

ROUNDUP³⁶⁰

Oncology

Time changes, results may not

■ It is not quite evolution but we perhaps like to think that, as orthopaedic surgery improves, so do its results. Work from **London (UK)** is fascinating in this respect. Researchers looked at the incidence and survival of patients with all subtypes of primary malignant bone sarcomas from 1979 to 2007 by analysing data held by the National Cancer Intelligence Network. They found 11 002 new cases over this time, a mean of 379 per year, and with no change in incidence during the study period. However, patients registered between 1983 and 1987 had better outcomes than those registered between 1979 and 1983 but, sadly, there has been no improvement since 1987. The most recent five-year survival figures were 55% for Ewing's sarcoma, 70% for chondrosarcoma, 56% for chordoma and 43% for osteosarcoma. Those with non-extremity tumours had worse outcomes than those with lesions of the extremity.¹ ³⁶⁰ finds this work both absorbing and humbling. We orthopaedic surgeons are clearly not as good as we think and our forefathers were obviously not daft. There is still plenty of work to be done.

Avoiding hemipelvectomy

■ Perhaps not every limb needs to be removed should a patient have the misfortune to develop a malignant bone tumour. There are few more mutilating procedures, for example, than an external hemipelvectomy. Workers from **Rochester (USA)** investigated this by reporting

long-term survival, rate of local recurrence, metastases, function and need for further procedures in patients who had undergone limb salvage procedures for malignant pelvic tumours. By retrospectively reviewing 60 patients who had received treatment before 1989 they found an overall survival rate of 45% at a median follow-up of 30 years. Survival was strongly influenced by the stage of tumour, being 100% for Stage IA, 75% for Stage IB, 31% for Stage IIB and 0% for Stage III. Although this was only a level IV study, the happy conclusion is that pelvic limb salvage appears to be a reasonable option if satisfactory margins can be achieved. Furthermore, if a patient with a pelvic sarcoma is free of disease five years after tumour resection, the subsequent risk of death from the disease seems to be low.²

Excising the impalpable tumour

■ How do you properly excise a tumour that cannot be adequately palpated? The use of intra-operative ultrasonography has already been shown to be useful for liver metastases, breast masses and melanoma. However, until recent work by researchers from **Buenos Aires (Argentina)**, the use of this technique during the resection of small soft-tissue musculoskeletal tumours had not been addressed. Reporting on 22 such tumours, each impalpable and < 3 cm in size, post-operative echography confirmed complete extirpation of tumours in all patients while histopathology

also confirmed adequate margins of excision. The mean surgical time was only 30 minutes and the mean length of incision a paltry 5.7 cm.³ Good work it seems, with room for further development.

Bone scintigraphy

■ Bone scintigraphy has been widely used in orthopaedic oncology over many years and one such use has been in the initial staging of chondrosarcomas of bone. Yet with the advent of MRI, how useful is scintigraphy in the modern era? Workers from **Birmingham (UK)** have looked into this for 195 chondrosarcomas in 188 patients. Whole-body bone scintigraphy showed increased activity at the site of one or more chondrosarcomas. However, in 67 patients there was increased activity at the site of the chondrosarcomas and further abnormal activity in other areas of the skeleton. No skeletal metastases were found in this series. The authors have concluded that there is little role for the routine use of whole-body bone scintigraphy in the initial staging of patients with chondrosarcomas of bone, irrespective of the tumour's histological grade.⁴

Chondrosarcoma and adjuvant therapy

■ A significant problem of chondrosarcomas is their high rate of local recurrence and metastases because of the lack of adjuvant therapies. Workers from **Münster (Germany)** have thus investigated the use of the bisphosphonates clodronate and

zoledronate on two chondrosarcoma cell lines, HTB-94 and CAL-78. It appeared that zoledronate could reduce CAL-78 cell activity by up to 95%. It was also more effective than clodronate in the reduction of cell viability for both cell lines. Clodronate showed significant cytotoxic effects in high concentrations and after longer incubation periods.⁵ ³⁶⁰ notes that further research is obviously necessary but that bisphosphonates may also play a role in the treatment of chondrosarcomas.

