Assessment of the cervical stiffness in osteopathic practice: a question of quality?

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Regarding the cervical spine, neck pain (NP) and cervicogenic headache are frequent reasons for clinical consultation. The prevalence rate over one year ranges from 30% to 50% for neck pain and from 0.4% to 2.5% for cervicogenic headache in the general population. Cervical complaints ranked in the most frequent clinical conditions causing disability in Western Europe.

Clinical assessment of patients with NP requires a physical examination to establish therapeutic strategies. Functionally, the cervical spine may be divided into two parts, the upper cervical spine (C0-C2) and the lower cervical spine (C3-C7). It is stated that the upper cervical spine (UCS) displays approximately 60% to 70% of the total cervical motion in axial rotation and has a major role to counterbalance the coupling patterns of the lower cervical spine.

In order to evaluate the functions of the cervical spine, clinicians may use various instrumental (e.g. goniometer) or manual procedures. Compared to these quantitative methods, qualitative approaches have been developed to assess stiffness features such as coefficient of stiffness (Young modulus), elastic zone and neutral zone ranges. These methods aimed to measure or judge stiffness magnitude, quality of resistance, pain and decrease of motion range, presuming positive signs of dysfunction that are also part of the diagnosis criteria for neck pain as well as cervicogenic headache.

Recently, studies reported stiffness and viscoelastic characteristics of the cervical spine in neck pain and headache patients compared to controls. Passive range of motion, neutral zone impairments and stiffness asymmetry has been found for clinical groups.

Besides, therapeutic approaches (i.e. osteopathic management) demonstrated immediate effect on cervical stiffness in axial rotation among patients with chronic neck pain.

These innovative methods and preliminary results emphasized the investigation of cervical spine stiffness characteristics using instrumented measurement for enhancing the significance of assessment and therapeutic strategies in various populations with musculoskeletal neck disorders.

References: