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The Importance of a Multi-Disciplinary Approach for Managing the Soft-tissue Sarcomas of Extremities:A Practical Case from the Sarcoma Team of CHU HASSAN II, Fez

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Abstract

Introduction: Soft tissue sarcomas are malignant tumors that require management in specialized centers. The aim of our study is to evaluate the benefit of the multidisciplinary meeting (RCM) on the management of these tumors. Materials and methods: It is a prospective study, which is conducted in the HASSAN II University Hospital Center in Fez. This research project has lasted for a period of 28 months. Results: ninety-seven (97) cases were selected, the average age was 52 years. The lower limb is the most frequent site (77%) with deep localization in 92.8% of cases. Eighty-two patients (88%) have had a prior biopsy. Seventy-three patients (75.3%) have received MRI before surgery. Fifty-six patients were operated, with R0 resection in 34 patients, R1 in 16 patients and R2 in 6 patients. Liposarcomas were the most frequent (26.5%), followed by synovialosarcomas (14.4%), leiomyosarcomas (10.3%) and undifferentiated pleomorphic sarcomas (10.3%). Neoadjuvant chemotherapy was indicated in 30 patients. Adjuvant chemotherapy or radiotherapy was indicated in 22 patients. The overall survival rate was 15.19 months, with a significant improvement in survival in patients with multidisciplinary management. Conclusion: The presented data are similar to the literature one with respect to the interest of multidisciplinary management of soft tissue sarcomas, specifically on the prognosis and survival of patients.

Keywords: Soft tissue sarcomas; Multidisciplinary; Survival

Introduction

Soft-tissue sarcomas are not common, especially for an adult person, and the treatment ofsuch malignant tumor depends on early prognosis management. At any age, one could have such cancer that results from connective tissue. The sarcoma tumor could be divided into three categories; the soft-tissues sarcomas of extremities (the most frequent 60%), the viscera(30%), and the bones (10%) [1]. Note that the treatment of each type is handled differently.

Practically, in case of a suspected sarcoma, and before any intervention or gesture, a discussion within a multidisciplinary concentration meeting (RCM) should be conducted. This meeting has to involve at least an oncologist, a radiologist, a pathologist, a radiotherapist, and a surgeon.

The negligence in carrying out such meeting (RCM) would lead to an inefficient handling of the tumor, and therefore ruin any chance of recovery [2,3].

Generally, surgery works as a solution for the curative treatment of soft-tissue sarcomas, hence the importance of prior imaging and early biopsy. The main objective of the treatment is to achieve complete resection of the tumor in one piece, while ensuring the best possible functional prognosis.

In the context of CPM, the current study aims to assess the importance and the impact of such procedure for the management of soft-tissue sarcomas. Keeping that as an objective, this investigation uses a series of 97 cases.

Methods and Material

Our work is based on a prospective study, carried out at the HASSAN II university hospital in Fez, over a period of 28 months, from 01/01/2020 to 30/06/2019, and as part of a research project.

The inclusion criteria were:

- Patients aged ≥18 years.
- Patients diagnosed with soft tissue sarcoma of the extremities. The exclusion criteria are:
- Other sarcomas than those of soft tissue (bone, viscera)
- Other histological types of cancer.

Cases numbering 136 were initially recruited. Of these, 97 cases were diagnosed with sarcoma. The other cases were excluded, either because the pathological diagnosis revealed benign tumors or other histological types, or because certain patients refused to take the treatment.

The quality of surgical excision (R0, R1, R2) was assessed according to the classification of the UICC (international union against cancer).

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The anonymity of patients and the confidentiality of their information were respected during data collection.

All of the data collected was captured and analyzed using "SPSS" software. Qualitative variables were described by means and medians, while quantitative variables were described by numbers and percentages.

Our support was based on international recommendations already available (NCCN, ESMO), with a comparison of these recommendations with local practices during multidisciplinary concentration meetings.

Results

Of the 97 cases, 57 (59%) were male and 40 (41%) female. The ages ranged from 18 years to 87 years (the average age was 52 years).

Seventy-seven (77%) of the tumors were in the lower limb, and 23% in the upper limb. Tumors at deep locations were the most frequent (92.8%) while 7% were superficial tumors. The average size was 18 cm (4-32 cm) (Table 1).

The patients were distributed into two groups. A group (1) (70 cases) whose files were recruited de novo at the CHU and were discussed in a multidisciplinary concentration meeting before any gesture. The second group (2) (27 cases), which included files recruited from the private sector, or referred after having been subjected to radiological assessments, biopsies or surgery.