Imatinib mesylate for PVNS and TGCT

■ Pigmented villonodular synovitis (PVNS) and tenosynovial giant cell tumours (TGCT) are rare forms of neoplasm that are usually benign. On occasion, PVNS is referred to as a diffuse-type giant cell tumour. These lesions are driven by an overexpression of colony-stimulating factor-1 (CSF1). Imatinib mesylate is known to block CSF1R and there is some case-report evidence that it might also exert antitumour activity. The rarity of these lesions lends itself to a multicentre study, so the involvement of 12 separate referral centres in Europe, the USA and Australia is impressive. Researchers from **Lyon, Bordeaux, Villejuif and Nantes (France), Leiden and Nijmegen (The Netherlands), Milan (Italy), Melbourne (Australia), London (UK)**, as well as **Boston and New York (USA)** have come together to find 29 patients, of whom 27 could be included in a retrospective analysis of outcome. The

most common site for disease was the knee and the median age of the patients was 41 years. Each patient had received imatinib mesylate and the bulk (69%) had also undergone previous surgery. However, despite a high rate of symptomatic improvement, six of the patients discontinued the use of imatinib mesylate because of toxicity and four others discontinued it for no clear medical reason. It thus appears that the medication does demonstrate benefits in alleviating morbidity in patients with either PVNS or TGCT but that its use must be balanced against its potential toxicity.⁶

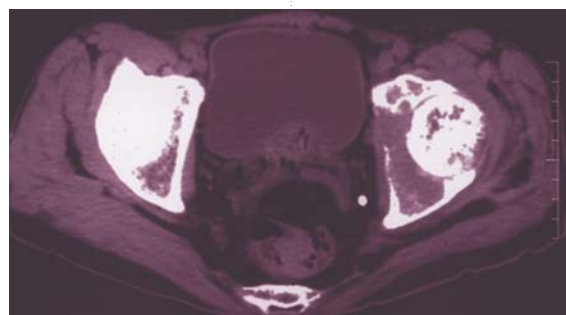
Forequarter and hindquarter amputations

■ Major amputations are sometimes indicated for advanced tumours when limb-preservation techniques have been exhausted. Yet what is their effect on survival? Researchers from **Tampa (USA)** have looked at this in 40 patients who underwent forequarter or hindquarter amputation over slightly more than ten years. The most common reason for amputation was sarcoma (55%). The second most common was a squamous cell carcinoma (25%). Of the 40 patients, 30 underwent a forequarter amputation and ten a hindquarter. Although wound complications occurred in 35% of the patients, pain was improved in 78%. Unfortunately 79% of patients experienced either local or distant recurrences. Despite these findings, however, the authors conclude that although recurrence rates remain high after these radical amputations, some patients can achieve a prolonged survival.⁷ The jury is out, thinks 360.

Skin cover and the medial gastrocnemius flap

■ One clear skill required of an orthopaedic oncology surgeon is an ability to fill large gaps and to obtain skin cover. Work from **Lyon**

(**France**) and **Dallas (USA)** is interesting in this regard. A study was performed in 20 fresh cadavers to compare the arc of rotation of a medial gastrocnemius flap based on three methods – standard harvesting, dissection of the pes anserinus, and dissection of the medial condyle. The area covered by each flap was calculated. The workers found that the mean surface area of the flaps did not vary with the technique used but that a marked gain in length was achieved by pes anserinus dissection alone or the combination with medial condyle dissection. 360 notes the authors' conclusion that it is important to assess the benefit/risk balance between different tech-



niques according to the type and extent of soft-tissue loss that might require reconstruction.⁸ Despite being a laboratory study only, this is certainly food for thought for tumour surgeons when dealing with lower limb musculoskeletal oncology.

