INFLUENCE OF PREVIOUS MANIPULATION IN THE TREATMENT AND LOCAL RELAPSE OF SOFT TISSUE SARCOMAS

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SUMMARY

Objective: Evaluate the influence of previous manipulation in the treatment and local relapse of soft tissue sarcomas. Methods: We evaluated 30 patients submitted to soft-tissue sarcoma (STS) surgery. These patients were divided into two groups: patients with previous unplanned resection of the tumor, and patients referred to a specialized center without any previous surgical treatment. We compared the two groups by the type of surgical treatment, complications and local relapse. Results: Previous manipulation of the STS was seen in 60% of the patients on the series, changing the surgical technique in 66.6% of the cases. The amputation rate was similar between both groups, but three patients were amputated as a result of inappropriate previous resection. Complications were not significantly different between the groups ($p = 0.282$), as well as for local relapse ($p = 0.461$). Conclusion: The previous manipulation of soft tissue sarcomas influenced the surgical treatment, but neither influenced post-operative complications nor local relapse.

Keywords: *Sarcoma; Cancer; Surgery*

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INTRODUCTION

The term soft tissues sarcoma (STS) defines a heterogeneous group of extra-skeletal mesenchymal tumors originated from the muscles, fibrous tissue, fascia, tendons, vessels and adipose tissue[1]. Peripheral nerves tumors, despite of their neuroectodermal origin, are included on this group because of their similar location, histology and biological behavior. These are relatively rare tumors presenting a large variety of histological subtypes and affected sites of the body, making difficult to obtain consistent information on these tumors' natural history, prognosis and treatment[2].

When STS is suspected, a definitive diagnosis can be confirmed by means of open incisional or puncture biopsy. This procedure is a frequent reason for complications of ST therapies, because it influences the surgical treatment. Although biopsy should be performed in a reference center and by the same surgeon who will provide the definitive procedure, 50% of the cases are referred to experts before any previous manipulation. And, for cases manipulated before referral, complications are six times more frequent, even accounting for converting a conservative treatment into a limb amputation[3-5].

The objective of the present study is to assess the effects of previous manipulation of STSs on definitive surgical treatment and on the occurrence of local tumor relapses.

PATIENTS AND METHODS

Between January 2000 and November 2005, 42 patients diagnosed with extra-skeletal sarcomas at body ends, pelvic and gluteus regions who received care at the Musculoskeletal Tumors Outpatient Facility of the Federal University of Minas Gerais'Hospital das Clínicas (HC) and at Biocor Institute. Of these, 30 patients were included in the study. Twelve patients were excluded: three of them did not present sufficient data on medical files, three patients missed clinical follow-up, and six showed tumors with different evolution, treatment or prognosis usually not included on STS group, namely: dermatofibrossarcoma (n= 3), rabdomyossarcoma (n=1), extra-skeletal Ewing sarcoma (n=1), and non-Hodgkin lymphoma (n=1).

All patients were submitted to surgical treatment performed by the same surgeon, and all diagnostics were confirmed by anatomicopathological examination of the surgical piece. The study was approved by the Committee of Ethics of both Services where the study was conducted, as a part of the master course monograph "Prognostic Factors for the Development of Metastasis and Local Relapse on Soft Tissue Sarcomas of the Body Ends", with final approval granted by the UFMG's Committee on Ethics (opinion report nr. ETIC 002/07).

Of the patients comprised in the sample, the mean age was 47.66 ± 19.1 years, ranging from 18 to 86 years. The mean follow-up time was 29.5 ± 12.2 months, ranging from 12 to 62 months, with 18 (60 %) male and 12 (40 %) female patients.

The histological diagnosis is listed on Table 1. Of the 30 patients in the sample, 22 (73.3%) were submitted to conservative procedure sparing the limb, while eight (26.7%) were submitted to amputation. Surgical margins were free of tumor contamination in 22 (73.4%) of the cases, and contaminated in eight (26.6%) patients.

Study conducted at the Orthopaedics and Traumatology Service, Federal University of Minas Gerais' Hospital das Clínicas, and at Biocor Institute
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Diagnosis	Number of patients (n)	Relative Frequency (%)	Accumulated Frequency (%)
Malignant Fibrohistiocytoma	7	23.3	23.3
Synoviossarcoma	7	23.3	46.6
Lipossarcoma	4	13.3	59.9
Fibrossarcoma	2	6.7	66.7
Leiomyossarcoma	2	6.7	73.4
Neurofibrossarcoma	2	6.7	80.1
Epithelioid Sarcoma	2	6.7	86.8
Angiossarcoma	1	3.3	90.1
Clear cells sarcoma	1	3.3	93.4
Malignant hemangiopericitoma	1	3.3	96.7
Idiopathic sarcoma	1	3.3	100
TOTAL	**30**	**100**	**100**

Source: SAME Feder al University of Minas Gerais' Hospital das Clínicas.

