



SOFT TISSUE / TRIGGER POINTS

A Shoulder Aggravating a Neck that Aggravates a Shoulder

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The title of this article looks weird, but it's the only way I can describe a concept written about in 1986 by Behrsin and Maguire.¹ Usually when we attempt to find the source of pain in a shoulder, we also evaluate the cervical spine. If motion testing of the cervical spine does not refer pain to the shoulder, and motion testing of the shoulder reduplicates the patient's shoulder pain, we would probably assume that the origin of the pain is localized in the shoulder. The levator scapulae arises from the dorsal tubercles of the transverse processes of the first four cervical vertebra and inserts on the superior angle of the scapula and the adjacent part of the medial margin. It elevates the scapula while rotating the inferior scapula angle medially,² causing the glenoid cavity to shift caudally. With the scapula fixed, it can laterally flex and rotate the vertebrae ipsilaterally; and bilaterally, it can aid in cervical extension.

Behrsin and Maguire studied the levator scapulae muscle with electromyography and x-rays to determine its activity and length during shoulder motion. They found that the levator scapulae contracts concentrically (shortens) during the first 90 degrees(of shoulder abduction and eccentrically (lengthens) during the second 90 degrees(of abduction. Eccentric activity, creates a greater force than concentric activity so that more force is exerted by the levator scapulae on the spine during the second 90 degrees(of shoulder abduction. The authors determined that at the higher ranges of abduction (over 90 degrees), there was increased compressive load on the cervical joints and discs with the tendency to laterally flex and rotate the spine ipsilaterally. They felt that stress on the cervical spine by the levator scapulae might create referred pain in the shoulder.



Fig. 1. Testing of the right levator scapulae for shortening. With permission from: Hammer W. *Functional Soft Tissue Examination & Treatment by Manual Methods: New Perspectives*, 2nd. ed., Gaithersburg, MD; Aspen Publishers, 1999.

It is very important in both shoulder and cervical spine problems to evaluate the upper trapezius and levator scapulae muscles, which have a tendency to shorten. Figure 1 depicts evaluation of the levator scapula for shortness.

If the levator scapulae was involved, it would probably contain trigger points and fascial barriers. The transverse processes of the upper four cervical vertebrae might be tender, as would the superior medial angle of the scapula.

I wonder if a functional test to determine this problem could be performed by having a seated patient abduct their shoulder 130 degrees(while they resist their head in an ipsilateral laterally-flexed, rotated position to contract the levator scapula.

References

1. Behrsin JF, Maguire K. Levator scapulae action during shoulder movement: a possible mechanism for shoulder pain of cervical origin. *Australian J of Physio* 1986;32(2);101-106.
2. Kahle W. Leonhardt H, Platzer W. *Color Atlas/Text of Human Anatomy, Vol I: Locomotor System*. New York: G.T. Verlag, 1991:142.

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