The Somatic Connection

"The Somatic Connection" highlights and summarizes important contributions to the growing body of literature on the musculoskeletal system's role in health and disease. This section of *The Journal of the American Osteopathic Association* (*JAOA*) strives to chronicle the significant increase in published research on manipulative methods and treatments in the United States and the renewed interest in manual medicine internationally, especially in Europe.

To submit scientific reports for possible inclusion in "The Somatic Connection," readers are encouraged to contact *JAOA* Associate Editor Michael A. Seffinger, DO (mseffingerdo@osteopathic.org), or *JAOA* Editorial Advisory Board Member Hollis H. King, DO, PhD (hhking@ucsd.edu).

Systematic Review Challenges Efficacy of Pediatric OMT

Posadzki P, Lee MS, Ernst E. Osteopathic manipulative treatment for pediatric conditions: a systematic review [published online June 17, 2013]. *Pediatrics*. 2013;132(1):140-152. doi:10.1542/peds.2012-3959.

The authors performed a systematic review of randomized controlled trials (RCTs) on osteopathic manipulative treatment (OMT) and osteopathic manipulative therapy (OMTh; manipulative care provided by foreign-trained osteopaths) for patients aged 18 years or younger to evaluate the evidence on the efficacy of OMT and OMTh for pediatric conditions. A literature search yielded 19,509 RCTs, 17 of which met the author's inclusion criteria. These RCTs included a total of 887 pediatric patients from the United States and Europe and assessed OMT and OMTh efficacy in the management of various conditions.

All 17 RCTs had an uncertain risk of bias and methodologic limitations. Four RCTs did not include details outlining the OMT or OMTh protocol, making replication difficult. Eleven RCTs did not include the incidence rates of adverse events, which the authors believed could signify a breach of ethics. Results were mixed regarding the efficacy of OMT and OMTh in the pediatric population. Of the 17 RCTs, 7 studies favored OMT or OMTh, 7 revealed no effect, and 3 did not report between-group comparisons. The RCTs that demonstrated OMT or OMTh efficacy were smaller and more biased, whereas those that did not demonstrate OMT or OMTh efficacy were larger and more rigorous. Of the 5 RCTs that were determined to be of high methodologic quality, 1 revealed favorable effects of OMT or OMTh and 4 revealed no effects. Of the 4 RCTs that were not led by osteopathic physicians or foreign-trained osteopaths, none demonstrated OMT or OMTh efficacy.

Although the authors noted several limitations of their systematic review, they concluded that "OMT [and OMTh] cannot be regarded as an effective therapy for pediatric conditions, and osteopaths should not claim otherwise." They suggested that future OMT and OMTh studies follow standards of reporting trials, increase sample sizes, use blinding procedures, use intention-to-treat data analysis, and include control measures.

This systematic review is notable for being published in a highly respected pediatric journal and for reaching conclusions that are unfavorable for the use of OMT in the pediatric population. In our experiences, OMT has indeed improved pediatric patient outcomes. We believe the authors may have over-

looked other studies that support OMT efficacy. Osteopathic physicians who perform OMT on pediatric patients must be prepared to respond to these claims by publishing high-quality studies that demonstrate OMT efficacy. (doi:10.7556/jaoa.2015.066)

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High-Velocity Thrust to the Atlantoaxial Joint Does Not Increase Mechanical Stress on the Vertebral Artery

Erhardt J, Windsor BA, Kerry R, et al. The immediate effect of atlanto-axial high velocity thrust techniques on blood flow in the vertebral artery: a randomized controlled trial [published online March 2, 2015]. *Man Ther.* doi:10.1016/j.math.2015.02.008.

In 2009, the American Osteopathic Association's House of Delegates reaffirmed their 2004 position paper[1] on osteopathic manipulative treatment to the cervical spine, endorsing the use of high-velocity, low-amplitude thrust by osteopathic physicians but calling for further research on the risk of vertebrobasilar accidents. In 2013, Thomas et al[2] found no alteration in blood flow in the brain with passive neck maneuvers used in cervical mobilization or before thrust of the cervical spine.

Using Doppler ultrasonography, Erhardt et al conducted a randomized controlled trial examining the effects of high-velocity thrust (HVT) techniques, performed by a licensed physical therapist, of the atlantoaxial joint on hemodynamics of the suboccipital portion of the vertebral artery (VA3).

