

**A RETROSPECTIVE CASE SERIES OF SYNOVIAL SARCOMA OF THE
EXTREMITIES AND LITERATURE REVIEW**

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ABSTRACT

The synovial sarcoma is a rare tumor of bad prognosis. It accounts for 5 to 10% of soft tissue sarcomas. Histology, immunohistochemistry and molecular biology are indispensable for the diagnostic.

Surgery is the primary treatment modality while radiotherapy and chemotherapy allow greater local control.

The evolution is marked by the occurrence of local recurrence and pulmonary metastases especially.

We report our study of 20 cases Synovial, collected between 2010 and 2017.

The objective of our work is to show the great variety of diagnostic, therapeutic and prognostic elements within a rare pathology and often poorly considered from a nosological level. The long-term follow-up has not been clarified because most patients are lost to view as well as the problem of accessibility to care, cause of a late diagnosis and therefore an unfavorable prognosis. It requires multidisciplinary coordination and new therapeutic approaches pave the way for better prospects.

KEYWORDS: Synovial sarcomas, soft tissue, biopsy, surgery, chemotherapy, radiotherapy.

INTRODUCTION

The synoviosarcoma is currently defined as a primary mesenchymal malignant tumor reproducing more or less faithfully the histological characteristics of the synovial tissue, it represents approximately 8% of all soft tissue sarcomas.^[1] The mainly para-articular localization of this neoplasm and the histological similarities with synovial tissue suggested that the synoviosarcoma originated from the synovial membrane.^[2] This explains why the name of synoviosarcoma has been wrongly given to this tumor. It is actually not derived from synovial tissue but made up of dedifferentiated mesenchymal cells. Recent advances in imaging, structural studies and immunohistochemistry techniques offer a new view of these tumors and open the field for better management. The treatment is surgical combined with chemotherapy and / or radiotherapy. The initial treatment is fundamental because it conditions the patient's quality of life, and his overall survival. Therapeutic planning must be taken within a multidisciplinary team. In our work, we report 20 cases of synoviosarcoma of the limbs collected in the Traumatology and Orthopedics

department at the Ibn Sina hospital in Rabat, Morocco. In the light of the literature, we try to show the epidemiological, clinical, paraclinical, therapeutic and prognostic aspects of these tumors.

METHODS

This is a descriptive retrospective study, spread over 08 years, from 2010 to 2017, with the aim of analyzing the epidemiology of these tumors, their clinical and paraclinical characteristics, as well as the therapeutic modalities. The analysis of the data collected and the results of the study was carried out by producing an operating sheet comprising essentially the following parameters: age, sex, symptoms, location, consultation time, radiology results, treatment and evolution.

RESULTS

Over a period of 2010 to 2017, we collected 20 patients carriers of synoviosarcoma of the limbs (3 cases per year).

Aged between 20 and 70 years with an average of 45 years old, with 11 men for 9 women.

The most common location was the thigh, followed by the forearm, knee and then arm.

Clinically, the patients in our series consulted after an average of 15 months, on the occasion of the apparition of a tumor, which is the major initial symptom revealing the disease and present in all patients. Pain, on the other hand, is found in 8 patients, i.e 40% of cases. The other signs were, weight loss (2 cases), Limping (1 case).

X-Ray was performed in all patients but with poor and non-specific contribution. It showed soft tissue opacity in 80% of patients, calcifications within these opacities in 50% of cases and osteolysis in 22%.

6 cases received an ultrasound, but in no case the diagnosis of synovial sarcoma was suggested.

Computed tomography (CT) was performed in 8 patients and Magnetic Resonance Imaging, despite its advantages in the diagnosis, was performed only in 3 patients.

Pathology

The biopsy confirmed the diagnosis of synovial sarcoma in all cases. 2 types of tumors were found: Biphasic synovial sarcoma (70%), Monophasic synovial sarcoma found in 30%.

Further immunohistochemistry was performed in 16 patients with positive expression of cytokeratin and epithelial membrane antigen (EMA).

Treatment

Conservative treatment was indicated in 60% of cases. Wide excision was performed in 2 cases (10%) of which one was reoperated for further excision 6 weeks after the initial resection. Radical excision removing the adjacent structures to the tumor (muscle, bone, fascia) was performed in 10% of cases. While marginal excision was not performed for any patient.

Amputation was performed in 30% of cases.