Table 1 - *Histological diagnosis of STS for 30 patients submitted to surgical treatment at HC-UFMG and Biocor Institute between January 2000 and November 2005.*

Open biopsy was provided on all patients diagnosed after referral. On patients in whom biopsy or previous resection had been made, the diagnosis was confirmed by reviewing the anatomicopathological slide, and the patients were submitted to definitive resections or enlargement of surgical margins (Figure 1).

The patients were divided into two groups, according to the early treatment of the STS:

Group A (n = 18): patients submitted to manipulation previously to referral for definitive treatment. Manipulation included biopsies or inadvertent tumor resection.

Group B (n = 12): patients referred and treated prior to any surgical manipulation.

Both groups were compared according to the kind of surgery performed (amputation vs. conservative surgery), to the complications seen postoperatively and to the local relapse during clinical follow-up.

The statistical analysis was made by means of the Chi-squared test (χ 2) for comparison of the qualitative variables as 2x2 tales by applying the Fisher's exact test when the use of Chi-squared test was restricted. For assessing local relapse, a multivariate analysis by logistic regression was employed, correlating it to prognostic factors associated to recurrence (gender, age, tumor size, malignancy degree at histological examination, surgical margins, tumor location, depth vs. tumoral fascia, presence in compartments, presence of necrosis and vascularization at the histological examination). Differences at 5% level were regarded as significant.

RESULTS

The previous manipulation of STS was seen on 18 (60%) patients, and only 12 (40%) were referred with no previous procedure. Manipulation influenced surgical treatment for changing the access, enlarging margins, or requiring resection of additional compartments in 12 patients (66.6%). Of these, four (22.2%) patients required amputation as a surgical treatment, three of them as a result of the previous procedure. On patients referred without any previous manipulation, only two (16.6%) required amputation (Figure 2). However, amputation surgery was not significantly more frequent for the group submitted to previous manipulation (p = 0.544).

Postoperative complications were seen on eight (26.7%) patients, six of them (33,3%) assigned to the group of manipulated patients (Group A), which included three wound dehiscence, one deep infection and one seroma. Complications were seen on two patients (16.6%) of Group B, with a dehiscence and a deep infection of the surgical wound. similarly, these data were not significant when both groups were compared (p = 0.282).

Local relapse was seen on 10 (33.3%) patients, five of them on Group A and five on Group B (Figure 3). When compared, both groups showed no significant difference (p = 0.461).

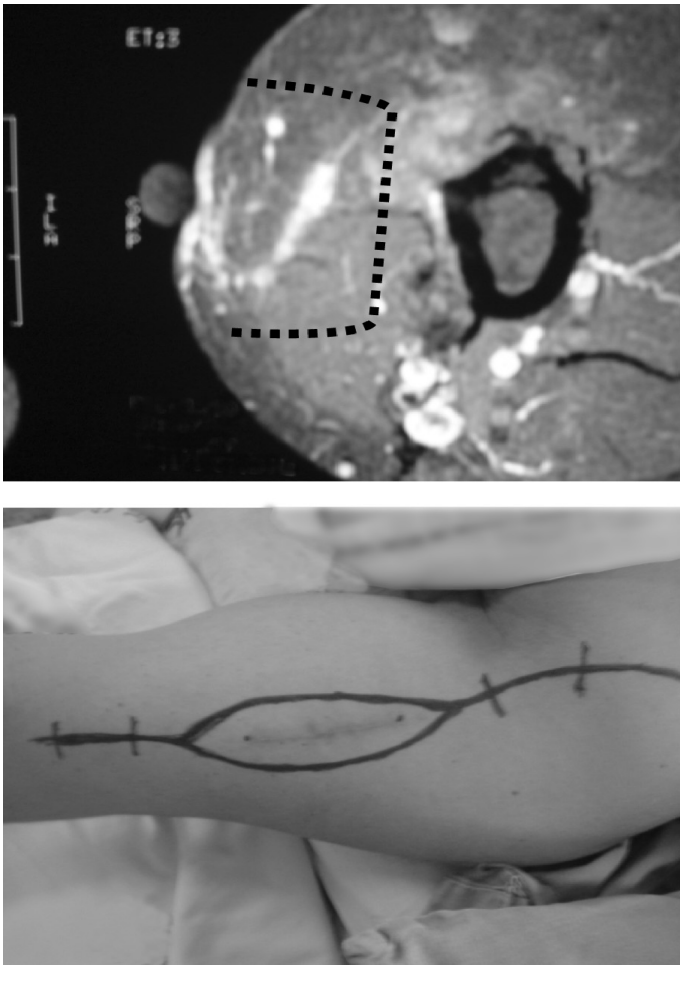
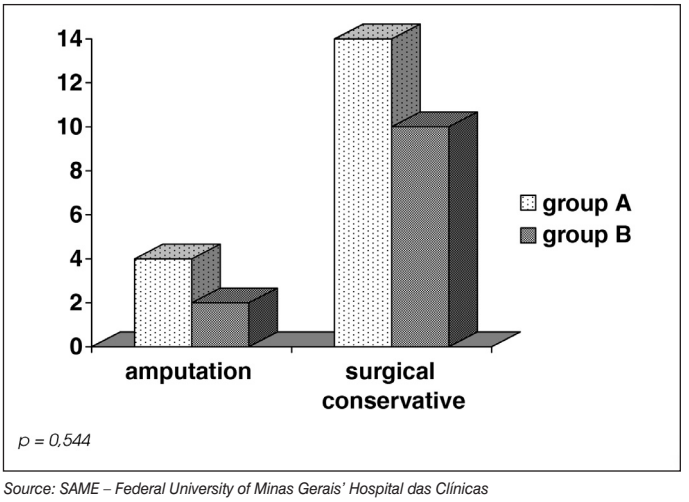
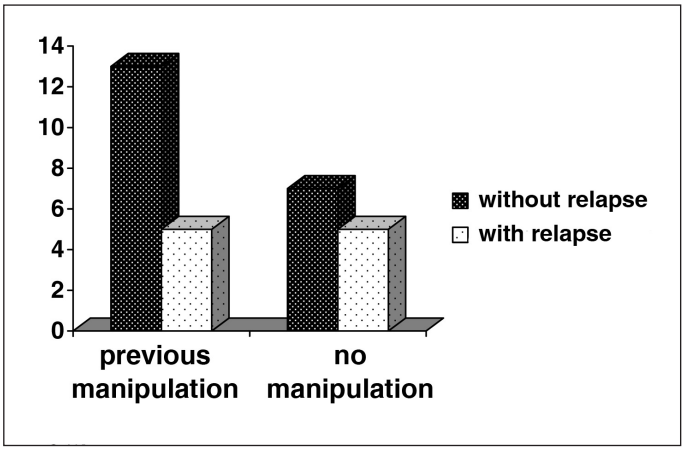