Twenty-three healthy adult participants (14 men and 9 women; mean [SD] age, 40 [12.6] years [range, 27-69 years]) were randomly assigned to an intervention group (n=11), in which HVT was applied to the atlantoaxial segment, or a control group (n=12), in which participants were held in the premanipulative hold position. Doppler ultrasonography was used to measure VA3 hemodynamics. Exclusion criteria included a history of known vertebral artery anomalies, hypoplasia, various spinal conditions, and more. Participants were also excluded if the investigators were unable to visualize VA3 on ultrasonography. The primary outcome measures were peak systolic and end diastolic velocities, which were measured at neutral, pre-HVT, post-HVT, and post-HVT-neutral positions.

Within-group comparison revealed no statistically significant differences between any cervical positions on peak systolic or end diastolic velocities for both the control and intervention groups, suggesting no statistically significant differences in blood flow velocity between HVT therapy and the static premanipulative hold position. Between-group comparison revealed no statistically significant changes between the control and intervention groups for any measurement variable, demonstrating no changes in blood flow velocity after HVT therapy. Because this study used only healthy patients, it remains uncertain as to how HVT therapy affects blood flow in diseased, inherently weak, or hypoplastic vessels. However, this article strengthens the research supporting cervical manipulation's safety in healthy patients. (doi:10.7556/jaoa.2015.067)

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Manual Manipulation Is More Effective Than Mechanical-Assisted Manipulation in Managing Low Back Pain

Schneider M, Haas M, Glick R, Stevans J, Landsittel D. Comparison of spinal manipulation methods and usual medical care for acute and subacute low back pain: a randomized clinical trial. *Spine (Phila Pa 1976)*. 2015;40(4):209-217.

The global lifetime prevalence of low back pain (LBP) is reported to be as high as 84%.[1] For acute low back pain, spinal manipulation is associated with short-term benefits.[2] Previous research[3] suggested that mechanical-assisted manipulation (MAM) is equivocal to manual thrust manipulation (MTM) in terms of effectiveness.

Schneider et al conducted a randomized clinical trial that investigated the effects of MTM compared with MAM and usual medical care (UMC) on acute and subacute LBP. All participants (N=107; mean age, 41 years) had had a new LBP episode within the previous 3 months. Exclusion criteria included the following: (1) chronic LBP lasting more than 3 months; (2) "previous chiropractic, medical, or physical therapy treatment for the current LBP episode"; (3) radiculopathy; (4) contraindications to spinal manipulation; and (5) current prescription pain medication use.

Participants were randomly assigned to 1 of 3 study groups: UMC, MTM, or MAM. Participants in the UMC group were seen by a physical medicine and rehabilitation physician, who prescribed over-the-counter analgesic and nonsteroidal anti-inflammatory medications and advised participants to stay active and to avoid prolonged bed rest. Participants in the MTM group received spinal manipulation by a licensed chiropractor, and MAM participants received spinal manipulation using the Activator IV Instrument by a certified chiropractor. Participants were treated over 4 weeks. Both the MTM and MAM groups attended 2 visits per week (8 visits total). The UMC group attended 3 office visits: 1 initial visit and 2 follow-up visits at weeks 2 and 4.

Primary outcome measures included the Oswestry LBP Disability Index and a self-reported pain intensity scale (0, no pain; 10, unbearable pain). Outcomes were assessed at baseline, 4 weeks, 3 months, and 6 months. A significant decrease in both disability and pain at 4 weeks compared with baseline was noted in the MTM group compared with the MAM (disability score=−8.1, P=.009; pain score=−1.4, P=.002) and UMC (disability score=−6.5, P=.032; pain score=−1.7, P<.001) groups. No statistically significant differences were noted between MAM and UMC or for any comparison at 3 or 6 months.

One major limitation of this study is that other outcome measures were not examined, particularly nonprescription medication use. Because all participants were allowed to use analgesics and nonsteroidal anti-inflammatory medications, it would be interesting to see if any differences between treatment groups existed or if any changes occurred in use over time. Another limitation of this study is the lack of a sham therapy or control group. However, the findings in this study are promising in that MTM can be considered part an effective treatment plan for patients with LBP. (doi:10.7556/jaoa.2015.068)

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