rest and during VRCE via pharmacologic manipulation using a bolus intravenous infusion of sodium nitroprusside followed by a bolus infusion of phenylephrine hydrochloride 60 seconds later, which is known as the “modified Oxford technique.” Blood samples were also taken to assess C-reactive protein, IL-2, and IL-6, which are known inflammatory biomarkers.

Veterans with PTSD had an overactive sympathetic nervous system and blunted BRS. Although the baseline values were similar between the 2 groups, the veterans with PTSD had significantly elevated MSNA (P<.001) and heart rate (P=.003) responses during VRCE. Similarly, there was a significant difference between MSNA (P<.001) and diastolic blood pressure response (P=.011) during mental arithmetic in veterans with PTSD vs those without PTSD but not during the cold pressor test. Veterans with PTSD also exhibited a blunted sympathetic BRS (P=.026) and cardiovagal BRS (P=.008) at rest, as well as elevated levels of C-reactive protein (P=.047) compared with controls. Limitations included small sample size, predominance of African American men in the sample, and the presence of subthreshold PTSD in the control group.

Specific OMT techniques, such as OA decompression and rib raising, may affect the autonomic nervous system by lowering sympathetic nervous system activity. Because this investigation revealed that veterans with PTSD have heightened sympathetic responses, the potential exists for OMT to improve the cardiac health of veterans. Further studies are needed to investigate the benefits of OMT techniques in inhibiting sympathetic outflow. (doi:10.7556/jaoa.2017.125)

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References

Cervicogenic Somatic Tinnitus Significantly Reduced by Physical Therapy

Physical therapy researchers at Antwerp University Hospital in Belgium assessed the effect of multimodal physical therapy on patients with severe, nonfluctuating, subjective tinnitus that had been stable for 3 months combined with neck complaints. Exclusion criteria included vertigo, objective tinnitus, Meniere disease, severe depression, progressive middle ear pathology, intracranial pathology, traumatic cervical spine injury, tumors, and history of cervical spine surgery. Patients were randomized to an immediate-start group (n=19) or a 6-week delayed-start group (n=19).
The intervention was physical therapy for the cervical spine and included manual mobilizations (similar to osteopathic myofascial release), exercise therapy, and home exercises. The intervention was provided by master’s degree-level physical therapists. Outcome measures were scores on the Tinnitus Functional Index (TFI) and the Neck Bournemouth Questionnaire (NBQ). All patients received the intervention for 6 weeks (12 sessions). Scores on the TFI and NBQ were taken at baseline, after 6 weeks for the delayed-start group, after the intervention for both groups, and after a 6-week follow-up. A global perceived effect scale was used to measure patients’ self-assessment at the above-mentioned points except at baseline.

After the intervention, results on the TFI ($P=0.04$) and NBQ ($P=0.001$) significantly decreased for all patients. Scores on the NBQ remained significantly lower at follow-up ($P=0.001$). Immediately after the intervention, 53% of patients reported clinically relevant improvement in their tinnitus on the global perceived effect scale, but this percentage fell to 24% at the 12-week follow-up. No difference was found in TFI between immediate-start and delayed-start groups.

This article represents the research effort on manual therapy for conditions other than musculoskeletal disorders and also suggests a possible somatic origin for systemic disorders such as somatosensory tinnitus. In a 2016 pilot study, Dutch researchers provided evidence supporting the successful application of very gentle, low-velocity passive movement of the joints of the spine, pelvis, and extremities for tinnitus. After power calculation for sample size, researchers enrolled 44 pain-free, normotensive, healthy volunteers (18 women; mean [SD] age, 23.8 [3.04] years) to assess BP and heart rate responses to unilateral PAJM vs touch placebo using a double blind, randomized controlled clinical trial design. Exclusion criteria were previous exposure to PAJM of the neck, history of syncope or cardiovascular disease, cervical-

References

Osteopathic physicians manage cervical somatic dysfunction with a variety of osteopathic manipulative treatment (OMT) techniques. Neck pain is a frequently encountered condition in clinical practice worldwide. Physical therapists often use oscillatory posteroanterior joint mobilization (PAJM), which is similar to articulatory OMT taught in osteopathic medical schools, both of which are widely known as effective interventions. Studies have established that cervical JM has a sympathoexcitatory effect, resulting in an elevation in systolic blood pressure (BP).

After power calculation for sample size, researchers enrolled 44 pain-free, normotensive, healthy volunteers (18 women; mean [SD] age, 23.8 [3.04] years) to assess BP and heart rate responses to unilateral PAJM vs touch placebo using a double blind, randomized controlled clinical trial design. Exclusion criteria were previous exposure to PAJM of the neck, history of syncope or cardiovascular disease, cervical-