Scapulothoracic Bursitis of the Chest Wall
Sonographic Features With Pathologic Correlation

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Scapulothoracic bursitis is an uncommon lesion. It usually appears as a growing mass at the scapulothoracic interface. Histopathologically, it is characterized by the presence of a thickened fibrotic cystic wall with a synovial inner lining and a capillary proliferation. Occasionally, villous projections can be seen arising from the inner wall. Higuchi et al have reported 9 cases of painless, distended scapulothoracic bursitis with intrabursal hemorrhage mimicking tumors, and these pseudotumoral lesions regressed spontaneously. Scapulothoracic bursitis may occur alone, or it may associate with some other diseases such as osteochondroma, scapular or rib incongruence, overuse syndrome, rheumatoid arthritis, and systemic sclerosis. On computed tomography (CT) and magnetic resonance imaging (MRI), scapulothoracic bursitis typically is seen as a well-demarcated cystic mass situated between the serratus anterior muscle and the thoracic rib cage along the lateral chest wall. To our knowledge, however, sonographic findings of scapulothoracic bursitis have been reported only once. Here we describe a case of scapulothoracic bursitis and emphasize the clinical usefulness of high-resolution sonographic features in this uncommon lesion.

Case Report
A 65-year-old female patient had a painful, rapidly growing mass at the left chest wall for 3 months before admission. She had diabetes mellitus for 7 years with good medical control. No antecedent traumatic history could be traced. Physical examination showed a fluctuant and tender soft tissue mass with the longest diameter of approximately 15 cm at the left posterior lateral chest wall around the inferior angle of the scapula. No scapular snapping, bruises, abnormal discoloration of the skin, or signs of local infection were seen over the lesion site. Chest radiographs revealed a soft tissue mass at the left chest wall without any bony abnormality or calcification.
A sonographic examination was performed with a Sequoia 512 scanner (Siemens Medical Solutions, Mountain View, CA) with a linear 8.5-MHz transducer. It revealed a 16 × 12-cm, well-circumscribed, thick-walled cystic mass between the serratus anterior muscle and the thoracic cage (Figure 1A). Intracystic septa and villous projections along the inner wall were clearly noted. A color Doppler scan revealed the presence of vascularity at the wall, septa, and villous projections (Figure 1B). Magnetic resonance imaging showed a well-defined cystic mass with a few incomplete septa (Figure 1C). No fluid-fluid or fluid-debris level could be identified. Contrast-enhanced T1-weighted images with fat saturation revealed rim-like enhancement of the cystic lesion.

Because of chest wall pain and the failure of conservative treatment, sonographically guided aspiration was suggested. The patient refused it because we could not exclude the possibility of recurrence after aspiration. Because the patient preferred complete removal of the lesion, surgical excision was implemented. The surgeon found that the scapulothoracic mass was tightly attached to the chest wall but could still be dissected from the adjoining tissue. On gross dissection, clear, light yellowish cystic content within the thick fibrous capsule was noted. Numerous villi were seen along the inner wall, but no rice bodies or hemorrhages were identified. Histopathologic examination revealed a cystic lesion with a dense fibrotic wall. The inner

Figure 1. A, Free-style oblique coronal extended view sonogram of the chest wall mass shows a thick-walled cystic mass with a thickened septum (open arrow), thickened wall, and villous projections (solid arrows) between the serratus anterior muscle (arrowheads) and the thoracic cage. B, Doppler study reveals a cystic mass beneath the serratus muscles (arrows) and prominent vascularity in the intracystic papillary projections (arrowheads). C, Transverse T2-weighted MRI reveals a septated (star) cystic mass between the serratus anterior muscle (arrowheads) and the thoracic cage at the inferior angle of the left scapula (arrow). D, Histopathologic examination shows a cyst with thickened fibrotic wall (curved arrow) and synovial lining (arrowheads) as well as capillary proliferation and papillary projections (arrow) (hematoxylin-eosin stain, original magnification, ×400).
wall was covered by synovial lining with papillary projections and capillary proliferation (Figure 1D). The final diagnosis of scapulothoracic bursitis was established. The patient recovered well after surgery. No chest wall pain was noted, and no recurrent mass was found at the 10-month sonographic follow-up.

