

A Rare Ovarian Tumor: Primitive Leiomyosarcoma of the Ovary

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Abstract

The primitive leiomyosarcoma of the ovary is rare and represents less than 1% of malignant tumors. It has a poor prognosis and frequently occurs during the postmenopausal period. We report two cases of this tumor in order to determine their epidemiological, histopathological, and evolutive aspects.

Material and methods: *The study material was consisted of ovariectomies fixed in 10% formalin. The sampled ovaries were subjected to usual techniques of inclusion in paraffin wax. These routine techniques were completed by immunohistochemistry assay using smooth muscle anti-actin, anti-desmin, anti-vimentin, and mitotic proliferation index (Ki-67).*

Results: *Histological examination has shown a proliferation of fusiform cells, which were more or less fascicled in both cases. Tumor cells had a poorly-limited eosinophilic cytoplasm containing an elongated or an oval nucleus presenting an hyperchromatic or a vesicular feature. The nuclei were nucleolated. The anisocaryose was intense with more than 20 mitoses for 10 HPF. The positivity of anti-smooth muscle actin, anti-desmin, and anti-vimentin confirmed the diagnostic of leiomyosarcoma.*

Conclusion: *The ovarian leiomyosarcoma is a rare with a poor prognosis.*

Keywords: Ovary, Leiomyosarcoma, Immunohistochemistry.

Introduction

The leiomyosarcoma of the ovary (LMSO) is an extremely rare and represents less than 1% of malignant tumors. This tumor usually occurs in patients during the postmenopausal time [1-4]. Indeed, 60 cases were reported in the literature since the discovery of this disease. Among these cases, Mong found the largest number of LMSO (21 cases) in 1993 [1,5]. In 2010, Ozene et al. reported 63 cases of LMSO of which 63.5% were not consisted of heterologous elements [5]. Because of the rarity of this tumor, we report two cases at the Department of Anatomic Pathology from the Treichville Teaching Hospital Abidjan and the International Polyclinic Sainte Anne Marie in Abidjan to evaluate epidemiological, clinical, histopathological, immunohistochemical, and prognostic features of the LMSO.

Observations

Case 1 : A 37 year old parous patient, with no medical background, consulted for intensive abdominal pain and asthenia. The physical examination revealed a poor general condition, a normal high

blood pressure (110/70 mmHg), a normal temperature (37.5°C), and a moderately stained conjunctiva. In addition, the abdominal exam revealed a large mass located around the umbilicus and the right hypochondrium associated with diffuse and irradiating pain to the pelvis. The exam of other organs were normal. CEA (0.4 ng/ml) and CA19-9 (0.0 UI/ml) were normal, while CA 125 (49.2 IU/ml) was high. The complete blood test has showed a normochromic normocytic anemia with 10.4 g/dl of hemoglobin rate. Computed tomography scan has objectified a heterogeneous, a multi-partitioned, and an expansive process located at the right ovary crossing the median line (Figure 1), and thus leading to a ureterohydronephrosis and an ascites at the right parietocolic gutter. There was no secondary location. The patient underwent a right oophorectomy. The sampled ovary was fixed in 10% formalin and sent to anatomic pathology laboratory. This surgical treatment was followed by 6-cure chemotherapy. Macroscopically, examination, the ovary measured 23 cm × 17 cm presenting an irregular surface. After section, it had polychromic aspect (grey and white) coloration in association with the presence of necrotico-hemorrhagic and cystic changes (Figure 2). Histologically, the tumor was characterized by a marked cellular proliferation of fusiform cells which were

more or less fascicled. Tumor cells showed a poorly eosinophilic cytoplasm containing not only an elongated or an oval nucleus but also a hyperchromatic or a vesicular nucleus. Some nuclei exhibited nucleolus (Figure 3). The anisocaryose was obvious with more than 80 mitoses for 10 high-powered fields (HPF). Moreover, the giant cells and extensive necrotico-hemorrhagic changes were observed. The fibrous stroma was hemangiopericytoma-like vessels. As a result, the diagnosis of leiomyosarcoma was evocated and confirmed by immunohistochemistry which was performed at the service of anatomic pathology of the Saint Louis Hospital in Paris (France). Immunohistochemically, we observed a strong membranous and cytoplasmic staining of anti-smooth muscle actin (Figure 4) and anti-desmin (Figure 5) showing more than 95% of tumor cell positivity, while moderate anti-vimentin staining was found. The positivity of these tumor markers confirm smooth muscle malignant tumor (leiomyosarcoma).

