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The surgical management of head and neck sarcoma: The Newcastle experience☆

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Summary *Introduction:* Head and neck sarcomas are rare and difficult to manage surgically. Factors that influence the prognosis include the type and grade of tumour, resection margins, the anatomical site and patient-specific parameters. We review our experience as plastic surgeons working in a bone and soft-tissue tumour multidisciplinary team (MDT) in managing these tumours surgically.
Methods: Data on all patients with sarcoma of the head or neck managed surgically from 2004 to 2015 was reviewed. Demographics, surgical details and outcomes were analysed.
Results: Forty-nine patients underwent surgery for sarcoma of the head or neck. The mean age at presentation was 53.1 years (range 0.5—92). Histological diagnosis was varied. Leiomyosarcoma (n = 6), angiosarcoma (n = 9), synovial sarcoma (n = 4), sarcoma of no specific type (n = 5) and rhabdomyosarcoma (n = 5) were the most frequently seen tumours. All sarcomas were treated by wide excision. Excision margins were histologically complete in the vast majority (n = 43). Reconstruction was undertaken as follows: direct closure (n = 12), local flap ± skin graft (n = 12), free tissue transfer (n = 21), pedicled flap ± skin graft (n = 3) and skin graft (n = 1). Twelve patients received adjuvant chemotherapy and fifteen patients received adjuvant radiotherapy. Eleven patients developed local recurrence and 10 patients developed metastasis. Twelve patients died of their disease: mean survival period was 17 months (range 8—28 months). The mean duration of follow-up was 78 months (range 18—137 months). Estimated 5-year disease-specific survival for this cohort was 72% and overall estimated survival was 61% (Kaplan—Meier equation).

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Conclusion: Head and neck sarcomas are rare and challenging to manage. Successful outcomes can be achieved by early, aggressive resection and appropriate reconstruction within the specialist MDT setting.

Introduction

Bone and soft tissue sarcomas are rare, with an annual incidence of around 5 per 100,000 population.[1] Known risk factors for sarcoma development include regional irradiation and genetic conditions such as Li—Fraumeni syndrome or type-1 neurofibromatosis.[2] Sarcomas developing within the head and neck are the most rare, accounting for 4—10% of all sarcomas[3] and around 1% of all adult head and neck malignancies.[4]

Sarcomas are a heterogeneous group of malignancies that originate from transformed cells of mesenchymal lineage.[5] Originating tissue types include muscle, bone, fat, blood vessels and nerves. The World Health Organisation (WHO) classifies 50 histological subtypes of sarcoma.[6] They are classified according to their tissue of origin, tumour grade and anatomical position. The ratio of mesenchymal soft—tissue lineage sarcomas to those of bony and cartilaginous origin is around 80:20.[7]

In the head and neck region, the most frequently encountered sarcomas are malignant fibrous histiocytoma, fibrosarcoma, angiosarcoma, malignant peripheral nerve sheath tumour and non-classified sarcoma (NST).[8] Despite advances in immunohistochemistry and molecular oncological markers, sarcomas remain difficult to classify, and subsequently approximately 20% of sarcomas are unclassified. This adds further to the difficulty of managing these complex malignancies.

In Newcastle upon Tyne, head and neck sarcomas are managed by The North of England Bone and Soft Tissue Tumour Service. We present an 11-year retrospective review of 49 patients with head and neck sarcoma managed surgically by plastic surgeons working within this multidisciplinary team (MDT). Our experience has enabled us to identify prognostic factors for patients presenting with head and neck sarcoma amenable to surgical management.

Methods

A prospectively collected database was used to identify all patients with sarcoma of the head and neck treated surgically between 2004 and 2015. All patients were treated within the North of England Bone and Soft Tissue Tumour Service. Patients' electronic and paper records were reviewed along with the local histopathological database. The data collected were analysed on the following criteria:

Age at presentation
Previous exposure to radiation/radiotherapy
Surgical management including reconstruction
Peri-operative complications
Adjuvant therapy
Histological tumour subtype
Resection margin status and histological tumour grade
Tumour recurrence, metastasis and subsequent management
Survival
Length of follow-up

Tumour type, tumour grade, anatomical site of the tumour and patient age were individually assessed for their correlation to negative prognostic indicators including local recurrence, metastasis and mortality.

Survival probability was calculated using IBM SPSS Statistics software; descriptive statistical analysis of the cohort was calculated using Microsoft Excel.

Fifty patients were treated surgically for sarcoma of the head and neck between 2004 and 2015. One patient returned to their home country (Trinidad & Tobago) after their initial surgery and as such follow-up data was not available; this patient was excluded from the review. All remaining 49 patients had complete records.

Results

Forty-nine patients were included in the analysis. The mean age at presentation was 53.1 years (range 6 months—92 years). There were 37 males (76%) and 12 females (26%) patients.

Previous radiotherapy

Three patients had a history of prior radiotherapy. One patient developed a radiation-induced sarcoma (NST) following wide local excision and radiotherapy treatment for a squamous cell carcinoma of the skin of the ear. One patient had undergone radiotherapy for myeloma and later developed a leiomyosarcoma. Another patient developed a liposarcoma following parotidectomy and adjuvant radiotherapy.

Surgical management

All patients underwent surgery with a curative intent (Figures 1 and 2). They were treated by wide local excision and variable reconstruction as required (Table 1). Free tissue transfer with or without adjunctive skin grafting was the most commonly employed reconstructive option. In the free tissue transfer group, the anterolateral thigh (ALT) fascio-cutaneous and latissimus dorsi (LD) muscle free flaps were the most frequently used (Table 2).