenchyma. Due to its characteristics it was considered, as...
a primary diagnosis, a primary neoplasm and we opted for surgical resection.

In typical cases, diagnosis of metastatic seminoma can be established only on the basis of morphological characteristics. In our case, macroscopic characteristics that include a single, heterogeneous and yellowish-white tumor simulated a conventional renal carcinoma. However, the histopathological characteristics observed allowed us to make a definitive diagnosis that was corroborated with immunohistochemical reactions.

The tumor-node-metastasis (TNM) staging system of the American Joint Committee on Cancer (AJCC) allows staging of the disease as follows: stage I—according to T stage and the tumor marker levels; stage II—according to the volume retroperitoneal lymph nodes affected; and stage III—according to the degree of metastatic involvement and tumor marker levels. Treatment of patients with seminoma is radical orchiectomy; radiation therapy is indicated in patients with early stages (IIB or lower), whereas in advanced stages (high to IIB) the indication is cytotoxic chemotherapy. Many patients with seminoma can be cured with radiotherapy and chemotherapy, even in cases with distant metastases. The gold standard treatment for metastatic testicular germ cell tumors is represented by bleomycin-etoposide-cisplatin.

The prognosis of testicular germ cell tumors has notably improved and must be considered as curable malignant neoplasms. In early stages, healing rates after surgery, chemotherapy and radiotherapy are close to 100% and even in advanced stages they are obtained in between 85% and 90% of the cases. Although great strides have been made in the treatment of this tumor, clinical conditions and extent of metastatic disease, coupled with factors such as ignorance, neglect or fear, carry a poor prognosis. Currently, we are unaware of the patient’s condition due to his status as “lost to follow-up.”

In conclusion, in patients with seminoma we should provide consistent care as indicated by treatment guidelines and explain the importance that this entails in its evolution. Seminoma, as other cancers, may have increased numbers of β-hCG. Most renal tumors represent primary neoplasms. In patients with a history of an extra-renal tumor, we must consider the possibility of a metastasis.

References