En bloc spinal resection for Ewing's sarcoma

■ Chemotherapy and radiotherapy are well-known treatments for Ewing's sarcoma of the spine. However, there is no consensus on the role of *en bloc* resection of these tumours, a problem investigated by surgeons from the Rizzoli Institute in **Bologna (Italy)**. They reported on 27 patients with primary Ewing's sarcoma of a mobile spine who had been treated between 1979 and 2008 by the same multidisciplinary team. Surgery had been

performed in 17 patients while all patients had received multiagent protocols of chemotherapy and radiotherapy. Patients were reviewed for a minimum of two years or until death, although there was actually a mean follow-up of 65 months. The results showed that an *en bloc* resection with a tumour-free margin provided better local control and longer survival. However, the results after intralesional margin resection or piecemeal excision combined with chemotherapy and radiotherapy were less effective than radiotherapy and chemotherapy alone.⁹ It appears that this major procedure of *en bloc* resection, which 360 feels by any standards to be demanding, does

confer an advantage.

Composite fixation for pathological fractures of the humerus

■ Surgeons have for many years stabilised pathological fractures using a combination of polymethylmethacrylate bone cement and internal fixation. Surgeons from **Pittsburgh (USA)** have now reported their experience of securing pathological fractures of the humerus in this way. Through a retrospective review over 20 years of patients treated at a tertiary musculoskeletal oncology centre, they found 63 patients to study with, coincidentally, a mean age of 63 years, too. All had undergone intralesional tumour curettage followed by fixation with intramedullary polymethylmethacrylate and plating.

There were complications in 22.2% and 11.1% required re-operation. By a mean follow-up of 75 months, 47 patients (74.6%) had died but 16 (25.4%) were living. Of the survivors, none had pain and all could perform activities of daily living without help.¹⁰ It certainly appears as if this cemented-plate technique does provide a reliable option for pathological fractures of the humerus.

REFERENCES

1. Whelan J, McTiernan A, Cooper N, et al. Incidence and survival of malignant bone sarcomas in England 1979-2007. *Int J Cancer* 2011;(Epub ahead of print).
2. Sherman CE, O'Connor MI, Sim FH. Survival, local recurrence, and function after pelvic limb salvage at 23 to 38 years of followup. *Clin Orthop* 2011;(Epub ahead of print).
3. Farfalli GL, Aponte-Tinao LA, Rasumoff A, Ayerza MA, Muscolo DL. Intraoperative ultrasound assistance for excision of impalpable musculoskeletal soft tissue tumours. *Orthopedics* 2011;34:e570-573.
4. Douis H, James SL, Grimer RJ, Davies MA. Is bone scintigraphy necessary in the initial surgical staging of chondrosarcoma of bone? *Skeletal Radiol* 2011;(Epub ahead of print).
5. Streitzburger A, Henrichs M, Ahrens H, et al. Cytotoxic effect of clodronate and zoledronate on the chondrosarcoma cell lines HTB-94 and CAL-78. *Int Orthop* 2011;35:1369-1373.
6. Cassier PA, Gelderblom H, Stacchiotti S, et al. Efficacy of imatinib mesylate for the treatment of locally advanced and/or metastatic tenosynovial giant cell tumor/pigmented villonodular synovitis. *Cancer* 2011;(Epub ahead of print).
7. Parsons CM, Pimiento JM, Cheong D, et al. The role of radical amputations for extremity tumors: a single institution experience and review of the literature. *J Surg Oncol* 2011;(Epub ahead of print).
8. Veber M, Vaz G, Braye F, et al. Anatomical study of the medial gastrocnemius muscle flap: a quantitative assessment of the arc of rotation. *Plast Reconstr Surg* 2011;128:181-187.
9. Boriani S, Amendola L, Corghi A, et al. Ewing's sarcoma of the mobile spine. *Eur Rev Med Pharmacol Sci* 2011;15:831-839.
10. Weiss KR, Bhumbra R, Biau DJ, et al. Fixation of pathological humeral fractures by the cemented plate technique. *J Bone Joint Surg [Br]* 2011;93-B:1093-1097.