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The Surgeon, Journal of the Royal Colleges of Surgeons of Edinburgh and Ireland
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Soft tissue sarcoma – A review of presentation, management and outcomes in 110 patients☆

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ARTICLE INFO

Article history:
Received 21 October 2013
Received in revised form
9 March 2014
Accepted 7 June 2014
Available online 30 September 2014

Keywords:
Soft tissue sarcoma
Presentation
Management
Outcomes

ABSTRACT

Soft tissue sarcomas are a rare group of mesenchymal tumours the treatment of which poses oncological and reconstructive challenges. Limb-salvage surgery aims to balance adequate excision margins for disease control and preservation of important structures to retain function. Reported here is the review of the Hull Plastic surgery sarcoma service over a twelve year period.

Method: We performed a review of the Hull sarcoma database over a twelve year period between 1997 and 2009. Demographic data, tumour grade, operative details complications and outcomes were recorded.

Results: The database contained a total of 435 patients with a diagnosis of sarcoma. 110 were treated at the Plastic Surgery department over a period of 12 years between 1997 and 2009. The patients treated in our department consisted of 67 males and 43 females (median age 70 years). The most common histological type was leiomyosarcoma ($n = 23$).

Distribution of anatomical sites affected were head and neck ($n = 15$), upper limb ($n = 17$), lower limb ($n = 56$), trunk ($n = 22$). Large tumours (greater than 8 cm) $n = 30$, deep tumours $n = 48$, and high grade (Trojani 3) $n = 33$.

Patients were treated with surgical excision and postoperative radiotherapy in the high grade groups (2 and 3). A range of reconstructive procedures were required from skin grafting, functional muscle transfer and free flap reconstruction.

Nine patients developed regional recurrence, six patients had grade 3 tumours. Three were not resectable.

Fourteen patients developed distant metastases, seven had grade 3 tumours, six underwent chemotherapy, two were treated palliatively.

There were twenty deaths in this group, of which sixteen were sarcoma related. Deaths in the high risk groups was seven (high grade), nine (deep tumours) and eight (tumour size >8 cm). There were six survivors from eleven in the group with all three of these risk factors.

Conclusion: This study summarises the management of sarcoma form one unit over a twelve year period and lends further evidence to the fact that the principles of limb-salvage surgery are applicable to a wide range of tumour-types and grades, to all patient age groups and anatomical sites with good functional results and that local and free flap reconstruction provides wound cover robust enough to withstand courses of radiotherapy. Early

☆ This paper was presented at the British Sarcoma Group Meeting, London.

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http://dx.doi.org/10.1016/j.surge.2014.06.002

recurrence of high-grade disease and the development of metastasis carry a worse prognosis, especially if adjuvant therapy cannot be given.

Level of evidence: 4.

Introduction

Soft tissue sarcomas are a rare group of mesenchymal tumours the treatment of which poses oncological and reconstructive challenges. Limb-salvage surgery aims to balance adequate excision margins for disease control and preservation of all important structures to retain maximum function. Reported here is the review of the Hull Sarcoma service over a twelve year period.

Methods

We performed a review of the Hull sarcoma database over a ten year period between 1997 and 2009. Demographic data, tumour grade, operative details complications and outcomes were recorded. Over this time four hundred and four patients had been referred to the sarcoma service and of these one hundred and ten had been managed in the Plastic surgery department.

A total of one hundred and ten patients were managed in the Plastic surgery department, sixty seven male and forty three female. The age range at referral was twenty four to ninety one years with a median age of seventy and mean sixty six years.

The majority of patients ($n = 74$) had been referred directly by their general practitioner and a significant number were referred by general surgery ($n = 23$); usually having had tissue diagnosis made. Other specialities referring patients were dermatology,[6] orthopaedics,[5] oncology[1] and urology.[1]

Results

Presentation

The majority of patients presented with a mass ($n = 78$). This was usually painless and did not have any significant functional impairment. Thirty one patients presented with a visible cutaneous lesion.

Distribution of the tumours was similar to that described previously in that the lower limb was most commonly affected ($n = 56$). Twenty two lesions were located in the trunk region and seventeen in the upper limb. Head and neck sarcomas numbered fifteen, all of which were superficial lesions.

Investigation

Patients presenting with small cutaneous lesions underwent excision biopsy for diagnosis. In many patients this primary excision had been performed by the general practitioner or dermatologist and in several cases a relatively narrow margin of excision had been performed as the diagnosis of sarcoma had not been suspected. These cases were discussed at the multi disciplinary team meeting and usually required a wider excision. Patients with a high grade lesion underwent staging computed tomography (CT).

Patients presenting with deep lesions underwent imaging, often ultrasound followed by magnetic resonance scanning with gadolinium. Then, where appropriate underwent core biopsy or image guided biopsy.

Diagnoses

The most common diagnosis was leiomyosarcoma ($n = 23$) and liposarcoma ($n = 20$).

Other diagnoses were as follows: dermatofibrosarcoma protruberans ($n = 13$), fibrosarcoma ($n = 10$), nerve sheath tumours ($n = 6$), angiosarcoma ($n = 6$), malignant fibrous histiocytoma ($n = 5$), synovial sarcoma ($n = 5$), pleomorphic sarcoma ($n = 4$), atypical fibroxanthoma ($n = 4$), rhabdomyosarcoma ($n = 3$), chondrosarcoma ($n = 3$), uncertain type ($n = 3$), Kaposis sarcoma ($n = 2$).

Tumour grade

Tumours varied in size from one to twenty four centimetres (average size = 6.95 cm, median = 5.5 cm). Twenty six patients had large tumours (over 10 cm diameter on macroscopic histological examination). Size was not recorded in twenty two cases. There were thirty eight T1 tumours (under 5 cm diameter) and fifty T2 (over 5 cm).

Some tumours were graded as per the Trojani system although we now use the FNCLCC diagnostic grading criteria. Grade three tumours numbered thirty five, grade two; eighteen and grade one; twenty seven. Tumour grade was not specified in thirty cases (Table 1).

Tumours located superficial to deep fascia numbered forty seven, whilst those deep to deep fascia numbered forty one.

Table 2 demonstrated the data of combining size and depth data (a = superficial, b = deep).

Highest risk (deep, large and grade 3) – 10 pts

Table 1 – Grade, size and depth of STS.

Grade		Size		Depth	
Trojan 1	27	T1 (<5 cm)	38	T1a	35
Trojan 2	18	T2 (>5 cm)	50	T1b	3
Trojan 3	35	Not known	22	T2a	12
Not specified	30			T2b	38
				Not known	22