Two patients were not operated. One presented with pulmonary metastases and another refused amputation.

All of our patients were referred for additional chemotherapy and/or radiotherapy, but some were lost to follow-up. Chemotherapy has been proposed in 12 patients, in only one as a neoadjuvant treatment while radiotherapy was used in 10 patients.

DISCUSSION

Synovial sarcoma is a rare neoplasm. In 1944 there were only 100 cases in the world literature.^[1] It can occur at all ages, but it is seen with greater frequency in young

adults. The average age in literature was between 25 and 34 years.^[5-10,12]

The male predominance is accepted by the majority of authors.^[5,7,9]

Synovial sarcoma can develop in any site where there is a synovial membrane, synovial bursa, tendon, tendon sheath or a fascia. The majority of publications insist on the frequency locations in the lower limb and especially the thigh, but also the knee and foot. Gerner *et al.* found lower limb location in 76% of their cases,^[13] Hadju *et al.* in 67%.^[14]

Hadju *et al.* introduces the notion of correlation between sex, topography and the size of the tumor, he draws conclusions concerning the prognosis of these neoplasms.^[5]

Clinically, the latency is constant as the tumor is growing insidious and asymptomatic.

Synovial sarcoma most often presents as a generally single mass which gradually becomes painful. The size of the lesion is very variable (2 to 17 cm).^[4] In fact, it varies mainly according to its topography. Lymphadenopathy can be seen on the first exam. But they are also absent, because they are already late manifestations. They are second in frequency after general metastases.^[5,28]

The most frequent secondary locations are in decreasing order: pulmonary, cutaneous, hepatic, bone and cerebral.^[15]

On X-Ray, the frequency of calcifications is 20 to 40%.^[16]

CT allows the evaluation of tumor extension and limits, presence of calcifications, necrosis, relationships with vasculo-nervous structures and bone. It guides biopsies of recurrences and metastases.^[11]

MRI is very useful for assessing local and loco-regional extension. The boundaries of the tumor are often clear,^[17,18] this character is misleading because it suggests a benign lesion and leads to misinterpretations.^[19]

Ultrasound and angiography are of very modest use. Positron Emission Tomography has its place in the follow-up.^[12]

Pathology

According to Hajdu and Coll^[3] classification, the histological appearance takes several forms: The biphasic form which is the typical form of synovial sarcoma and two monophasic forms: one with spindle cells, the other with epithelioid cells; Epithelioid sarcoma; Clear cell sarcoma and cordoid sarcoma.

Immunohistochemistry has an important place in the diagnosis of SS, through the detection of the expression of vimentin and cytokeratin EMA.

Cytogenetics minimizes the risk of confusion with other soft tissue sarcomas and demonstrates in SS the existence of translocation between chromosome X and 18, and more rarely between chromosomes 5 and 18.^[20,21]

Treatment

The therapeutic approach and the extension of SS surgery are decided in a multidisciplinary committee with appropriate imaging and the histological result.

Surgical treatment^[23-26]

The excision must be "large" and in one-block. The margin must be evaluated by the pathologist and the surgeon.^[26]

The local prognosis is related to the minimum margin.^[27] The amount of this minimum margin is currently not precisely determined. In one study, no recurrence was noted with margins greater than 1cm, with or without postoperative radiotherapy.^[28]

It is necessary to plan the surgery.^[29] If the preoperative examinations show that the bone is affected, it is necessary to perform resection of the cortical bone with the tumor. The involvement of vascular structures should be assessed by means of angiography: if there is a close connection between the vessels and the tumor, resection of the vessels with arterial and venous bypass is necessary. In case of joint extension: extra joint resection and reconstruction using arthroplasty.

In case of poor general condition, damage to a major vessel or during local recurrences along the limb, amputation is indicated.^[22,23]



Image after wide resection of knee synovial sarcoma with conservation of large sciatic nerve Chemotherapy.^[23, 30-34]

The three agents most active in metastatic synovial sarcomas are doxorubicin, ifosfamide and dacarbazine. Due to their respective efficiency, they can be used in monotherapy exclusively. The presence of Adriamycin in multidrug therapy protocols is classic, in combination with doxorubicin and/or ifosfamide.

Neoadjuvant chemotherapy has its place in SS of locally advanced limbs. It seems indicated in order to limit functional sequelae. In fact, in some studies, it allows carcinologic surgery for 72 to 80% of SS judged inoperable, by reducing the tumor volume, and thus allows in 61 to 80% of case a conservative gesture initially impossible.