The tumor proliferation index, Ki-67, was 40% (Figure 6). Tumor cells did not express PS 100, CD 10, AE1/AE3, pancytokeratin, anti-CD34 antibody, and anti-CD 117 antibody. Taken together, we concluded to well-differentiated leiomyosarcoma grade II of the FNCLCC. The patient died 6 months later after the diagnosis.

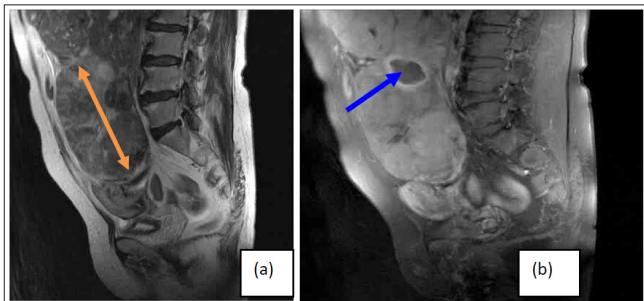


Figure 1: (a) - Computed tomography (CT) scan shows a huge heterogeneous pelvic mass (orange arrow). (b) - CT scan with injection shows cystic and necrotico-hemorrhagic changes (blue arrow).

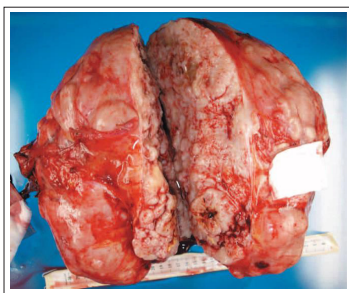


Figure 2: Fleshy tumoral mass presenting an irregular surface and cystic and necrotico-hemorrhagic changes.

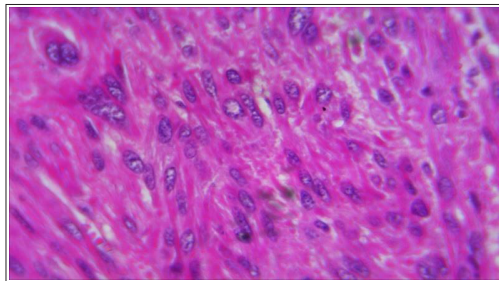


Figure 3: Tumor proliferation of fusiform cells associated with abnormal cytonuclear patterns (HES X 400).

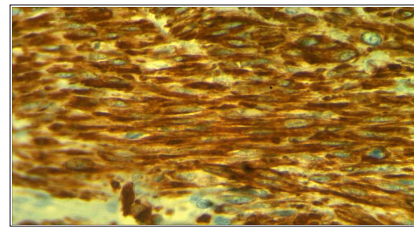


Figure 4: Intense membranous and cytoplasmic immunostaining of tumor cells with anti-desmin (x 400).

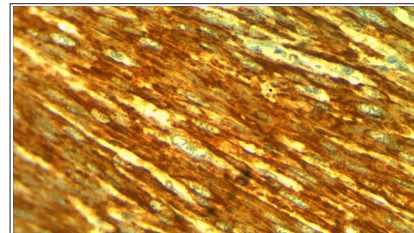


Figure 5: Marked membranous and cytoplasmic immunostaining tumor cells with anti-smooth muscle actin (x400).

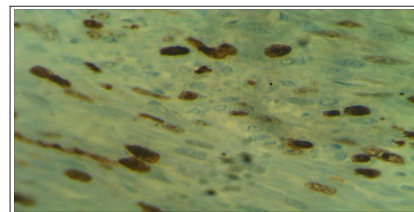


Figure 6: Nuclear immunostaining of Ki-67 value is 40% (x400).

Case 2 : A 47-year patient, with no medical history, was admitted to surgical emergency service for diffuse abdominal pain associated. The biological analysis revealed hypochromic microcytic anemia (9.58 g/dl).

Ultrasound highlighted a heterogeneous and a voluminous mass located at the right iliac fossa. Ovariectomy was performed and the ovary was fixed in 10% formalin for anatomo-pathological examination. At macroscopic level, the tumor measured 38cm x 17cm x 15 cm displaying an irregular surface (Figure 7). The ovarian section presented polychromic fleshy feature and necrotico-hemorrhagic changes. At histological level, the lesion had the same feature as the case 1, consisting of proliferation of fusiform cells in fascicled manner (Figure 8). The anisocaryose was evident with more than 20 mitoses for 10 HPF in association with extensive necrotico-hemorrhagic changes. The immunohistochemistry (IHC) analysis was carried out at the CERBA Laboratory and showed the same profile as the case 1, and thus, confirming the classical diagnosis of differentiated leiomyosarcoma of grade II of FNCLCC system. The post-operative conditions were unfavourable due to the death of the patient 1 month later after surgery.



