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).

Editor's Note: This month's installment of "The Somatic Connection" features 3 articles on women's health issues. A commentary by section editor Hollis H. King, DO, PhD, on the benefits of manual therapy for women's health is included after the summaries.

Pelvic Manipulation Benefits Women With Primary Dysmenorrhea

Molins-Cubero S, Rodríguez-Blanco C, Oliva-Pascual-Vaca Á, Heredia-Rizo AM, Boscá-Gandía JJ, Ricard F. Changes in pain perception after pelvis manipulation in women with primary dysmenorrhea: a randomized controlled trial [published online March 25, 2014]. *Pain Med.* 2014;15(9):1455-1463. doi:10.1111/pme.12404.

Researchers from the Department of Physical Therapy at the University of Sevilla and the Madrid Osteopathic School conducted a prospective randomized double-blind controlled trial that investigated the effects of a bilateral global pelvic manipulation (GPM) technique on lumbar pelvic pain and blood catecholamine and serotonin release in patients with clinically diagnosed primary dysmenorrhea. All participants (N=40; mean age, 30 years) had "regular menstrual cycle[s] (28 ± 7 days)" and "menstrual pain of moderate or severe intensity" (defined as greater than 50 mm on a 100-mm visual analog scale [VAS]). Women who had any of the following were excluded from the study: (1) an intrauterine device, (2) secondary dysmenorrhea, (3) previous gynecologic interventions, (4) contraindications to the GPM technique, (5) recent previous manipulative therapy, and (6) fear of spinal manipulation. Previous research has suggested that pain associated with primary dysmenorrhea could be addressed with spinal manipulation of the lumbosacral spine (spinal levels L5-S1).[1,2]

Participants received either a bilateral GPM technique (a semi-direct high-velocity, low-amplitude technique applied to the fifth lumbar vertebra over the first sacral vertebra and the sacroiliac joint [SIJ] with the participant in a lateral position) or a sham technique (a technique with the participant in an identical position without any tension or thrust). Both the GPM and sham therapy sessions lasted approximately 2 minutes.

The primary outcome measures were pre- to postintervention self-perceived low back pelvic pain (measured using a VAS) and pressure pain threshold (PPT) in the SIJs (measured using a digital dynamometer). Additionally, blood was drawn from the right arm before the intervention and from the left arm 30 minutes after the intervention to analyze plasma catecholamine and serotonin levels. A significant decrease in low back pelvic pain (P=.003) and a significant increase in PPTs of the left and right SIJs (SIJ left side, P=.001; SIJ right side,

P=.001) were noted within the experimental group after intervention. When the preintervention and postintervention changes were compared, significant differences for PPT in the left and right SIJ (*P*=.001) and serotonin plasma level (*P*=.045) were found between the GPM and sham therapy groups.

Although no definitive explanation was given for the increase in serotonin levels, these findings are promising and support personal observations that osteopathic manipulative treatment reduces the aggravation and pain of dysmenorrhea. Given the short duration of this study (1 day), a longer trial is needed to determine the long-term effects of this treatment. (doi:10.7556/jaoa.2015.031)

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2. Boesler D, Warner M, Alpers A, Finnerty EP, Kilmore MA. Efficacy of high-velocity low-amplitude manipulative technique in subjects with low-back pain during menstrual cramping. *J Am Osteopath Assoc.* 1993;93(2):203-208, 213-214.

Dramatic Reduction in Menstrual Pain After Osteopathic Manipulative Therapy

Schwerla F, Wirthwein P, Rütz M, Resch KL. Osteopathic treatment in patients with primary dysmenorrhea: a randomized controlled trial. *Int J Osteopath Med.* 2014;17:222-231. doi:10.1016/j.ijosm.2014.04.003.

Researchers in Germany used a pragmatic design to assess the effect of osteopathic manipulative therapy (OMTh; manipulative care provided by foreign-trained osteopaths) on women with diagnosed primary dysmenorrhea (N=60). Inclusion criteria were age 14 years or older and "regular menstrual cycle (± 10 days)." Exclusion criteria were contraceptive use, being pregnant, reported substance abuse, hormonal therapy, neurologic abnormalities, or a diagnosis of secondary dysmenorrhea. Participants were randomly assigned to an OMTh group (N=25) or a control (no intervention) group (N=28).

Osteopathic evaluation and OMTh were carried out by 3 osteopaths who were registered naturopaths. Patients in the OMTh group received 6 therapy sessions delivered twice per menstrual cycle for 3 successive cycles. In each session, OMTh was applied to only those structures in which somatic dysfunction was present.

Outcome measures included a numerical rating scale (NRS), with 0 indicating no pain and 10 indicating worst pain imaginable, and a health-related quality of life questionnaire, the Short Form (SF)-36. Duration of menstrual pain was also measured by recording the number of days patients reported general pain and the number of days patients reported intense pain (ie, ≥5 on the NRS). Whereas measures for the OMTh group were collected at each session, participants in the control group filled out the SF-36 and NRS for duration and intensity of pain once per menstrual cycle and mailed in their data. At baseline, no statistically significant differences were noted between groups for any outcome measure.

Results were significant for reduction of pain intensity in the OMTh group, with mean (SD) NRS scores of 4.6 (1.2) before intervention and 1.9 (1.4) after intervention (*P*<.0005). The mean (SD) reported days of general pain was also significantly reduced in this group (4.5 [1.8] days before intervention to 2.2 [1.8] after intervention; *P*<.0005), as was reported duration of intense pain (2.2 [1.4] days before intervention to 0.2 [0.6] days after intervention; *P*<.0005). No changes in these measures were observed for the control group. The physical component score on the SF-36 showed significant improvement for the OMTh group (*P*<.003) but not for the control group.

