Middle and lower trapezius strengthening for the management of lateral epicondylalgia: a case report

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Background and Aims

This case report pertains to a 54 year-old woman who presented with a 5-month history of right lateral elbow pain. Her symptoms had not improved since onset, despite pain medication. The aim of this case study was to document the beneficial effects of a treatment program focusing only on scapular position and trapezius strengthening in the management of clinically diagnosed lateral epicondylalgia (LE).

Methods

The patient attended five physiotherapy sessions over 10 weeks. She was instructed to perform strengthening exercises targeting the middle and lower trapezius twice a day (3 x 10 repetitions). The exercises were progressed when quality and control were good. No intervention was directed at the elbow. The main outcome measures used to assess response to treatment were the Disabilities of the Arm, Shoulder and Hand (DASH) questionnaire and an 11-point numeric pain rating scale (NPRS). In addition, grip strength, middle and lower trapezius strength, and scapula resting position were measured during the first and last sessions.

Results

From an initial DASH score of 44.2 the patient reached 0 by her fifth visit. Self-reported pain during aggravating functional tasks at home changed from 7/10 to 0/10. Grip strength improved from 26.1 kg (with 7/10 pain) to 42.2 kg pain free. Trapezius muscle strength changed from 3+/5 and 4-/5 (middle and lower) to 5/5 in both. Scapula resting position was symmetrical on the left and right at the final assessment. The DASH and NRPS scores were reassessed and maintained at the two and six month follow-up sessions.

Conclusion

This case report highlights that addressing the function of scapular muscles might be of importance in the physiotherapy management of LE.

Commentary

Colloquially referred to as "tennis elbow", LE is reported to have an incidence of 1-3%, being prone to chronicity, and is considered a difficult condition to treat (Coombes et al 2009). It is proposed that in addition to a tendon pathology there are impairments in motor systems and pain processing, with variable presentations in subgroups of patients (Coombes et al 2009). A study on female tennis players found significantly reduced lower trapezius strength in those diagnosed with LE, compared to symptom-free players and controls (Lucado et al 2012). However, directing treatment towards the scapular muscles has gained little attention, and is why this case report is worthy of noting. Remarkably good results were achieved in only a few physiotherapy sessions when combined with a progressive home exercise programme. This is beneficial both from a patient and a socio-economic viewpoint.

The patient's onset of symptoms was after carrying heavy loads. A diagnosis was reached based on three positive special tests, reduced pain free grip strength and reproduction of symptoms with palpation of the common extensor tendon. On examination the woman had an abducted scapula position with relative internal rotation of the humerus. When manually normalising the position of her scapula, grip strength changed from 26.1 kg with 7/10 pain to 33.7 kg pain free. In addition to the clinical assessment, electromyography was used to gain further insight into levels of muscle activity. A marked reduction of activity in extensor carpi radialis brevis (44%) and biceps brachii (23%) was observed while the patient performed a gripping task with the scapula position actively corrected, compared to no correction. The improvements observed during the course of the treatment are suggested to be due to several factors; it is possible that motor learning, pain inhibition and neurophysiological effects all played a role.

This is a thorough and high quality case report. Possibly, differential diagnoses could have been addressed a bit more thoroughly, but the diagnostic criteria used are in line with what are currently advocated as best practice (Vicenzino 2011). Nonetheless, given that this is a case report there are several associated limitations that are acknowledged by the authors. With only one patient and no blinding, there is little control of what factors contributed to the outcome. It is plausible that this result could be one of a kind, although the authors emphasise they have had experience with several similar cases in their clinic. The fact that the patient's symptoms immediately improved when the position of the scapula was corrected supports the hypothesis that scapula position and possibly scapular muscle strength contributed to the positive outcome. More research is indicated and it would be interesting to see if the results are generalisable to a larger patient sample.

It is unknown whether impairments of scapular muscle function predispose to an elbow problem, or if they are a likely consequence of elbow tendon pathology. However, it is important to recognise that LE patients are a heterogeneous group (Coombes et al 2009). From a clinical perspective the most important consideration is how to help the patient regain pain-free function. This case is a reminder of how different parts of the body can influence each other, and that it is important to assess and address contributing factors that are not necessarily in the immediate area of the presenting symptoms.

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