Primary intra-abdominal synovial sarcoma
A case report

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The authors report a case of intra-abdominal synovial-sarcoma of the gastrocolic ligament in a 64-years-old woman hospitalized for a palpable abdominal mass and pain. CT scan detected an intra-abdominal mass extended through the abdominal wall into the soft tissues, causing compression and dislocation of intra-abdominal structures (left liver, gallbladder, pylorus and gastric antrum, duodenal bulb). At its back, it was in contact with the pancreas, the vena cava and the right kidney. Biopsy revealed that the mass was an intra-abdominal synovial-sarcoma. Patient received preoperative chemotherapy. After three chemotherapy cycles the patient was admitted to hospital for anemia. CT-scan revealed mass necrosis and bleeding. After red blood cells transfusions, the patient underwent surgery and the mass was resected. Histopathological study confirmed the diagnosis of biphasic Synovial-Sarcoma. SYT-SSX1/2 fusion molecular assessment was attempted, but it was not possible to evaluate the presence of the t (X, 18) (p11.2; q11.2) traslocation. The patient was discharged in good health and received adjuvant chemotherapy. CT-scan after 18 months showed pulmonary and intra-abdominal relapse of the disease.

KEY WORDS: Gastrocolic ligament, Intra-Abdominal synovial-sarcoma.

Introduction

Synovial-Sarcoma (SS) is the fourth most common type of soft-tissue sarcoma after malignant fibrous histiocytoma, liposarcoma and rhabdomyosarcoma. In 85-95% of cases SS occurs in the extremities, but rarely within the large joints. Only 5-15% of SS affect the head and the neck, the mediastinum, the abdominal wall and the retroperitoneum. Intraperitoneal localization of SS is extremely rare.

Cases have been reported localized in small intestinal mesentery, ascending mesocolon, gastrocolic ligament, upper digestive tract, liver and pelvis. SS had been found also in parotid, thyroid, breast, lung, pleural cavity, kidney, prostate, ovary, vulva, inguinal region, skin, blood vessels and nerves.

Case report

The patient, a 64 years old woman, was admitted for a palpable abdominal mass. Computed tomography detect-
ed a bulky expansive lesion in the epimesogastric region with patchy contrast enhancement and colliquative areas in the context. The lesion measured cm 12 x 13.6 x 13.2. It was mainly localized intra-abdominally, but there was also abdominal wall infiltration with spreading in the subcutaneous fat. It compressed and displaced the adjacent peritoneal-visceral structures, such as lower medial liver margin, gall-bladder, pylorus, gastric antrum, duodenal bulb without a sure cleavage planes. At its back it was in contact with the pancreatic body, inferior vena cava and anterior margin of kidney.

A trans-cutaneous ultrasound-guided mass biopsy allowed the diagnosis of neoplasia with mixed epithelial and stromal phenotype and high proliferative activity (40%). Immunohistochemical examination showed that the lesion was positive for Vimentin, EMA and BCL2 and negative for Actin, Desmin, S100 and CD 34. The epithelial component was positive for CK AE1-AE3, CAM 5.2 and EMA. The morphological and immunophenotypical characteristics were consistent with the diagnosis of synovial sarcoma.

Patient was given epirubicin (60 mg/sm2) and ifosfamide (3000 mg/mq in continuous intravenously infusion on day 1-3 of a 3-week cycle); 3 cycles were performed, then a control CT scan was performed. Radiological examination detected increased dimension of the mass (diameter cm 20 x 15 x 14), because of enlarged colliquative areas, due to chemotherapy. Since patient was in better conditions, two chemotherapy cycles were planned in addiction. After completing the fourth chemotherapy cycle, patient was admitted into the Oncologic Departement for severe anemia and hyperpirexia. Abdominal CT scan pointed out large fluid areas within the mass; it was not possible to distinguish between blood and necrosis. There was no active bleeding evidence, consequently embolization was not indicated.

During the hospitalization blood was transfused and patient hemoglobin level re-established, then patient underwent surgery. The mass appeared bilobed, with its upper part unit extended into the rectal abdominal muscles whereas the greater lower part developed intra-abdominally, invading the omentum. It was in close contact with the greater curvature of stomach and the transverse colon. The right gastroepiploic vessels constituted the major vascular pedicles of the mass. The whole mass of 18 x 13 cm was removed, and the lymph-nodes of the right gastroepiploic vessels were excised too. The postoperative course was regular. The patient was discharged after a week.

