CLINICAL CASE

Testicular yolk sac tumor with metastasis to the pleura: first case reported in the literature


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Abstract  Testicular cancer is the most common malignant urologic tumor in young men. More than 90% are germ cell tumors. The aim of this study was to report the first case of germ cell tumor testicular cancer with metastasis to the pleura.

A 21-year-old man had disease onset with pain in the right hemithorax. The chest x-ray showed radio-opacity in the middle lobe of the right lung. A chest tomography scan detected an intrathoracic and extrapulmonary mass. Ultrasound-guided thoracic biopsy revealed a solid mass attached to the thoracic wall, displaced over the pleura, known as the “comet tail effect”. The biopsy was positive for a poorly differentiated malignant neoplastic lesion of the pleura. Upon physical examination we encountered a right testis with a tumor at the lower pole; this was corroborated through ultrasound. In relation to tumor markers, only alpha-fetoprotein was elevated at 295.87 ng/dl and lactate dehydrogenase at 2380 i U/l. An abdominal tomography scan identified interaortocaval lymph node activity. We performed a right radical orchiectomy and the pathology report was testicular yolk sac tumor, pT1N2M1S2.

In our patient, metastasis at the level of the pleura was confirmed, making this a case with an exceptional form of spread.

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Palabras claves  Tumor testicular de saco vitelino con metástasis a pleura: primer caso reportado en la literatura

Resumen  El cáncer testicular es el tumor urológico maligno más común en hombres jóvenes. Más del 90% corresponden a tumores de células germinales. El objetivo del estudio es el...
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Introduction

Testicular cancer is relatively rare and makes up 1% of the cases of cancer in men. These tumors are the most common solid tumors in males between 15 and 34 years of age and represent 1.2% of the neoplasias in Mexico.1-3 Testicular cancer is the most common malignant urologic tumor in young men. More than 90% correspond to germ cell tumors (GCT) that are divided into seminomatous and nonseminomatous tumors, corresponding to the histologic subtypes of embryonal carcinoma, yolk-sac tumor, teratoma, and choriocarcinoma.

Primary yolk-sac testicular tumors are not common and can present in pure form or be a component of mixed GCTs. Pure yolk-sac tumors in adults are rare and are more likely to be found as a component of mixed GCTs.2 Metastases in GCTs are common. Approximately 10% of the patients present with metastatic symptoms, such as back pain, neck tumors, and dyspnea as initial symptoms.4 The majority of the GCTs metastasize to the lymph nodes in a characteristic pattern, although choriocarcinoma preferentially spreads via the blood.5

Retroperitoneal lymph nodes, particularly the para-aortic lymph nodes on the left side, and interaortocaval lymph nodes on the right side, are the primary and most common metastasis sites in the GCTs.5,6

Case presentation

A 21-year-old man with an unremarkable past history had the onset of stabbing pain in the right hemithorax 3 weeks prior that was predominantly nocturnal and increasing in intensity. Physical examination revealed no pleuropulmonary syndrome.

The chest x-ray showed a mid-lobe lesion in the right lung (fig. 1).

A chest tomography scan that was done the same day as the evaluation revealed a right mass with obtuse edges and a clear separation interface with the pleura (which was not thickened and had no effusion) and a completely normal lung (fig. 2). There was no atelectasis, no nodules, or interstitial patterns. The mediastinum was normal. A neoproliferative process could not be ruled out.

The chest ultrasound performed for the lung biopsy showed a solid, hypoechoic mass attached to the thoracic wall with clear displacement over the pleura known as the “comet tail effect”. Mode B displayed the displacement (fig. 3).

Percutaneous biopsy of the thoracic tumor was carried out with the anterior approach with a 16 G needle, obtaining semisolid pasta-like material, probably necrotic, that did not shape into cores.

The biopsy report stated tissue with a small-blue-round-cell tumor, associated with extensive tumor-type, and

Figure 1 Tumor in the mid-lobe of the right lung.
cytologic necrosis of an intrathoracic mass with cell detritus. A second review of the biopsy was positive for a poorly differentiated malignant neoplastic lesion.

At the time we evaluated the testicular tumor finding, physical examination revealed a right hypotrophic testis with a stony, approximately 1 cm tumor at the lower pole, a spermatic cord with no alterations, and a left testis with a normal shape, size, and consistency.

Upon admission, the patient had the following tumor marker values: alpha-fetoprotein 295.87 ng/ml, human chorionic gonadotropin 0, and lactate dehydrogenase 2,380 IU/ml.

The postoperative tumor markers (on the 8th day after surgery) were: alpha-fetoprotein 87.91 ng/ml, human chorionic gonadotropin 0, and lactate dehydrogenase 2,468 IU/ml.

Testicular ultrasound reported a heterogeneous, poorly-defined tumor with calcifications located in the lower pole.

Based on the clinical, ultrasound, and tumor marker findings, right radical orchiectomy was performed. We ordered an abdominal tomography scan, which reported conglomerated retroperitoneal (interaortocaval) lymph node activity. The pathology study reported a yolk-sac tumor (1.5 cm) with a fibrous component, chronic inflammation with calcifications, and no lymphovascular invasion. The patient was diagnosed with germ cell testicular tumor, T1N2M1S2, clinical stage IIIB with metastasis to the pleura, and oncologic treatment was begun based on chemotherapy with cisplatin and etoposide.

Discussion

The majority of the GCTs present a predictable metastatic dissemination pattern, contributing to their high treatment success. The most common dissemination pattern is via the lymph nodes, from the primary tumor to the lymph nodes in the retroperitoneum and to subsequent distant sites, with the exception of choriocarcinoma that spreads via the bloodstream.

Yolk-sac tumor metastases typically occur in the lungs and retroperitoneal lymph nodes. Our patient was diagnosed with pure yolk-sac nonseminomatous testicular cancer that presented with respiratory symptoms. During the diagnostic approach we detected a tumor, through radiologic studies, in the right hemithorax that apparently affected the pulmonary parenchyma. During the ultrasound-guided biopsy, we observed radiologic signs of disease involvement only in the pleura with the “comet tail effect” and involvement at the level of the pulmonary parenchyma was ruled out through tomography.

Radiologic techniques play a crucial role in the initial staging and the subsequent follow-up of patients with testicular cancer. The detection of pulmonary metastases (nodular or pulmonary) is essential for patient re-evaluation.

Intrathoracic metastases for the nonseminomatous GCTs vary in 20% of patients with a range of 17.0-25.17%. There appears to be a significant difference in the dissemination behavior of metastases between seminomas and nonseminomatous GCTs at the pulmonary level, with the latter being more frequent and more variable.

We carried out an online search of the literature using the PubMed database with the terms “testicular tumor”, germ cell tumors”, testicular tumor metastasis”, yolk-sac tumor”, “pleural testicular cancer” and found no case reports of GCT with metastasis to the pleura.

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Conflict of interest

The authors declare that there was no conflict of interest.

References

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