Figure 1 – *Preoperative surgical planning for a sarcoma submitted to inadvertent previous resection (A – Magnetic resonance image of the arm outlining the enlargement area; B – surgical access marking).*



Source: SAME – Federal University of Minas Gerais' Hospital das Clínicas

Figure 2 – *Correlation between the kind of surgery performed and the previous manipulation of the tumor. (Group A- patients submitted to previous manipulation; Group B – patients referred prior to any surgical procedure).*



p = 0,461 - Fonte: SAME – HC - UFMG

***Figure 3** – Incidence of local relapse cases in patients with STS submitted to previous surgical manipulation (n = 18) and referred prior to any surgical procedure (n= 12).*

DISCUSSION

The most common treatment for STS is surgery, whether associated with radiotherapy and chemotherapy or not[2,6,7]. Radiotherapy and surgery are indicated to provide local control, while chemotherapy targets the systemic treatment of the disease, but its indication remains controversial for STS[6]. Surgery must be performed through broad access, providing resection of the whole tumor, involved by normal tissue, in a single mass, including the biopsy path and the drainage exit hole when present[2,3]. This kind of surgery associated to radiotherapy has been achieving local control in as many as 90% of the cases[6-8].

Many prognostic factors are correlated to local relapse, particularly the margins reached during surgical procedure; however, few studies assess the influence of inappropriate previous manipulation of tumors on definitive surgical treatment and on local relapse[9].

In our series, we saw that 60% of the patients were manipulated prior to referral, which represent a higher frequency compared to other centers, yet consistent with data reported by Mankin et al.[4,5]. Definitive surgery was influenced by manipulation in 66.6% of the cases on this group, either by the modification of the access way, by the enlargement of the operative field, or by the additional resection of contaminated compartments. While the treatment provided with amputation was similar for both patient groups, in three cases of the previously manipulated group, this was indicated as a result of an inappropriate manipulation performed before referral, which was also seen by Siebenrock, et al.[10], who concluded that the inadvertent previous resection of a soft tissue sarcoma leads to more mutilating surgeries and high prevalence of local relapses.

Complications resulting from enlarged dissection patches, such as necrosis and wound dehiscence, as well as seromas and hematomas, are frequently seen in surgical procedures for STS treatment. We didn't find differences between groups in our study, suggesting that performing a similar surgical technique does not increase the risk of postoperative complications.

The inappropriate manipulation of tumors has been reported as a factor for poor prognosis of relapse[9-11]. However, most of the studies show that a surgical review for enlarging surgical margins, when timely performed, can avoid relapses and does not compromise the local control or the survival of patients when compared to patients not submitted to inadvertent resections[11-13].

In our study, we found that the inappropriate manipulation of STS is a common finding, changing the surgical technique in most of the cases, but did not increase local relapse rates nor increased the occurrence of postoperative complications. These data suggest the need of broader dissemination of the information concerning manipulation of soft parts tumors and the early referral to reference centers in cases of suspected or confirmed STS. The timely supplementation of the treatment for previously manipulated STS enables the prevention against local relapse and a better prognosis for those patients.

CONCLUSION

Previous surgical manipulation of soft tissues sarcoma has influenced the definitive surgical treatment, but did not change the rate of postoperative complications or local relapse.

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