Pathologic and immuno-histochemical study

The gross examination showed malignant mesenchymal neoplasm consisting of two different cellular types. The first type was represented by spindle cells that in some areas assumed a polymorph aspect with atypia and mitosis; the second type consisted of epithelioid cells organized in structured solid beads or glands or tubules, containing eosinophilic amorphous material with rare mitosis. In the periphery of the tumor there were cystic areas separated by fibrous septa. Consequently the diagnosis of synovial sarcoma was confirmed. All lymph nodes were free of metastasis. Molecular assessment for translocation SYT-SSX1/2 was performed at the Institute of Pathology. As a matter of fact, synovial sarcoma is characterized by a specific chromosomal translocation t (X; 18) (p11.2; q11.2), found in more than 90% of patients. The N-terminal region of SSX is replaced by the C-terminal domain of SYT, which appears to be involved in the DNA transcription.
In our case, sections were cut from 20 μM of the block FFPE by microtome and placed in a sterile tube. In order to obtain dewaxing, 1 ml of XYLENE was added to the sample, it was then vortexed and centrifuged at 13000 rpm for 5 minutes and then the xylene removed. Two consecutive washes in 1 ml of ETOH to 100% were performed by centrifuging at 13000 rpm for 5 minutes. The fabric was dried at 37 °C for 10 minutes in order to eliminate the excess ethanol. The total RNA was extracted using RNeasy Mini Kit (QIAGEN) and quantized to biophotometer Eppendorf. The c-DNA was obtained by RT-PCR using the kit High-Capacity cDNA Reverce Transcription Kit (Applied Biosystems). Unfortunately, the small amount of extracted RNA did not allow to determine the actual expression of the fusion product. This can probably be ascribed to the excessive fragmentation of RNA, caused by previous tissue fixation in formalin. Therefore, it was not possible to evaluate the actual presence of the chromosomal translocation t (X; 18) (p11.2; q11.2).

Follow-up

After surgery, the patient received additional cycles of adjuvant chemotherapy. CT-scan performed 12 months after surgery found no disease relapse. CT-scan after 18 months showed evidence of bilateral pulmonary metastatic lesions and an intra-abdominal, heterogeneously hypo dense, mass, measuring 37 x 43 x 54 mm. That mass was localized in the right-upper abdominal quadrant, just below the head of pancreas with a high suspicion of pancreatic infiltration. The head of the pancreas was displaced, as the same splenoportal axis too, and the mass compressed the inferior vena cava and the renal vein, without a clear adipose cleavage plane. A hypodense focal lesion, with irregular margins and maximum transverse diameter of about 3.4 cm, was seen at the VII hepatic segment; the evidence was consisting with a metastatic localization.

In the left paraaortic space, there was a nodular, hypodense and colliquative mass of 23 x 25 x 38 mm. This was explained as a lymph node in close contact with aorta and psoas muscle, with evidence of local infiltration.

Discussion

Synovial sarcoma may occur in two main variants: monophasic and biphasic. The lesions are composed of spindle cells arranged in fascicles, sometimes with wored or hemangiopericytoma-like pattern. Biphasic lesions contain glandular elements embedded in the spindle cell background. The clusters of epithelioid cells are outlined by a reticulin stain emphasizing the biphasic nature of the tumor. The presence of stromal mast cells in the

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stroma may represent a valuable diagnostic clue since the focal mixoid change is frequently seen, but the presence of predominantly myxoid stroma is rare. The cystic synovial sarcoma is also a rare finding. Poorly differentiated forms or tumours with rhabdoid features have been described. The differential diagnosis of intra-abdominal synovial sarcoma includes other biphasic neoplasms (carcinosarcoma, malignant mesothelioma) or monophasic ones (malignant peripheral nerve sheath tumor, fibrosarcoma, hemangiopericytoma, leiomyosarcoma, gastrointestinal stromal tumor or small round cell tumors like Ewing sarcoma). Immunohistochemistry and especially the reactivity for EMA, Cytokeratin AE1/AE3, E-Cadherin and Vimentin, in combination with CD34 negativity, are the most useful and sensitive markers in diagnosing the Synovial-Sarcoma along with the expression of bcl2, Ki67 and Cyclin1. It has been suggested that even focal positivity for EMA enables the diagnosis but TLE1 had been found more sensitive than EMA in the diagnosis of Synovial-Sarcoma. The available immunohistochemical markers including Bcl2, Epithelial Membrane Antigen and Cytokeratins. When available, the presence of a SYT-SSX1 or SYT-SSX2 fusion transcript resulting from a chromosome translocation t(X;18) (p11.2;q11.2) is a specific finding. Apart from its diagnostic value, the presence of this translocation fusion type has proved to be the single most significant prognostic factor in a multivariate analysis in SS patients. However, a European retrospective analysis found that the most important factor in determining the prognosis of the patient is the histological grade rather than the SYT-SSX fusion type.

Patient's age, tumor location, differentiation grade, mitotic activity, neurovascular invasion and SYT-SSX fusion type have variably proved to be independent predictors of survival. Synovial sarcoma has a propensity to local recurrence, particularly when excised without a margin of macroscopically normal tissue.

Surgery is the mainstay treatment. Chemotherapy and radiation therapy should be considered as alternative treatment options or may be utilized in case of relapse. Currently, new therapies targeting DNA or protein are under investigation. The vaccine of SYT-SSX junction peptide has been tested in a pilot study. Recent studies have shown that retinoic acid and its derivatives could induce the differentiation of SS cell lines and inhibit cell growth both in vitro and in vivo. However, the therapeutic efficacy is still under evaluation.

Conclusions

Synovial Sarcomas are aggressive tumours. Up to 50% of Synovial Sarcomas recur locally within 2 years. Metastases occur mainly in the lungs and less commonly in the lymph nodes and in the bones. All patients with primary retroperitoneal synovial sarcoma died in 7-24 months, with local recurrence or extension, but without metastases outside the abdomen.

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