Eighty-two patients (88%) underwent prior biopsy, ultrasound-guided in the majority of cases (66%), and surgical in 34% of the cases (Table 2). Seventy-three patients (75.3%) had received prior MRI (Table 3).

Of all the cases, 56 were operated upon. The results of the quality of surgical excision are detailed in Table 4.

Among all the patients who did not have an *in sano* resection (R1 or R2), 8 (14%) were surgically resumed in the CHU.

The most frequent histological diagnoses in our series were liposarcomas (26.5%), synovialosarcomas (14.4%), leiomyosarcomas (10.3%) and undifferentiated pleomorphic sarcomas (10.3%) (Figure 1).

Thirty-six patients received chemotherapy treatment. In the majority of cases (30 patients), this involved neoadjuvant chemotherapy, based on the MAI (Adriamycine, Isofosfamide, Mesna), EMPTY (Vincristine, Isofosfamide, Doxorubicin, Etoposide) and VAC (Vincristine) protocols. Doxorubicinen, Cyclofosfamide).

Patients characteristics	
	Incident patients (N=97)
Gender	
Males	57 (59%)
Females	40 (41%)
Mean age=52 years (18-87)	
Median age=44 years	
Tumor's characteristics	
Localization	
Upper limb	22 (23%)
Lower limb	75 (77%)
Depth	
Superficial	7 (7.2%)
deep	90 (92.8%)
Size of the tumor	
Median (min-max) : 18 cm (4-32)	

Table 1: Patient and tumors characteristics.

P = 0.001		**BIOPSY**			**Total**
		NO	NS	YES	
« 1 »	N=	7	1	62	70
	%	10.0%	1.4%	88.6%	100.0%
« 2 »	N=	13	0	14	27
	%	48.1%	0,0%	51.9%	100.0%
Total	N=	20	1	76	97
	%	20.6%	1.0%	78.4%	100.0%

Table 2: Repartition of patients according to the preoperative biopsy.

P = 0,008		**MRI**			**Total**
		NO	NS	YES	
« 1 »	N=	11	1	58	70
	%	15.7%	1.4%	82.9%	100.0%
« 2 »	N=	12	0	15	27
	%	44.4%	0.0%	55.6%	100.0%
Total	N=	23	1	73	97
	%	23.7%	1.0%	75.3%	100.0%

Table 3: Repartition of patients according to the preoperative MRI.

	R0	**R1**	**R2**	**Total**
GROUP « 1 »	25	12	2	38
GROUP « 2 »	9	4	4	18
Total	34	16	6	56

Table 4: Results of the quality of surgical excision.

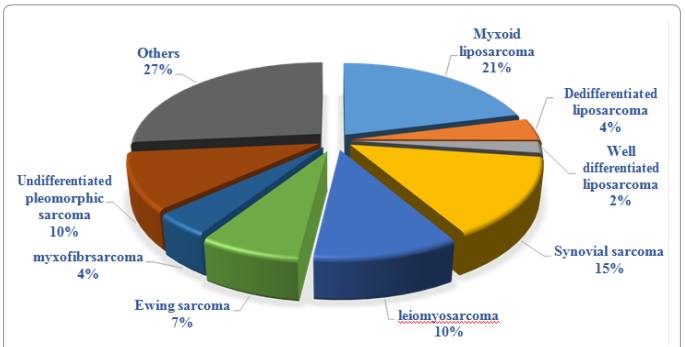

Figure 1: Distribution of the patients according to the histological type.

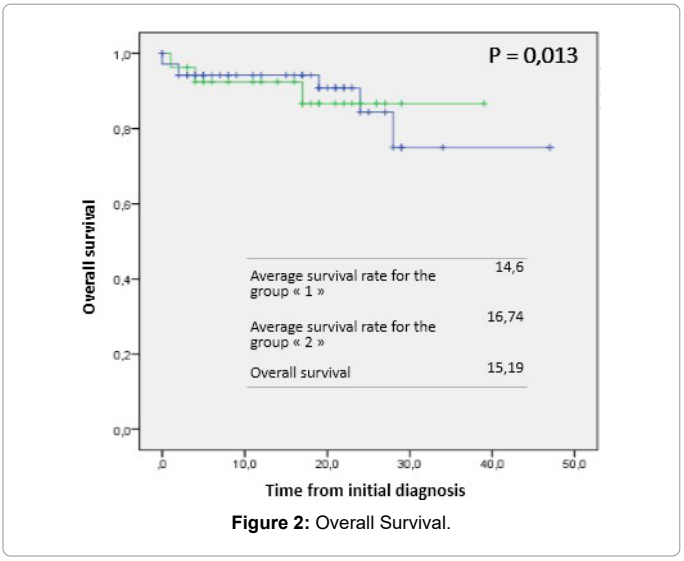

Figure 2: Overall Survival.

