

Massive, well-differentiated liposarcoma of the axilla

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We present a case of well-differentiated liposarcoma (WDL) involving the right proximal arm and axilla in a 66-year-old Filipino male. The patient first noticed the lesion 18 years ago, and it subsequently slowly progressed in size. MR and CT imaging interpreted the lesion as likely being a WDL, a diagnosis that was confirmed by histology.

Case report

A 66-year-old Filipino male presented to our institution with a history of a slow-growing mass in his right proximal arm that he first noticed 18 years ago as a small egg-shaped bulge. After those 18 years, the patient presented with a soccer-ball-sized mass involving his proximal arm and axilla (Fig. 1).

The overlying skin was normal in appearance, although with several large, tortuous, superficial veins. The mass did not transilluminate, and the forearm was of normal caliber with normal pulses. The patient denied any pain at rest or with palpation; however, he was unable to fully adduct his arm due to the size of the mass. A review of systems was negative. The patient's medical, surgical, and family histories were not contributory. There was no history of any radiation treatment, trauma, or prior malignancy in the affected extremity.

MRI revealed a large, multilobulated, heterogeneous, predominantly fat-containing lesion that measured 18.9 cm (anterior-posterior) by 19.5 cm (transverse) by 29.7 cm (craniocaudal) in greatest dimension (Figs. 2 and 3).



Figure 1. Large, soccer-ball-sized mass involving the patient's upper arm with several large, superficial, tortuous veins.

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The mass arose from the medial soft tissues of the arm at the level of the mid humeral diaphysis and demonstrated growth into the axilla; however, the marrow signal of the humerus was preserved and was without evidence of osseous involvement (Fig. 4).

A component of the mass extended posteriorly into the superior aspect of the upper back (Fig. 5). The mass demonstrated heterogeneous contrast enhancement. The axillary

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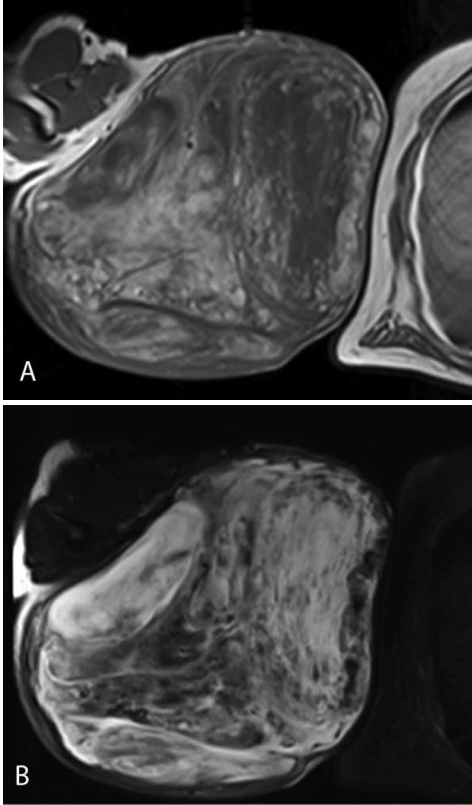


Figure 2. A. Axial T1-weighted MR image through the largest diameter of the mass demonstrates fatty predominance. B. Axial, T2-weighted, fat-saturated MR image at the same level demonstrates decreased signal in the fatty component of the tumor.

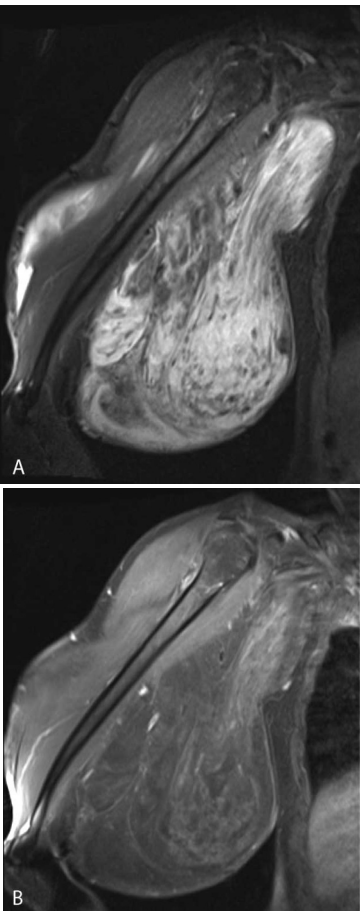


Figure 3. A. Coronal STIR MR image demonstrates lack of osseous involvement. B. Coronal T1, fat-saturated, contrast-enhanced MR image demonstrates lack of osseous involvement and heterogeneous contrast enhancement.

