



The problem of local recurrence and metastasis in soft-tissue sarcoma

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BACKGROUND: *The purpose of this study was to evaluate local recurrence of soft-tissue sarcomas as a prognostic factor reflecting adequate or inadequate excision.*

METHODS: *We reviewed the cases of 53 patients who had soft-tissue sarcomas and were treated between 1991 and 2001. All patients were treated operatively, but 11 of them (20.75%), before being sent to us, were operated elsewhere with inadequate surgical margins. The oncology status, including local recurrence and metastasis was determined at the follow-up evaluation.*

RESULTS: *All of 11 patients treated with inadequate excision had palpably or histologically determined local recurrence. The most common histological diagnosis of local recurrence was dermatofibroma protuberans (7 patients, 63.63%). In patients who were treated with planned and adequate excision there were 4 (9.52%) recurrences. Five patients (45.45%) had metastases in the group of inadequate and only one patient (1.88%) in the group of adequate surgical margins.*

CONCLUSION: *Our study demonstrated that excellent rates of survival and low rates of local recurrence and distant metastasis of soft-tissue sarcomas could be obtained with the use of carefully planned radical resection. The quality of operation is the most important factor.*

KEY WORDS: *Sarcoma; Neoplasm Recurrence, Local; Neoplasm Metastasis; Surgery*

INTRODUCTION

Soft-tissue sarcomas are malignant tumors of connective tissue, fat, muscle or blood and lymph vessels. They are mesodermal in origin and account for about 1% of all malignancies in adults. Slow persistent growth is typical for all types of soft-tissue tumors, and early detection and adequate excision of tumors are the most important factors for prognosis (1-3). Many published studies suggest that surgical assessment of the adequacy of excision of soft-tissue tumors is very inaccurate, and that highest percentage of local recurrence and metastasis is a consequence of inadequate initial surgical treatment (4-6). Each tumor presents its own special problem and local recurrence is important and an independent adverse prognostic factor, and good surgical judgment is needed to know when and how to perform a surgical treatment of a tumor (7,8).

PATIENTS AND METHODS

From 1991 to 2001, we retrospectively reviewed 54 patients treated at Clinic of maxillofacial and oral surgery and Clinic of plastic and reconstructive surgery, Clinical Center Novi Sad. The study included 53 patients who were treated for soft-tissue sarcomas of various body localizations during the observed 10 years. There were 34 male patients (64.15%) and 19 female patients (35.84%) with median age of 51 years (range, 19-81 years). Eight patients (19.04%) had malignant fibrous histiocytoma, 9 patients (21.42%) had dermatofibrosarcoma protuberans, 8 patients (19.04%) had rhabdomyosarcoma, 4 patients (9.52%) had leiomyosarcoma, 4 (9.52%) had malignant Schwannoma, 3 patients (7.14%) had liposarcoma, 3 patients (7.14%) had fibrosarcoma, 2 patients (4.76%) had hemangiopericytoma, and 1 patient (2.38%) had lymphangioma (Table 1).

The relevant medical records, surgery and pathology reports, and oncology status including recurrence and metastasis were registered. The interval between the initial diagnosis and the progres-

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Table 1. Distribution of lesions by histological type, stage and recurrence

Histological type	N	%	Initial stage		Recurr.	N	%	
			N	%				
Malignant Fibrous Histiocytoma	8	19.04	II A	2	4.76	-	0	-
			III A	2	4.76	+	1	2.38
			III B	4	9.52	+	1	4.76
DFSP	9	21.42	-	-	-	-	0	-
Rhabdomyosarcoma	8	19.04	II B	3	7.14	-	0	-
			III A	5	11.90	-	0	-
			III B	1	2.38	-	0	-
Leiomyosarcoma	4	9.52	III A	3	7.14	-	0	-
			III B	1	2.38	-	0	-
			III B	1	2.38	-	0	-
Malignant Schwannoma	4	9.52	III B	1	2.38	-	0	-
			III B	3	7.14	-	0	-
			III B	3	7.14	-	0	-
Liposarcoma	3	7.14	II A	2	4.76	-	0	-
			II B	1	2.38	-	0	-
Fibrosarcoma	3	7.14	III A	1	2.38	-	0	-
			III B	2	4.76	+	1	2.38
			III B	2	4.76	+	1	2.38
Hemangiopericytoma	2	4.76	II B	1	2.38	-	0	-
			III A	1	2.38	-	0	-
			III B	1	2.38	-	0	-
Lymphangioma	1	2.38	III B	1	2.38	-	0	-

