ROUNDUP360

Oncology

Prolonged symptom duration does not always exclude malignancy

These days it seems almost impossible to have a case report published anywhere. Certainly at *360* they do not feature highly on our wish list. Yet sometimes a case springs out at you. How about this one from **Hong Kong (China)** that presents the case of a 31-year-old woman with a 23-year history of a mass in her right buttock that was otherwise asymptomatic? Her blood investigations were normal, as was her renal and liver function. MRI showed a well-circumscribed lesion (6.3 cm × 7.2 cm × 9.3 cm) in the gluteus medius. Complete resection was achieved, with a 1 cm margin, histology revealing a low-grade fibromyxoid sarcoma. This is a fully malignant tumour with the potential for distant metastasis.[1] The lesson? It does not matter how long a lump has been there, you cannot exclude malignancy. *360* agrees with the authors that a vigilant approach should be taken for any tumours that are larger than 5 cm.

Peri-operative mortality and above-knee amputation

Bone and soft-tissue tumours affect an estimated 2500 individuals within the UK each year. It has been reported that 70% of bone sarcomas occur around the knee and while many of these patients will be offered limb salvage, up to 15% will eventually need an amputation. Soft-tissue sarcomas also have a propensity to affect the lower limb and while many of these will be treated with wide surgical excision and radiotherapy, a number will eventually require amputation. Although amputation should proceed uneventfully, it does not always do so and peri-operative deaths have at times been reported, particularly related to thromboembolic events. A team from **Birmingham (UK)** has looked at this problem in detail as part of a retrospective review of data stored on a prospective database. They identified 484 patients who had undergone an above-knee amputation between 1980 and 2011. The most common diagnosis leading to amputation was osteosarcoma (45%) followed by chondrosarcoma (6%). The majority of patients (n = 301) underwent an above-knee amputation as a primary procedure (62%). There were two inpatient deaths soon after the amputation (mortality 0.4%) and a further two deaths within 30 days of the procedure (30-day mortality 1%). Only two deaths were directly related to the procedure and were because of a pulmonary embolism. The incidence of non-fatal, clinically evident thromboembolic events was 0.6% in the first 30 days after surgery. For the malignant disease itself, the one-year survival was 79% and the five-year survival was 52%. Above-knee amputations are performed mainly for vascular reasons but also for bone or soft-tissue tumours of the lower limbs. They represent two completely different patient groups. Interestingly, the latter group – the oncology patients – has a lower chance of peri-operative mortality (< 1% for oncology patients *versus* 8% to 23% for vascular patients). Presently, there is no consensus about thromboprophylaxis because of the increased risk of bleeding. However, as modern methods of prophylaxis have generally low complication rates, the authors propose routine prophylaxis for patients undergoing above-knee amputations if they are aged > 60 years or have other risk factors for thromboembolic disease.[2] In *360*'s view this advice seems sensible.

Giant cell tumour of the spine – a challenging management problem

Giant cell tumours only rarely attack the spine but if they do their management can be challenging. A team from **Bologna (Italy)** has looked into this by undertaking a retrospective review of 49 cases of giant cell tumour of the mobile spine treated surgically. Median follow-up was 145 months with a minimum of 24 months or until death. The authors used the Kaplan-Meier method to test whether Enneking stage, type of surgery, or the surgical margin had a significant impact on local recurrence. Of the 49 patients, 11 (22%) had local recurrence. The latest recurrence occurred at 60 months. Those patients aged < 25 years had a worse relapse-free survival. En bloc resection was associated with better local control with Enneking stage III tumours; however, intralesional resection provided adequate control of Enneking stage II tumours. There were six (12%) cases of metastasis, and two patients died from disease progression. One patient died from the complications of the surgery. The authors conclude that en bloc resection should be considered for Enneking stage III giant cell tumours of the mobile spine. This choice must be balanced with the inherent risks of the procedure. Meanwhile, intralesional resection of Enneking stage II tumours provides adequate local control.[3] The authors remind us that patients should be followed for at least five years because local relapse can occur quite late. A good paper, we thought at *360*, from a renowned and highly specialist unit in Italy.

