Difficulties in diagnosing soft-tissue sarcomas: a case of synovial sarcoma of the foot

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Soft-tissue sarcomas can be difficult to diagnose in the primary care setting, with around 87% of all tumours found in the foot being benign.\(^1\) History and clinical findings can make them difficult to distinguish from benign tumours. Kirby et al found that ganglions make up to one-third of benign tumours of the foot.\(^1\) Synovial sarcoma is the most common malignant tumour of the foot.\(^1,2\)

Case report

A 39-year-old woman, with a past history of traumatic brain injury and cervical cancer, presented to her general practitioner with a 2-year history of a mass between her second and third toes (Figure 1). It had accelerated in growth over the last 4 months, and on examination was firm and mobile with normal neurovascular findings.

Figure 1. Clinical photograph taken preoperatively. Note the large size of the tumour

Plain X-rays were normal. Magnetic resonance imaging (MRI) showed a soft-tissue mass measuring 3.1 × 3.3 × 4.1 cm with no bony involvement or apparent association with neurovascular structures. Post contrast there was inhomogenous enhancement (Figure 2).
The patient went on to have an excision biopsy of a well circumscribed tumour. There was a close association with the digital nerves. Histology revealed biphasic synovial cell sarcoma with spindle cell element (Figure 3). Atypical 18q11.2 SS18 gene rearrangement was detected.
The patient went on to have a normal staging computed tomography scan (CT) of the chest and MRI of the lower limb and was referred to a tertiary tumour centre. She proceeded to amputation of the second and third rays with an uneventful postoperative course. She received a course of adjuvant radiotherapy and is doing well 8 months postoperatively.

**Discussion**

Soft-tissue sarcomas classically present as a painless enlarging mass.\(^3,4\) Growth can be fast or slow and is often associated with the grade of the tumour, with higher grades tending to be faster growing.\(^5\) Sarcomas are usually non-tender, firm and well circumscribed. They have a tendency to be large in size (>5 cm) and fixed to local tissues.\(^2,4\)

Imaging consists of plain X-rays followed by advanced imaging for local and systemic staging. Plain X-rays can show spotty calcification however this finding is not limited to synovial sarcoma.\(^3,4\) MRI is the best available imaging modality for local staging with low signal intensity on T1 weighted images and high signal on T2 weighted.\(^2\) A CT scan of the chest should be performed to rule out distant metastases.

Biopsy is then performed and should involve consultation with a musculoskeletal oncologist to ensure incisions avoid contamination and allow for adequate limb salvage if required.\(^2,3,8\)

Synovial sarcoma is the third most common soft-tissue sarcoma of the extremity. It accounts for 6–9% of all adult soft-tissue sarcomas.\(^3,6\) Synovial sarcoma is most commonly seen in the extremity (80%) and despite its name is not associated with normal synovial cells.\(^5,6\) Incidence is similar between males and females.\(^9\)
Synovial sarcoma commonly presents as a mass that has been present for months or years that has had recent rapid growth.\textsuperscript{2} Common metastatic sights are the lung and peripheral lymph nodes with reported rates over 50\% and 10–12\% respectively.\textsuperscript{5}

Histologically synovial sarcoma presents as one of two subtypes; monophasic or biphasic. Monophasic consists of ovoid spindle cell elements, while biphasic has both spindle cell and epithelial cell components. Over 90\% of cases show a characteristic translocation between chromosomes X and 18.

Management is largely surgical with the focus on en bloc excisions through normal tissues planes. This should be performed with either primary excision or include an incisional biopsy site if present. Surgery in the main is limb sparing but amputations are considered, especially in the setting of local recurrence. Surgery has a very limited role in metastatic disease.\textsuperscript{5}

Radiotherapy has a role when tumour size is greater than 5 cm and is shown to improve local recurrence rates. Ideally this should be started post operatively to reduce the risk of wound complications.\textsuperscript{9}

Survival rates for synovial cell sarcoma vary with 65–75\% 5-year survival in those with no metastatic disease on presentation.\textsuperscript{2,6,10} This drops to 10–22 months if metastatic disease is present at presentation.

Other negative prognostic factors for survival include tumour size greater than 5 cm and invasion of bone, nerve or vascular structures.\textsuperscript{6–8,10} Negative prognostic factors for local recurrence include proximal location and positive margins.\textsuperscript{8,10}

This case illustrates the difficulties of distinguishing benign from malignant soft-tissue tumours. The New Zealand Guidelines Group recommends patients with an unexplained mass associated with increasing size or that is hard or tethered to surrounding tissues should have advanced imaging and referral to specialist prior to any biopsy.\textsuperscript{11}

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