The pragmatic "treat what you find" study design produced dramatic reduction in the symptoms of primary dysmenorrhea, although it has not been used in many osteopathic research projects. The researchers planned for this study to test the value of seeking help from an osteopath (ie, the perceived effectiveness rather than the effectiveness of particular osteopathic techniques). I believe this approach to research design has a promising future in the osteopathic medical profession. (doi:10.7556/jaoa.2015.033)

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OMT—and Placebo—Shown Effective in Reducing Pain During Pregnancy

Hensel KL, Buchanan S, Brown SK, Rodriguez M, Cruser dA. Pregnancy Research on Osteopathic Manipulation Optimizing Treatment Effects: the PROMOTE study [published online July 25, 2014]. *Am J Obstet Gynecol*. 2015;212(1):108.e1-108.e9. doi:10.1016/j.ajog.2014.07.043.

In the Pregnancy Research on Osteopathic Manipulation Optimizing Treatment Effects, or PROMOTE, study, researchers at the University of North Texas Health Science Center studied 400 women during their third trimester of pregnancy. Participants were randomly assigned to a usual care plus osteopath manipulative treatment (OMT) group (n=136), a usual care plus placebo ultrasound treatment (PUT) group (n=131), and a usual care only group (n=133). Recruited participants were scheduled to be seen after routine office visits for obstetric care at 30, 32, 34, 36, 37, 38, and 39 weeks of pregnancy. All women in the study were approved for participation by their attending physician, and women with high-risk conditions were excluded.

Both the OMT and PUT were applied over the participants' clothing and focused on the same body areas for 20-minute periods. Body areas treated were bilateral cervical, thoracic, and lumbar paravertebral musculature; thoracolumbar junction; sacroiliac joint; hip; and anterior pelvis. Treatment providers were either certified by the American Osteopathic Board of Neuromusculoskeletal Medicine or board eligible, as well as trained in the PROMOTE protocol. The OMT was applied for 1 to 2 minutes per area until tissue response was observed. For the PUT group, an ultrasound wand was placed on the specified body areas and steady, circular contact was maintained for approximately 2 minutes per area. The ultrasound machine was turned on, and a timer was set, providing credible cues of activity, but no ultrasound waves were emitted. Primary outcome measures were the Roland Morris Disability Questionnaire and characteristic pain intensity on a visual analog scale for "pain now," "pain average," "pain best," and "pain worst." The results showed significant treatment effects with reduced functional deterioration and pain for both the OMT and PUT groups compared with the usual care only group ($P<.001$). The effects of OMT were not found to be statistically significantly different than those of PUT. The occurrence of meconium-stained amniotic fluid, a secondary outcome measure, was not found to be different between the 3 groups.

The PROMOTE study is one of the largest randomized controlled trials showing the effectiveness of OMT, and it addressed an important aspect of women's health. I was a treatment provider in this study and can attest to PUT group participants frequently stating that they felt better after ultrasound administration. I agree with the authors' conjecture that this finding appeared related to the patients being touched but also add that this finding could also be related to physician time with the participant in addition to usual prenatal care. (doi:10.7556/jaoa.2015.032)

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Recognizing the Value of Manual Therapy Interventions in Women's Health: An Interim Report

The 3 research publications reviewed in this installment of The Somatic Connection, along with research reviewed in previous installments,[1-5] highlight the growing evidence base for the benefits of osteopathic manipulative treatment (OMT) and osteopathic manipulative therapy (manipulative care provided by foreign-trained osteopaths) for women. If we include research from other health care professions that use hands-on therapy (eg, chiropractic, physical therapy) that has been reviewed in The Somatic Connection[6-14] and previously published in *The Journal of the American Osteopathic Association*,[15-19] the list is substantial enough to warrant special recognition of the benefit of OMT and manual therapy in women's health.

Perhaps the foremost contribution of OMT and manual therapy to women's health is intervention during the prenatal period. Intervention early in pregnancy has the potential to reduce morbidity associated with labor and delivery, such as preterm delivery and meconium-stained amniotic fluid,[17] as well as reduce mortality rates in child birth.[19] Preventing these types of complications could substantially reduce health care costs. Further research on these topics could form the basis for health policy changes in prenatal care. The improvement in hemodynamic control,[6] reduction of labor duration,[18] and reduction in pain during the late stages of pregnancy has been shown in osteopathic,[4,15,20] massage,[14] and chiropractic[12] research.

The literature has reported that up to 50% of women experience primary dysmenorrhea.[21] In addition to the studies[22,23] reviewed in this installment of The Somatic Connection, osteopathic,[16] chiropractic,[13] and physical therapy[2] research articles have reported a significant reduction of the symptoms of primary dysmenorrhea after manual therapy. Urinary tract symptoms and pelvic pain have also been reduced with manual therapy[1,3] and physical therapy,[6-8] the findings of which have also been reviewed in this section.

Research has also associated improvement in breast health with physical therapy[9] and massage therapy.[10] One report even described reduced depression symptoms in pregnant women after yoga and massage.[11]

This overview is not a systematic review and meta-analysis suggesting proof, but rather an interim report describing the growing body of research suggestive of benefit in this area of women's health. It is my hope that this commentary stimulates more osteopathic research and practice in women's health issues.

The mission of The Somatic Connection is to report and elucidate trends in manual therapy research across professions and around the world. Where applicable, we relate such research to osteopathic manual medicine research, and we will continue to review important research in this area that is at the heart of our profession. Readers are encouraged to send suggestions for research to be reviewed in The Somatic Connection to the section's editors at hhking@ucsd.edu or mseffingerdo@osteopathic.org. (doi:10.7556/jaoa.2015.035)

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