Figure 7: Large tumour ovarian displaying an irregular surface with necrotico-hemorrhagic changes.

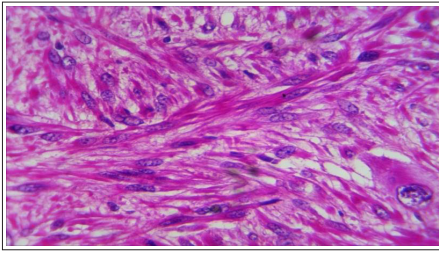


Figure 8: Tumoral proliferation of fusiform cells in fascicled manner. Cytonuclear abnormalities with hyperchromatic or vesicular nuclei and nucleoli (HES x 400).

Discussion

Primitive sarcoma of the ovary are rare, representing less than 2% of malignant tumors. The LMSO are exceptional (1% of ovarian sarcomas). In fact, 60 cases have been reported in the literature. The primary smooth muscle tumors of the ovary are very rare compared to those of the uterus [7]. They generally occur in postmenopausal women with an exceptional case at 37 years old [1-3, 6]. The average age of this tumor onset is 55 years. 10% of patients have less than 30 years [5, 7].

The LMSO is often unilateral, while its bilateral localization is exceptional. [2,6]. The most common primitive ovarian sarcomas are fibrosarcoma, endometrioid sarcoma, fibrosarcoma and Carcinosarcoma [2,5,6]. In 25% of cases, the leiomyosarcoma is associated with a mature cystic teratoma, a fibroma, a mucinous cystadenoma, and a serous carcinoma [5]. The histogenesis of the primitive LMSO is controversial. Various theories are discussed. Some authors think that LMSO would be a malignant transformation of an ovarian fibroma; however, other authors believe that it might derive from the smooth muscle of blood vessels, cortical stroma around the follicles, the yellow body, and the ovarian ligament [2,5,6,8]. Estrogen and progesterone could be involved in the development of smooth muscle tumors of ovary [9]. Clinically, LMSO is characterized by an abdominal pain and a tumoral mass. Biologically, Özen and Baker reported elevated value of CA 125 (139 IU/ml) and normal levels of CA19-9, CA15-3 and AFP which were similar as those of the patient 1 [5,10]. Mashiro et al. [11] found normal values of CEA, CA19-9, CA125, CA72-4, and LDH. Radiologically, abdominopelvic computed tomography scan highlighted a heterogeneous mass [5]. At the macroscopic level, the tumors were usually large and presented irregular outer surface. The section of the sampled ovary showed a solid appearance associated with cystic and hemorrhagic changes and calcifications [2, 6, 7].

At histological level, tumor architecture was fascicled, dense, and made up of fusiform, giant, bizarre, and anaplastic cells.

The nuclei of tumor cells were large, pleomorphic associated with a severe hyperchromatism and more than 10 mitoses for 10 HPF. The stroma was either fibrous or myxoid. Necrotic-hemorrhagic regions were present [2, 5-7]. Lerwill and al. recorded 24 conventional leiomyosarcoma cases and 2 myxoid leiomyosarcoma cases, while Abdelmadjid et al. and Bouie et al. found 1 case of epithelioid leiomyosarcoma [1, 12, 13].

At IHC level, tumor cells expressed anti-smooth muscle actin, anti-desmin, anti-vimentin, anti-caldesmon, and anti-calponin [1-5, 6, 8, 9,13]. The tumor is also positive for estrogen, progesterone,

p53, bcl-2 in some cases [3,14]. Tumor cells of LMSO showed a focal positivity (15-25%) for anti-CD10, MNF116, and CKAE1/AE3 antibodies from [1,5,15].

Ozen, Saimet, and Bouie found a Ki-67 value at 20%, 30%, and 50%, respectively [1, 5]. Additionally, there is no established standard therapy for this disease, but the surgery is highly recommended [1-3,5]. Chemotherapy and radiation therapy have been used as adjuvant treatment; however, they do not provide any additional benefits for patients [2,6, 8].

The prognosis of the LMSO is usually unfavorable. Several IHC markers (Ki-67, P53, bcl2, MMP 1and MMP2) have studied for prognostic purpose [5: 15]. The majority of patients died as a result of local tumor recurrence and metastasis [13, 15].

Conclusion

The LMSO is an extremely rare tumor occurring in postmenopausal period and characterized by a large pelvic tumoral mass associated with diffuse pain. Abdomino-pelvic computed tomography scan is crucial for morphological exploration of this malignant tumor. Histological analysis help to evoke the diagnostic of LMSO which has been confirmed by IHC. Treatment of LMSO is primarily surgical with an unfavourable prognosis.

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