sion of the diseases was recorded. Unfortunately, there were no data of initial stage of primary tumor for patients operated elsewhere. Patients who had primary surgery at our Clinics were staged according to the system of American Joint Committee for Cancer Staging and the system of the Musculoskeletal Tumor Society (3,4,9,10). Our surgical procedures were designed to remove the complete lesion with a cuff of surrounding normal tissue (the operation well-known as "radical" or "wide" resection), and the second phase of the procedure was reconstructive operation. Large defects were closed by local rotational skin or musculocutaneous tissue transfers, and split-thickness skin graft. Patients with inadequate primary surgery performed elsewhere had a second operation for the purpose of complete re-excision and reconstruction of defects.

RESULTS

Out of 54 patients with soft-tissue sarcoma from the observed period 1991-2001, local recurrences were noticed in 15 patients (28.30%) and distant metastases were shown in 6 patients (11.32%). Local recurrence occurred in all 11 patients (100%) patients who had surgical procedure in other hospitals. The most common histological type was dermatofibroma protuberans (7 patients, 63.63%), followed by malignant fibrous histiocytoma (3 patients, 27.27%) and one fibrosarcoma (9.09%). The local recurrence was represented in a group of patients with adequate ("wide", "radical" or "compartment") tumors excision (4 patients, 9.52%). The histological types of sarcomas are presented in Table 1. At the time of our study there were 6 patients (11.32%) with distant metastases. Five (45.45%) of them were in a group with unplanned or inadequate operation. Only one patient (1.88%) in a group with adequate excision had a distant metastasis (Table 2). The majority of patients (9 patients, 81.81%) from the group with inadequate surgery had local recurrence in early postoperative period (from 1 month to 1 year). In a group with adequate

surgery local recurrence occurred from 1 to 9 years (Table 3).

Table 2. Distribution of distant metastases in according to histological type

Histological type	Site of metastases	N	%
Malignant fibrous histiocytoma	Brain	1	1.88
DFSP	Lung	2	3.77
DFSP	Lung	2*	1.88
Hemangiopericytoma	Brain	1	1.88

* One patient (1.88%) in a group with adequate excision

Table 3. Distribution by time of appearance local recurrence

Time	N	%
To 1 month	-	-
From 1 month to 1 year	9	60.00
From 1 year to 2 years	2 + 1*	20.00
From 2 years to 5 years	1*	6.66
From 5 years to 9 years	1*	6.66

DISCUSSION

Over the last twenty years, the treatment of sarcomas has developed from simple excision to "wide en block" resection and to planned "compartment resection" (4-6). Recently, many authors have been suggesting that sarcomas can often be treated with operative intervention alone, with good results (1,5,7). Technically, most soft-tissue sarcomas are easy to treat, especially those with superficial localization (7-9). The evaluation and treatment of all patients with soft-tissue tumors must be highly individualized.

The problem of treating sarcomas is a persistent one. Effective management depends on the knowledge of classification and staging of soft-tissue tumors, and consistent use of strategy for evaluation and treatment. Some of the surgeons are not willing to risk the damage of vital structures and perform operations with limiting margins (6,8,9). Soft-tissue sarcomas have not a true capsule and "marginal excision" is a wrong operative intervention, because the chance of local recurrence and metastasis are higher (8,9). Loss of functions is sometimes inevitable but it is a price for curing (7,8,9). After large operative intervention, huge defects must be covered by a tissue transplantation or microscopic surgical procedure. Several of these soft-tissue tumors singularities require further explanation but surgical techniques up to date are clear (2,4,5,9). Local recurrence indicates poor general prognosis, i.e. development of metastases and poor survival (4,5,8,9). The presence of positive surgical margins is highly associated with development of recurrence. In a large study published by Beaty, which included 271 patients with malignant fibrous histiocytoma, positive surgical margins were associated with a 39% local recurrence rate compared to 17% in patients with negative margins (5). Because metastases are more likely to occur after local recurrence, primary re-excision is recommended for incompletely excised soft-tissue sarcomas having in mind an incidence of metastases of 53% in recurrent tumors (5,9).

CONCLUSION

On the basis of our experience we proved that the first surgical treatment is keystone for patient's survival. Local recurrence is a risk factor for metastasis. The relevant study demonstrates that excellent rates of survival and low rates of local recurrence as well as distant spreading can be obtained with the use of a carefully planned "wide", "radical" or "compartment" excision performed by a competent surgeon.

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