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Quiz case

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1. Patient

1.1. Clinical history

An 18-year-old girl presented with a slowly growing mass on the left pectoral area close to anterior axillary line. There was no trauma history. The lesion was learned to show moderate enlargement during the last 3 years. There was also a pain on her left shoulder extending to the arm in recent months. On physical examination, a tender, soft tissue mass, 5 cm in greatest diameter was detected deep into the left pectoralis muscle. It was also palpable in axillary fold. Laboratory data and chest X-ray were normal.

1.2. Sonographic findings

The patient referred to ultrasound (US) examination. US examination revealed an anechoic lesion with relatively thick septations within it (Fig. 1). The lesion was located within the left pectoralis major muscle.

1.3. Computed tomography findings

Computed tomography (CT) revealed a well circumscribed mass lesion with heterogeneous density in the left pectoralis muscle. There was a marked decreased attenuation at the anterior portion of the lesion relative to the other parts suggesting fatty tissue. But density measurement revealed 23–25 HU is consistent with fluid or semisolid nature of the lesion. There was a small peripheral hyperdense area consistent with calcification (arrow) (Fig. 2).

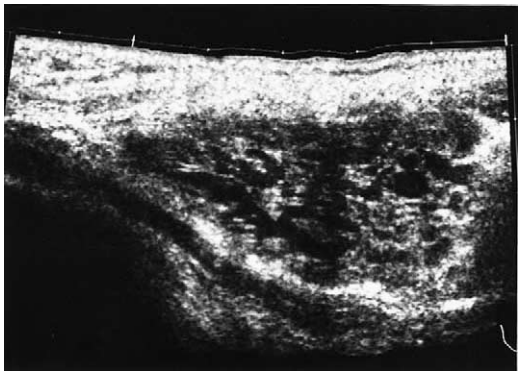

Fig. 1. US section shows an anechoic lesion intermixed with echogenic thick septations within the fibrils of pectoralis major muscle.

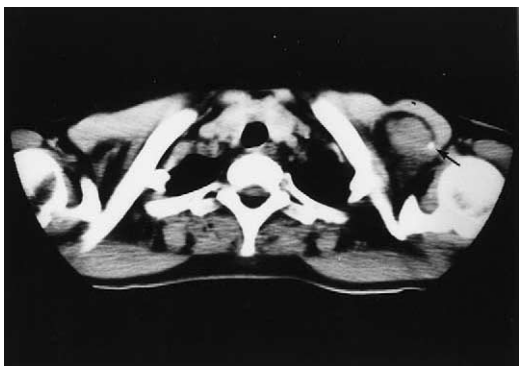

Fig. 2. Axial CT section reveals a well-circumscribed lesion within the pectoralis major muscle. Note anteriorly located low attenuation area relative to the other components of the lesion at small calcification (arrow).

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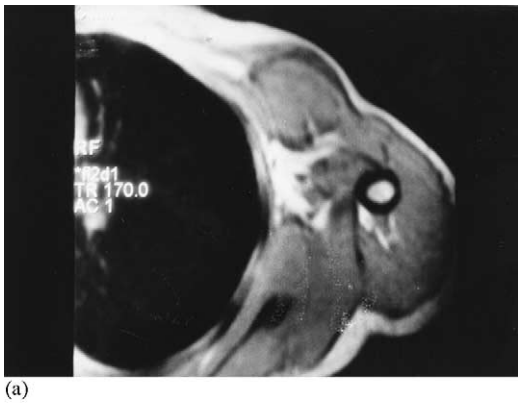
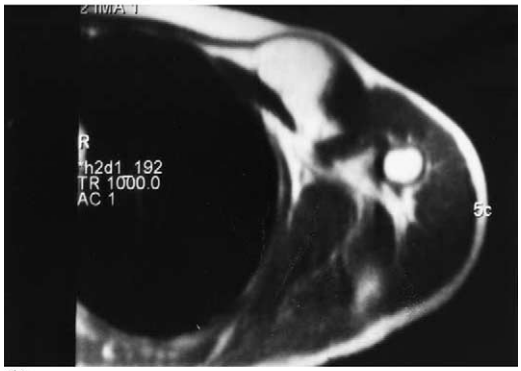


(a)



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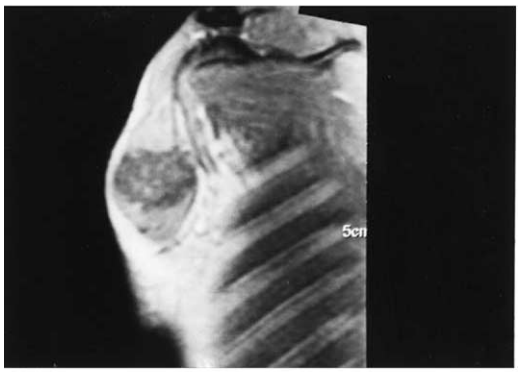

(c)

Fig. 3. (a) Axial Flash T1-weighted section shows a homogeneous mass lesion at the left upper thorax isointense relative to neighboring muscle tissue. (b) Axial HASTE T2-weighted MR image homogeneous hyperintense lesion. (c) T1-weighted sagital image after contrast medium injection shows marked contrast enhancement at the septations.