	Univariate analysis	Multivariate analysis
MRI	p=0.008	p=0.063
Biopsy	p=0.000	p=0.000
Metastases	p=0.057	p=0.188
Recurrence	p=0.557	-
Quality of Reseсtion	p=0.792	-
Histological grading	p=0.567	-
Type of surgery	p=0.429	-
Size of the tumor	p=0.318	-

Table 5: Univariate and Multivariate analysis of prognostic factors.

For the other six patients, it was adjuvant chemotherapy, one of which was Doxorubicin monotherapy.

Twenty-two patients benefited from external adjuvant radiotherapy, exclusive in 9 cases. During the course of the evolution, 23 patients died, and 3 patients presented local recurrences (Figure 2). The overall duration of survival was 15-19 months.

We conducted univariate and multivariate analyses according to abovementioned parameters. The key information about these analyses is summarized in Table 5.

Discussion

Soft tissue sarcomas are rare malignant tumors. It is a heterogeneous group of tumors with a severe prognosis. Because of their rarity and their sometimes banal clinical presentation, the diagnosis is often complex. The care being well codified through reference systems and recommendations, must be multidisciplinary involving oncologist, radiologist, pathologist, radiotherapist and surgeon involved within RCM at each stage of care: imaging, biopsy, surgery, and adjuvant or neoadjuvant treatments, follow-up [4,5]. It is specific care that should be conceived only within specialized structures.

Studies have shown that the overall survival rate and the R0 resection rates were statistically higher within these structures [6-8].

Other observational studies have shown that in addition to the constant demographic and biological risk factors, survival was influenced by another modifiable parameter concerning the adequacy of care and care in accordance with the recommendations of good practice. [9,10]. Our results are, however, in agreement with other studies concerning prognostic factors such as age, histological type and grade FNCLCC [11-13].

The radiologist plays a crucial role in the patient circuit by selecting suspicious tumors requiring appropriate management. In our series, fifty-eight patients (82.9%) in the “RCP” group underwent radiological exploration with MRI performed (52% in the study by Ray-Coquard et al. and 76.5% in the study by Haddad, et al.) compared to 55.2% in the"non-RCP" group. All patients discussed in RCM benefited from an extension assessment with chest CT in search of distant metastases (82% in the study by Ray-Coquard et al., and 100% in the study by Haddad et al.) [14].

Biopsy is the first examination to look for a suspicious tumor after imaging. In our series note, the biopsy was performed on 85% in the group “1” (72.4% in the series by Haddad J et al., and 42% in the series by Ray-Coquard et al.), Compared with 51, 9% in the group”2”. In the Blay series, biopsy was performed on 80% of the patients treated in the center of the NetSarc network as against 36% outside the network [1]. In 66% of cases, it was an ultrasound-guided biopsy.

Surgery is the radical treatment for STM. It must be performed in a single piece with margins of healthy tissue around the tumor or a healthy anatomical barrier. The quality of the excision is the most important prognostic factor for local control with a fourfold increase in the risk of local recurrence in the event of non-R0 excision [15,16]. R1 or marginal excision corresponds to enucleation and exposes the patient to a 70% risk of local recurrence due to the risk of the microscopic remainder [17]. Studies show that R0 resections are statistically more frequent in patients treated in specialized centers, with lower recovery rates [18,19]. The same results were found in our series.

The administration of an adjuvant or neoadjuvant treatment must be decided in SPC. This was the case for all patients in the "RCP" group in our series (more than 90% of the cases in the Ray-Coquard study and 100% of the cases in the study of Haddad J et al.).

Conclusion

STMs are tumors with a severe prognosis. Their prognosis is directly linked to the initial management which influences the patient's future. The comparison of data from our series concerning the overall management of patients is comparable to the data in the literature, particularly in terms of overall survival and quality of excision, which underlines the great importance of multidisciplinary management.

Data Availability Statement

The data used to support the findings of this study have not been made available due to the Patient Privacy Policy applied by CHU HASSAN II FEZ to the personal health information of all patients. However, the key information about this data is available from the corresponding author upon request.

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