Discussion

Kuhn et al7 have described the anatomic details around the scapulothoracic interface with 2 major (anatomic) and 4 minor (adventitial) bursas. The major bursas include the scapulothoracic bursa (also called infraserratus bursa), which is between the serratus anterior muscle and the chest wall, and the subscapularis bursa, which is between the serratus anterior muscle and the subscapularis muscle. On the basis of a study of 8 cadavers, Williams et al8 divided the scapulothoracic interface into superficial, intermediate, and deep layers. The scapulothoracic and subscapularis bursas are located in the deep layer, whereas the scapulotrapezial bursas (between the superomedial scapula and the trapezius muscle) are located in the intermediate layer, and the inferior scapular bursas (between the inferior scapular angle and the latissimus dorsi muscle) are located in the superficial layer. Bursitis of the scapulothoracic interface typically affects the superomedial and inferior angles,7 whereas bursitis at the inferior scapular angle is usually caused by inflammation of the scapulothoracic bursa.7,8

The CT and MRI features of scapulothoracic bursitis have been well described. The lesion usually appears as a well-demarcated cystic mass between the serratus anterior muscle and the thoracic rib cage.1–4,6 The differential diagnostic considerations of chest wall masses at the scapulothoracic region include elastofibroma, abscess, hematoma, and sarcoma, such as malignant fibrous histiocytoma, liposarcoma, and lymphangioma. Sonographic examination is useful for differentiating elastofibroma, which characteristically appears as a poorly defined solid mass with a coarse echo texture, from scapulothoracic bursitis.9 Computed tomography and MRI are useful for distinguishing a distended scapulothoracic bursa from other soft tissue masses. Chest wall abscess and hematoma were not likely in this case because of lack of evidence of local infection or soft tissue hemorrhage based on physical and MRI findings; furthermore, capillarized papillary projections along the cyst wall are also less likely to be found in an abscess or hematoma. Malignant fibrous histiocytoma and liposarcoma usually affect patients older than 50 years and rarely show a purely cystic pattern.1 Lymphangioma may appear as a thin-wall septated cystic mass, and it usually affects children younger than 2 years.

In contrast to CT and MRI, the sonographic findings of scapulothoracic bursitis have rarely been reported. To our knowledge, only 1 case of scapular osteochondroma with concurrent scapulothoracic bursitis that manifested as an anechoic cyst has been documented.3 High-resolution sonography has the advantage of being able to reveal the fine details of the lesions in superficial soft tissues. In this particular case, high-resolution sonography showed intracystic septa and vascularized villous projections of the lesion to a better advantage than MRI; however, a body coil and T2-weighted image sequence were used for evaluating this lesion. With the use of surface coil coupling with a fast spin echo proton density image sequence obtained on a high-field strength system, far superior anatomic delineation would be attained, and thus the anatomic relationships could be seen better than on sono-graphic examination. In addition, small bursa may not be apparent on sonographic screening, unless there is an adequate acoustic shadow, in which case MRI and CT would be better diagnostic tools. Above all, the internal morphologic changes of this surgically proven scapulothoracic bursitis were clearly revealed on high-resolution sonography with good pathologic correlation. Because of high versatility and relatively low cost as well as lack of radiation exposure, sonography could be a valuable tool for primary evaluation and subsequent follow-up of a mass situated at the scapulothoracic interface.

Conservative treatments for scapulothoracic bursitis, including rest, shoulder exercises, anti-inflammatory drugs, and intracystic injection of a long-acting corticosteroid or ethanol, are highly effective in most cases of scapulothoracic bursitis. Surgical intervention could be applied for coexistent osseous lesions or when conservative treatment has failed.1,2,4,5

In summary, this report describes an unusual pathologically proven case of scapulothoracic bursitis in which sonographic examination was helpful for the explicit delineation of the lesion, allowing accurate preoperative diagnosis.
Sonographic Features of Scapulothoracic Bursitis

References