Giant cell tumours (again) – this time from Germany

Giant cell tumours have clearly attracted much attention in recent months, as a team from **Cologne (Germany)** has also reported on 19 cases affecting the spine or sacrum. They evaluated the outcome of different treatment methods. Of the 19 patients, six had their tumour in the spine and 13 in the sacrum. The mean follow-up was 51.6 months. For the sacral tumours, ten were treated by intralesional procedures of which four also received embolisation, and three received irradiation only. All the spinal tumours were treated surgically. There were two (15.4%) patients with sacral local recurrence and four (66.7%) with spinal local recurrence, two of whom subsequently developed pulmonary metastases. One local recurrence of the spine was successfully treated by serial arterial embolisation, a procedure previously described only for sacral tumours. At the latest follow-

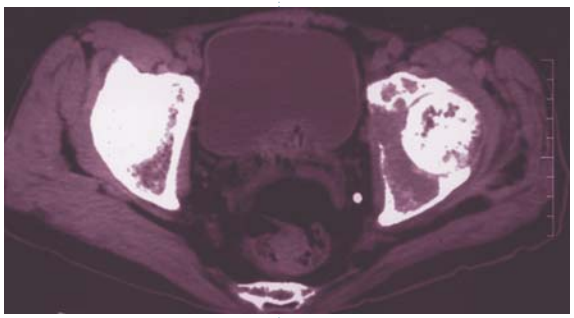
up, nine patients had no evidence of disease, eight had stable disease, one had progressive disease, and one had died from their disease. *360* notes the authors' conclusions that a giant cell tumour of the axial skeleton has a high local recurrence rate and that neurological deficits are common. *En bloc* spondylectomy combined with embolisation appears to be the treatment of choice. In case of inoperability, serial arterial embolisation seems to be an alternative not only for sacral but also for spinal tumours.[4]

Surgical resection for Ewing's sarcoma

■ Ewing's sarcoma has traditionally been treated with chemotherapy and radiotherapy. However, in the last few decades, a multidisciplinary approach to these lesions has been advocated, with surgical resection playing an increasing role in local control. A team from **Mumbai (India)** has looked into this and has reported the results of 26 patients treated over a nine-year period. For these patients, 13 resections included the acetabulum and 13 did not. No reconstruction was performed in the 13 patients who did not have resection of their acetabulum. However, arthrodesis was performed in two, extracorporeal radiation and reimplantation in two, and a pseudarthrosis created in nine. There were three patients who had involved margins. For chemotherapy, 17 patients had a good response but nine were poor responders. There were 21 patients available for follow-up at a mean of 36 months, and there were 13 patients who were alive at the time of this analysis. There was one local recurrence. Using a Kaplan-Meier analysis the overall survival was 72% at five years. The three-year survival in good responders to chemotherapy was 94% compared with 30% in poor responders. The Musculoskeletal Tumour Society score ranged from 23 to 29, with patients in whom the acetabulum was retained having better function than those in whom the acetabulum was resected.[5] This is good work, we feel at *360*, as Mumbai has clearly pushed the therapeutic envelope by undertaking resections in this difficult group of tumours. It appears that surgery provides good local control, with good oncological outcomes, as well as acceptable function in these patients.

Intercalary allograft reconstruction of the femur for tumour defects

■ With an improved survival for patients with bone malignancies, there is a trend towards reconstruction of the defects with biological techniques. While the use of an intercalary allograft is an option, this can be technically demanding and it is unclear whether the complication rates and survival associated with this are any better than with other treatments. Consequently, researchers from **Buenos Aires (Argentina)** have looked into the matter. They assessed survivorship, complications, and functional scores of 83 patients who had received intercalary femoral segmental allografts. This was a Level IV therapeutic study with the patients being retrospectively reviewed. Allograft survival was determined using the Kaplan-Meier method and patient function assessed with the Musculoskeletal Tumor Society scoring system. The minimum follow-up was 24 months, the median being 61 months. Survivorship was 85% at five years and 76% at ten years. Allografts were removed in 15 of the 83 patients: one with infection, one with local recurrence, and 13 because of fracture. Of the 166 host-donor junctions, 22 (13%) did not heal initially; the nonunion rate being 19% for diaphyseal junctions and 3% for metaphyseal junctions. The authors identified an increase in the diaphyseal nonunion rate in patients who had been internally fixed with intramedullary nails (28%) compared with those who had been fixed with plates (15%). All patients without complications had mainly good or excellent Musculoskeletal Tumor Society functional results. This work has shown that diaphyseal junctions have higher nonunion rates than metaphyseal ones. Also, internal fixation should span the entire allograft to avoid the risk of fracture.[6] *360* was pleased by the authors' observations, which essentially suggest that segmental allograft of the femur is an acceptable choice when reconstructing tumour resections.



