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Doppler ultrasonography assessment of the vertebral artery in people with cervicogenic dizziness

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Background: Cervicogenic dizziness is characterized by symptoms of imbalance or spinning associated with neck pain, stiffness or headache. Mal-aligned upper cervical spine, poor head and neck posture could be among the causes of the mechanical compromise of the vertebral arteries that could lead to dizziness. It is hypothesized that a course of chiropractic adjustments will have an effect on the vertebral arteries velocities. The aim was to investigate the immediate effect of cervical spine chiropractic adjustment on the vertebral arteries peak velocities in people with cervicogenic dizziness.

Methods: Eighteen patients with cervicogenic dizziness participated in this study. The time average mean velocities (TAMV) of the upper (C0-1) and lower (C5-6) cervical vertebral arteries were measure by Doppler ultrasonography before and after one session of cervical adjustment (toggle recoil). The cervical range of motion was also measured.

Results: There were no significant differences in the clinical outcome measures and blood flow measures in the control group following 3 weeks of no intervention ($P > 0.05$, $n = 12$). A good within-session (ICC: 0.903-0.967) and between-session (ICC: 0.922-0.984) repeatability were demonstrated in measuring the vertical blood flow velocities in patients with cervicogenic dizziness when the clinical outcome measures were unchanged. There was a significant increase in the time average mean velocities of the upper cervical vertebral arteries ($P < 0.05$, $N = 18$) but no significant differences in that of the lower cervical vertebral arteries ($P > 0.05$, $N = 18$). The results showed significant improvement ($p < 0.05$) in the cervical range of motion after a single session of manipulation.

Conclusion: A session of toggle recoil chiropractic adjustments is effective in improving the cervical range of motion in patients with cervicogenic dizziness. The average time mean velocities of upper cervical vertebral arteries also improved.



Biography

Shum G is an Associate Professor at University of St. Mark & St. John, UK and an Honorary Associate Professor at the Exeter Spinal Unit, Princess Elizabeth Orthopaedic Centre, Royal Devon and Exeter NHS Foundation Trust, UK. He has completed his PhD in Spine Biomechanics from University of Sydney, Australia. His main research interests are in Musculoskeletal and Sports Biomechanics including inverse dynamics, gait analysis, ultrasound imaging and rehabilitation research.

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