1.4. Magnetic resonance (MR) imaging findings

The lesion was homogeneous on T1-weighted spin-echo magnetic resonance (MR) imaging. The signal intensity of the lesion was similar to neighboring muscle tissue (Fig. 3a). T2-weighted images showed homogeneous increased signal intensity within the lesion (Fig. 3b). T1-weighted MR images were taken after the injection of contrast medium. We detected contrast enhancement within the septations.

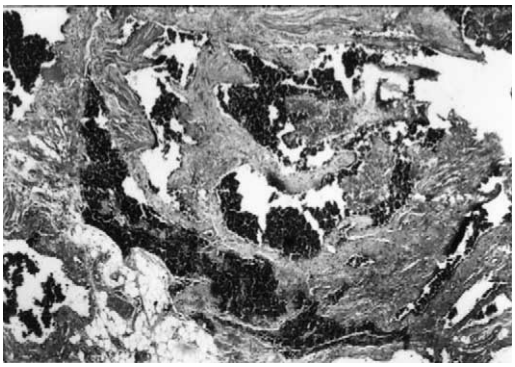

Fig. 4. Pathologic examination revealed congestion of vascular structures and dilated vessels that were lined by endothelial cells. The vessels were surrounded with fat cells, which composed large vacuolated cytoplasm and eccentric nucleus (HE × 40).

2. Diagnosis

Fine needle aspiration biopsy revealed normal blood cells. Excision biopsy was performed with the presumed diagnosis of hemangioma, skin incision made on anterior axillary hair line. Pectoralis muscle fibers separated with blunt dissection, and there after from the lateral to medial $4 \times 3 \times 1.5$ cm mass were extirpated. Pathologic examination revealed congestion of vascular structures and dilated vessels lined by endothelial cells. The vessels were surrounded with fat cells, which were composed of large vacuolated cytoplasm and eccentric nucleus (Fig. 4).

3. Discussion

Soft tissue hemangioma is a common soft tissue neoplasm. Indeed it is the most frequent tumor of infants and children and constitutes 7% of all benign tumors. These lesions more commonly affect women and are usually discovered in the first three decades of life. Clinical abnormalities include pain, a mass that may intermittently change size, and occasionally a bluish discoloration of the overlying skin [1].

Cavernous hemangiomas of skeletal muscle are rare. Although previous reports described localization of intercostal muscle and ribs this is the second case of pectoralis muscle localization [2–6].

Radiographs of soft tissue hemangiomas are often normal, although a nonspecific mass may be apparent. Phleboliths represent a characteristic calcification and are most commonly associated with cavernous hemangioma (30–50% of cases).

US evaluation of soft tissue hemangioma typically reveals a complex mass. Phleboliths are best evaluated by radiograph or CT, however, acousting shadowing may be detected at large calcifications on US.

Soft tissue hemangiomas often show an ill-defined mass on non-contrast enhanced CT studies and marked post contrast enhancement [1]. Serpentine vascular structures and fat

overgrowth may be apparent. These features are better depicted by MRI. CT may identify Phleboliths not seen on radiographs and MR imaging. Lesions are often heterogeneous on all MR pulse sequences because of the combination of tissues present, although low intensity usually predominates T1-weighted images. Vascular components of the hemangiomas typically show high signal intensity on T2-weighted MR images whereas fat shows intermediate intensity. Soft tissue hemangiomas demonstrate prominent enhancement after intravenous administration of gadolinium.

Although hemangioma is the most common soft tissue neoplasm, it is uncommon at the chest wall. Differential diagnosis should be taken into consideration with the other most common chest wall lesions [5]. The most common benign soft tissue tumors of the chest wall are neurilemoma, fibroma, lipoma and fibrolipoma. Lipoma and fibrolipoma can be easily differentiated by their characteristic radiologic findings both on CT and MR. Neurilemoma reveals heteregoneous signal intensities within it and shows marked contrast enhancement after contrast medium injection on CT or MR imaging [1]. Fibrosarcoma, desmoid tumor, malignant fibrous histiocytoma, leiomyosarcoma, hemangiosarcoma are other possible malignant chest wall soft tissue tumors that can be confused with hemangiomas. But their aggressive growth pattern and more heterogeneous appearances can be useful in differentiating these tumors.

Fine needle aspiration or cut biopsies are not diagnostic in those cases. The biopsy material is generally insufficient in differential diagnosis due to normal tissue elements and vascular structures that form the hemangioma. Literature results showed generally normal blood cells and tissue diagnosis in most of the cases in fine needle biopsies [3,4]. The histopathologic evaluation of our biopsy material also revealed normal blood cells. This diagnosis did not exclude the diagnosis of neoplasm and the choice of surgical procedure. The appearance of the mass during surgery and the absence of malignant cells at the biopsy are sufficient to exclude the radical surgery. Total surgical resection of tumor is the treatment of choice for cavernous hemangiomas of the chest wall muscle. The appropriate procedure for the total excision is dictated by two considerations: the mass may reform at least the size of the original lesion which often follows partial excision; radical surgery is not necessary because cavernous hemangiomas do not have malignant behaviors or metastasize.

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