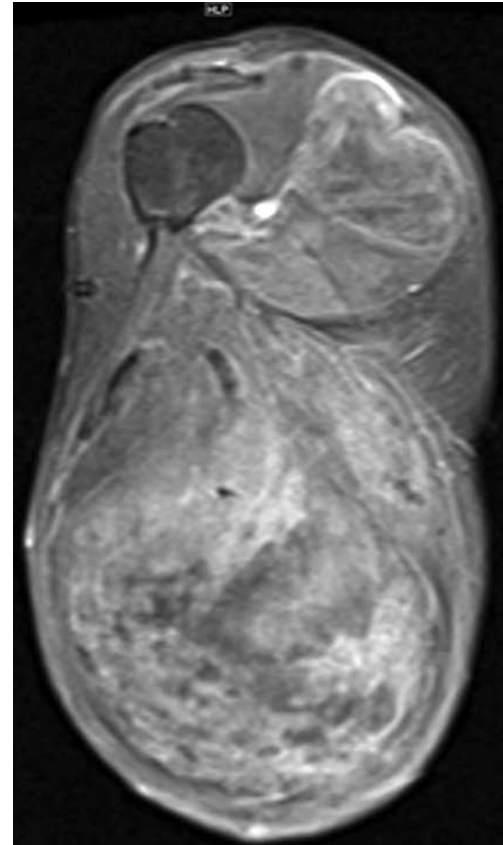


Figure 4. Sagittal, T1W, fat-saturated, contrast-enhanced MR image demonstrates a component of the mass that extends into the superior aspect of the upper back.

vessels and brachial plexus were slightly displaced by the mass, which was thought to be suggestive of highly differentiated liposarcoma.

CT demonstrated an intact humeral cortex and multiple foci of dystrophic calcification (Figs. 5 and 6).

A staging chest CT (not shown) demonstrated multiple, indeterminate, upper-lobe pulmonary nodules. Surgery was recommended to the patient and was subsequently performed. The entire mass was grossly resected, although with positive microscopic margins. Gross pathology demonstrated tan-yellow, paramyxoid-appearing tissue in firm lobules with scattered tan-white nodules and areas of hemorrhage (Fig. 7).

The mass also contained foci of chondro-ossification and areas that were suspicious for necrosis. Microscopic examination revealed adipocytes of variable sizes with dark hyperchromatic nuclei and interposed sclerotic bands (Fig. 8). Foci of chondroid and osseous formation with mineralization were also seen, consistent with the appearance on CT and gross examination. The final diagnosis was WDL (atypical lipomatous tumor) with focal chondroid metaplasia.

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Figure 5. Coronally reformatted, contrast-enhanced bone-algorithm CT image demonstrates an intact humeral cortex with no evidence of osseous involvement.

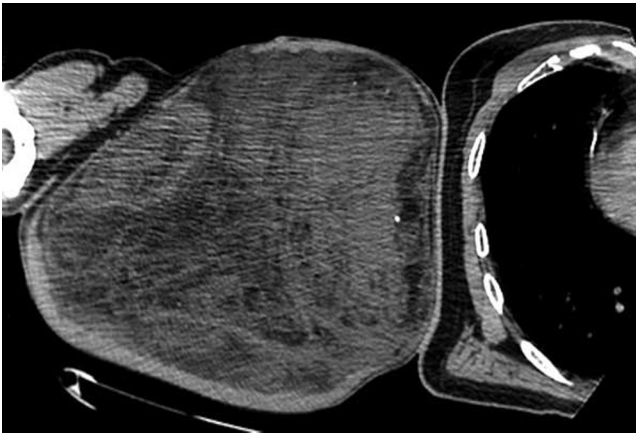


Figure 6. Axial soft-tissue algorithm image of the mass demonstrating foci of dystrophic calcification.

