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Quantification of the upper cervical spine stiffness among headache patients

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Introduction: Migraine and tension-type headaches are two different clinical disorders commonly defined in neurology. To date, several studies have reported musculoskeletal impairments of the cranio-cervical junction among headache patients. However, quantitative assessment of the upper cervical spine (UCS) stiffness is lacking for these clinical groups.

Aims & Objectives: The objective of the present study was to analyze stiffness characteristics of the UCS in axial rotation among migraine (n=30) and tension-type headache (n=18) patients using a customized torque-angular displacement meter. Patients were selected by a clinician expert according to the International Classification of Headache Disorders.

Methods: The current protocol was conducted using the flexion-rotation test on the basis of previous investigations. Further, data comparison was carried out with respect to UCS stiffness normative data obtained from asymptomatic subjects (n=80).

Results: Outcomes demonstrated that neither stiffness nor neutral zone ROM was significantly different between groups. In contrast, patients showed significant lower passive ROM compared to asymptomatic subjects ($p<0.007$ and $p<0.034$ for migraine and tension headache, respectively). In addition, left-right stiffness asymmetry was larger for these clinical groups, reaching 40% compared to 20% for the asymptomatic subjects.

Conclusion: Based on our sample sizes, magnitude of UCS stiffness seems not to be altered in headache patients with an exception for the left-right symmetry ratio. Decrease of passive ROM in patients may be related to motion discomfort at the end ranges. Further investigation is needed to confirm these preliminary outcomes for broader clinical populations.

Biography

Pierre-Michel Dugailly received his PhD in Biomedical Sciences from the Université Libre de Bruxelles. He is Head of the Department of Osteopathic Sciences and is a full-time Professor at the Faculty of Motor Sciences. He has expertise in clinical assessment and treatment of musculoskeletal disorders. His teaching interests include joint kinematics, spinal manipulation and osteopathic methods. His main research concerns in joint kinematics, anatomical motion modeling and clinical assessment of the spine.

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