

The 30 year experience of malignant tumours affecting the bones of the foot.

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Introduction:

Bone tumours of the foot are rare, representing only 3%–6% of all bone tumors. They are benign in 75%–85% of cases and malignant in 15%–25%. Wide surgical margins are an important factor in determining the outcome of malignant tumours. The anatomical complexities of the foot can lead to an inadequate resection. Clearly, amputation can negate this problem but can lead to significant psychological, social, physical and financial cost to the patient, with some patients refusing amputation.

Aim

Our database holds the records of all patients referred to our tertiary bone tumour unit over a 30 years. To our knowledge, only a few small series have been published reviewing bone tumours of the foot. The aim of this paper was to use a large musculoskeletal oncology database in order to provide a more accurate incidence of malignant tumours affecting the foot as well as to review the clinical course and outcomes.

Methodology:

Retrospective search of a prospective tumour database identified all patients treated at our unit with a malignant tumour affecting the bones of the foot. Patient demographics were recorded along with the site of their primary malignancy, region of the foot involved and management. Haematological malignancies were excluded.

Results:

A search of our database, which holds prospectively gathered data on over 40,000 patients, including over 4,000 patients with a bone sarcoma, identified 239 patients with a malignant foot lesion, of which, 70 had a malignant tumour involving the bones of the foot.

15 (21%) patients had a metastatic lesion. Median age at presentation was 67 years (range 14-83 years). 9 female, 6 male. Median length of foot symptoms was 24 weeks (range 6-104 weeks). 12 (80%) of the metastases were found in the mid/ hindfoot with the remainder in the forefoot.

In 3 patients there was no history of past malignancy. The disease free interval from diagnosis of the primary to the diagnosis of metastasis varied from 7 to 64 months (mean 19.3 months). In only 3 patients were there other known metastases.

10 (67%) patients had infra-diaphragmatic primary lesions. 4 had primary carcinoma of the lung. 3 (20%) patients, who presented to our unit without a prior history of malignancy, were subsequently diagnosed with metastatic carcinoma following biopsy. In 12 (80%) patients the foot metastasis was the only metastases clinically apparent at presentation. 9 (60%) received palliative radiotherapy, 3 (20%) underwent amputation, and 3 (20%) were treated expectantly. Median survival following diagnosis of pedal metastases was 20.1 months (Range 2.3 – 104.5).

55 (79%) had a primary malignant lesion. Median age of presentation was 37 years (range 1-89 years). 26 female, 29 male. The overall median length of symptoms was 52 weeks (range 4-780 weeks). The median length of symptoms for Ewing's sarcoma was 26 weeks (range 4- 312 weeks); for osteosarcoma 44 weeks (range 5-156 weeks); and for chondrosarcoma 104 weeks (range 12- 780 weeks). Areas of the foot involved included; 17 (30.9%) hallux/ first ray, 21 (38.2%) lesser toes/ metatarsals; 12 (21.8%) calcaneal, with 2 lesions in the talus and cuboid and 1 in the navicular. There were 10 (18.2%) osteosarcomas (2 low-grade central, 4 parosteal, 4 high-grade), 20 (36.4%) Ewing's sarcomas and 25 (45.5%) chondrosarcomas (6 low-grade, 17 intermediate grade, 1 high grade, 1 dedifferentiated). 8 (14.5%) patients were referred to our unit having had a "whoops" procedure at the referring hospital. The management of all patients involved a consensus agreement at our sarcoma multidisciplinary team (MDT) meeting, with neo-adjuvant and adjuvant chemo and radiotherapy being administered to sensitive cases using standard protocols. The surgical management included 18 ray amputations, 18 below knee amputations, 5 toe amputations, 2 resections with biological reconstruction, with 3 patients having intra-lesional curettage. 6 (13%) patients developed a local recurrence and 5 developed metastatic disease.

Conclusion

We present the largest single centre review of malignant bone tumours affecting the foot. In our experience 21% of malignant bony foot tumours are metastatic and 79% are a primary bony malignancy. Our series confirms that patients often have to suffer with protracted symptoms prior to the establishment of the correct diagnosis. The variety of differential diagnoses may explain the long delay in diagnosis. Worryingly, 14.5% of the primary bone malignancies in our series underwent a "whoops" procedure. This highlights further that physicians need to maintain a high index of suspicion when treating a patient with foot symptoms, even when the symptoms may be protracted.