An induced membrane technique for large bone defects

■ With biological reconstruction being all the rage for large bone defects, a new alternative is the induced membrane technique. This is sometimes called the Masquelet technique. It is a two-stage procedure. During the first stage, stabilisation is performed after the bone resection and a cement spacer is inserted followed by soft-tissue repair. The second stage is performed a few weeks later, with removal of the spacer, bone decortication and use of cancellous bone graft in the biologically induced membrane. Surgeons from **Bron (France)** have looked at this method and have reported the preliminary results in eight children. This was a prospective study of six girls and two boys, with a mean age of 12.1 years. They had been treated for a mean 15 cm defect created by resection of an osteosarcoma (n = 4), Ewing's sarcoma (n = 3) or low-grade sarcoma (n = 1). All patients except one were given pre- and post-operative chemotherapy. The distribution of the tumours was distal femur (n = 3), proximal tibia (n = 2), proximal humerus (n = 1), humeral shaft (n = 1) and fibula (n = 1). Fixation was mainly performed with either a locking compression plate or locked nail and the mean operating times for first and second stage procedures were 4.8 and 4 hours, respectively. The healing process was radiologically assessed. After a mean follow-up of 21.6 months, all patients were free of disease and seven had bony union. For the lower limb reconstructions, it was possible to bear full weight after a mean of 116 days after the second stage. Meanwhile, the mean time to bony union was 4.8 months. The early Musculoskeletal Tumor Society score was 25.2. Complications were one nonunion and one paradoxical graft resorption that required graft revision. *360* notes the advantages of this procedure in that it reduces the operating time during the first stage and also reduces early complications. Rapid bony union is achieved despite major bone resection and the use of chemotherapy.[7] This method could be an excellent alternative for biological reconstruction after tumour resection in children, as the authors suggest.

We are no better than we were

■ *360* has published a similar finding in an earlier issue but it pays to say it again. Alas, we surgeons do not seem to have greatly improved over the years. This is well highlighted by a meta-analysis from **Los Angeles (USA)** into the outcomes of osteosarcoma in the modern medical era. The authors write that osteosarcoma was once considered such a fatal condition that early studies measured outcome in terms of "months to metastasis" rather than actual survival. In the early 20th century, osteosarcoma survival was measured at 5%. In the 1950s,

neither surgery, nor radiation, nor rudimentary chemotherapy regimes significantly impacted survival, with the largest study of the decade citing a 22% five-year survival. With the advent of higher dose, multi-agent chemotherapy regimens, the five-year survival steadily increased to as high as 81.6% in the 1970s. However, casual inspection of published data indicates that since the 1970s, survival and perhaps other outcome measures have yet to improve further. As surgical techniques and implants have evolved, chemo-therapeutic agents used today seem very similar to those used 30 years ago. This study confirms suspicions about the lack of improvement in osteosarcoma survival in more recent times. In fact, disease-free survival at the three-year, five-year, and ten-year marks has actually decreased over the last 20 years. That said, limb salvage rates as well as survival rates in limb salvage populations, have continued to climb, and both have increased significantly since the 1970s. This may indicate improve-ments in biopsy and limb salvage reconstructive methods. However, and most unfortunately, this study confirms suspicions about the stag-nation of progress in the manage-ment of systemic osteosarcoma. After tremendous improvement in the 1970s, survival measures have failed to demonstrate any further increase since the 1980s.[8] *360* has to agree with the authors, that after 30 years of lack of progress, the orthopaedic community should re-evaluate its treatment paradigms and think along different lines. We feel that time has passed us by and that patients are paying the price.

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