Discussion

WDL, which represents the most common type of liposarcoma, is a tumor composed of mature proliferating adipocytes. This tumor has also been called atypical lipomatous tumor (ALT), although there remains controversy as to which term is more appropriate (1). The typical natural history is that of a slow-growing, painless mass in the retroperitoneum or the limbs (2). ALT-WDL is most common in males and in those between the ages of 50–60 years (2). Differential diagnoses for this presentation include sarcoma, benign lipoma, inflammatory myofibroblastic tumor, and Castleman's disease, although the indolent nature of this patient's mass is highly suggestive of a benign tumor.

WDL typically manifests on CT as a nonspecific mass with soft-tissue and fatty components. In contrast to lipomas, liposarcomas are typically contrast-enhancing. On

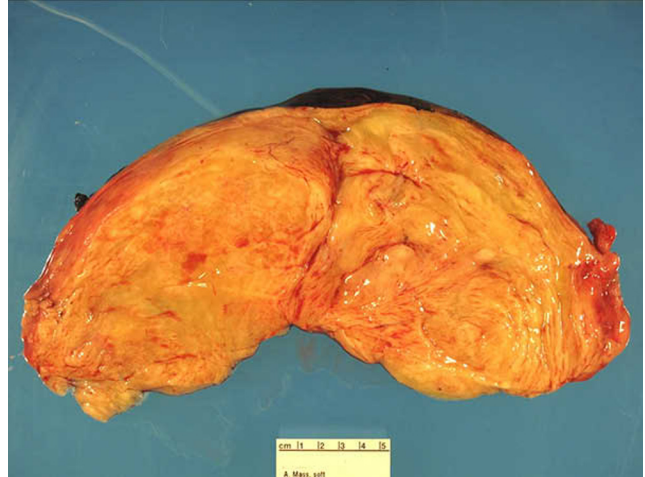


Figure 7. Gross pathology image demonstrating tan-yellow, paramyxoid-appearing tissue in firm lobules with scattered tan-white nodules and areas of hemorrhage.

MR imaging, mass signal intensity closer to that of fat indicates a higher degree of differentiation (3). Thick septa may be seen within the mass as areas of decreased T1-weighted signal and increased signal on T2-weighted images (4). Contrast-enhancing septa with irregular borders on T1-weighted images suggest a more malignant process (5). Calcification, as was seen in this patient's mass, is common and has been seen in 10%–32% of lesions (1).

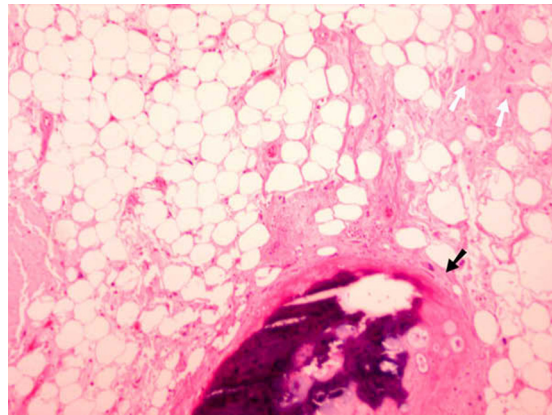


Figure 8. Microscopic examination revealing adipocytes with variable sizes and dark hyperchromatic nuclei (white arrows) with interposed sclerotic bands. Foci of chondroid (black arrow) and osseous formation with mineralization are also seen.

Prognosis varies based on several factors, including location, with those located in the extremities displaying the most favorable prognosis (6). Weiss et al also demonstrated a 2-year recurrence rate of 43% in the extremities, compared to 79% in the groin and 91% in the retroperitoneum (7). Should the lesion dedifferentiate, a process that is time-dependent, metastasis can occur (7). Extremity ALTs in the same series also demonstrated a dedifferentiation rate of

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7% at two years but with no disease-related mortality. One study demonstrated a 10-year local recurrence-free survival of 17%; however, this was specifically with the sclerosing subtype of ALT/WDL (8). Although ALTs frequently recur, they have no potential for metastasis (2). Einarsdottir et al presented a series of three ALTs and found that on MR and CT imaging, the percentage of tumor composed of fat was typically less than 75% (9). Standard treatment primarily consists of surgical resection, although radiation is sometimes employed as a means to decrease the local recurrence in masses that were not completely excised surgically (1).

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