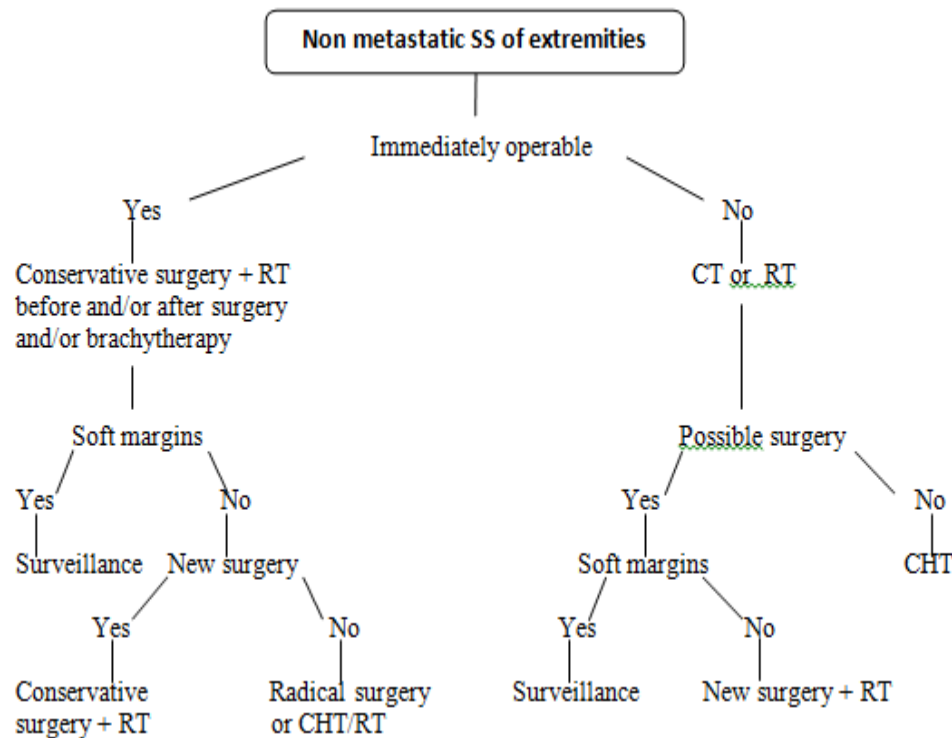
In an adjuvant situation, most studies show a reduction in the risk of local relapse but few find a reduction in the incidence of metastases;

Radiotherapy.^[35-42]

It significantly reduces the risk of local recurrence by especially for high grade sarcomas, but should not be performed on inappropriate surgery.

Postoperatively, it allows local control of around 75% for complications post-radiation treatment acceptable.

Preoperatively, it would prevent possible extension by contiguity, or even at a distance, linked to the surgical act.



Treatment of non metastatic synovial sarcomas of the extremities.

Evolution, Prognosis

As a post-treatment complications, we can distinguish acute complications (hematoma, lymphocele, edema, infection, skin necrosis, scar disruption, delayed scarring) and late complications (lymphedema, radiation fibrosis, infection, pathological fractures, pain).

The prognosis of these tumors depends mainly on the location, the age of the tumor, the extent at the time of diagnosis and the quality of the treatment.

Surveillance

Intermediate / high grade synovialosarcoma: every 3 to 4 months the first 2 to 3 years, then twice a year until the fifth year, then once / year.

Low-grade synovialosarcoma: every 6 months for 5 years, then once a year for up to 10 years.^[43]

CONCLUSION

Synovialosarcoma is a rare tumor with a histological diagnosis.

The therapeutic approach and the extension of the surgery of a synovialosarcoma are decided in a multidisciplinary committee with: imaging adapted; a preoperative biopsy with the definitive histological result and the tumor extension.

The principle of cancer surgery is wide excision passing through distance from the lesion.

Adjuvant treatments can be discussed in the event of

residual tumor or metastatic (chemotherapy) or in case of marginal excision (radiotherapy).

The prognosis is hampered by a significant risk of local recurrences (50%) and metastases (40%).

Consent

The patients have given their informed consent for the case to be published.

Competing Interests

The authors declare no competing interest.

Authors 'Contributions

All authors have read and agreed to the final version of this manuscript and have equally contributed to its content and to the management of the manuscript.

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