A Rare Case of a Symptomatic Sternalis Muscle: Ultrasonography And MRI Correlation

**Introduction**

Accessory muscles are common, yet often overlooked entities (Sookur PA et al. Radiographics 2008, 2: 481–499) and are most often found in the extremities. While frequently just an incidental finding in radiological examinations like ultrasound or MRI or during autopsy, there are incidences of symptomatic accessory muscles that, when observed, can be associated with clinical symptoms. The sternalis muscle is a small band-like muscular structure with axial orientation superficial to the pectoral fascia (Scott-Conner CEH et al. Clin. Anat. 2002, 1: 67–69; Paraskevas G et al. Clin. Anat. 2010, 2: 481–499). It is a small band-like muscular structure with axial orientation superficial to the pectoral fascia (Scott-Conner CEH et al. Clin. Anat. 2002, 1: 67–69). It may be an embryonic remnant of the rec-}

currence of fluid collections, nodular areas or edema was present. It originated from the anterior aspect of the sternoclavicular joint, ran along the right sternal edge just above the fibers of the major pectoral muscle and ended at the 5th costal cartilage. Its axial length was 170 mm with a diameter of 21 × 8 mm. In its lower third a common partial fascia to the major pectoral muscle was observed. Asymmetry of the medial muscle fibers of the ipsilateral major pectoral muscle was present (Fig. 2a, b, c).

**Discussion**


**Case Description**

A 51-year-old female patient with a history of rheumatoid arthritis was referred to exclude synovitis and enthesitis due to right paraskeletal swelling, which was described as painful upon application of pressure, and respiratory excursion of the thorax. These symptoms had begun several months ago and slowly increased in intensity. Inspection revealed slight asymmetry with a right parasternal volume increase. Palpation was described as painful. No other asymmetries were apparent.

Ultrasonography (performed on a Logiq E9 with a GL6-15 linear transducer; GE Healthcare; Milwaukee, WI, USA) revealed a unilateral right parasternal muscular structure extending from above the sternum to the lateral edge of the sternum. This structure demonstrated musculo-isoechoic signal properties and was embedded in fat. No fluid collections, nodular areas or edema were present. It originated from the anterior aspect of the sternoclavicular joint, ran along the right sternal edge just above the fibers of the major pectoral muscle and ended at the 5th costal cartilage. Its axial length was 170 mm with a diameter of 21 × 8 mm. In its lower third a common partial fascia to the major pectoral muscle was observed. Asymmetry of the medial muscle fibers of the ipsilateral major pectoral muscle was present (Fig. 2a, b, c).

**Fig. 1** Axial a and longitudinal b panoramic ultrasound images of the sternalis muscle (white arrowheads). Sternum (*). A painful sensation comparable to the primary symptoms could be provoked through sonopalpation along the muscle.
is believed to cause no symptoms besides asymmetry and to our knowledge there are no reports on clinical symptoms. This may be due to the nature and location of the muscle, but also due to low clinical awareness (Arráez-Aybar LA et al. Clin. Anat. 2003, 4: 350–354).

We present a highly unusual case of a clinically symptomatic sternalis muscle in a female patient. The described pain upon pressure or respiratory excursion of the thorax may stem from muscular imbalance, as there was significant hypoplasia of the pectoral muscle fibers compared to the contralateral non-affected side. Parasternal asymmetry has been described before (Scott-Conner CEH et al. Clin. Anat. 2002, 1: 67–69; O’Neill MN et al. J. Anat. 1998, Pt 2: 289–292). Possibly a unilateral lack of pectoral muscle mass may lead to muscular imbalances and a compensatory increase in tension of the remaining fibers with potential mild inflammation at the fiber insertion. The sternalis muscle itself may also exert contractile vertical force along the costosternal joints. Alternatively, compression of anterior cutaneous branches of the lateral pectoral nerve or of intercostal nerves could be causative as anatomical studies have shown that branches from both nerves can run through the sternalis muscle (Kida MY et al. Clin. Anat. 2000, 2: 138–140; Snosek M et al. Clin. Anat. 2014, 6: 866–884).

**Conclusion**

While most often clinically silent, the presence of a sternalis muscle should be considered when patients describe long-term painful soft tissue swelling of the parasternal region. Ultrasonography is a valuable tool to confirm the presence of a sternalis muscle.

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**Fig. 2** Corresponding coronal **a**, longitudinal **b** and axial **c** T1w MRI studies of the sternalis muscle (arrowheads). **a** is a composite image of 3 coronal slices (3 mm slice thickness, TE 20 ms, TR 797 ms), while **b** demonstrates the sagittal extent (MIP 7.5 mm; TE 20 ms, TR 812 ms, 3 mm slice thickness of original study). Note the superficial marker placed at the site of the highest pain intensity by the patient. **c** shows 4 axial slices in the cranio-caudal sequence (TE 21 ms, TR 804 ms, 4 mm slice thickness).