Stretch Reflex and Hoffmann Reflex Responses to Osteopathic Manipulative Treatment in Subjects With Achilles Tendinitis

John N. Howell, PhD; Karen S. Cabell, DO; Anthony G. Chila, DO; David C. Eland, DO

Context:
Irvin M. Korr, PhD, hypothesized that sensitivity of the monosynaptic stretch reflex (ie, deep tendon reflex) plays a major role in the restriction-of-motion characteristic of somatic dysfunction, and that restoration of range of motion through osteopathic manipulative treatment (OMT) could be achieved by resetting of the stretch receptor gain.

Objective:
To test Korr's hypothesis in the context of Achilles tendinitis, examining whether OMT applied to patients with Achilles tendinitis reduces the strength of the stretch reflex.

Methods:
Subjects were recruited through public advertisements and referrals from healthcare professionals. There were no recruitment restrictions based on demographic factors. Amplitudes for stretch reflex and H-reflex (Hoffmann reflex) in the triceps surae muscles (the soleus together with the lateral and medial heads of the gastrocnemius) were measured in subjects with diagnosed Achilles tendonitis (n=16), both before and after OMT. These measurements were also made in asymptomatic control subjects (n=15) before and after sham manipulative treatment.

Results:
As predicated on the concepts of the strain-counterstrain model developed by Lawrence H. Jones, DO, the use of OMT produced a 23.1% decrease in the amplitude of the stretch reflex of the soleus ($P<.05$) in subjects with Achilles tendinitis. Similarly significant responses were measured in the lateral and medial heads of the gastrocnemius in OMT subjects. The H-reflex was not significantly affected by OMT. In control subjects, neither reflex was significantly affected by sham manipulative treatment. By using a rating scale on questionnaires before treatment and daily for 7 days posttreatment, OMT subjects indicated significant clinical improvement in soreness, stiffness, and swelling.

Conclusion:
The reduction of stretch reflex amplitude with OMT, together with no change in H-reflex amplitude, is consistent with Korr's proprioceptive hypothesis for somatic dys-function and patient treatment. Because subjects' soreness ratings also declined immediately after treatment, decreased nociceptor activity may play an additional role in somatic dysfunction, perhaps by altering stretch reflex amplitude.

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