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Evalution of Cranio Cervical Muscle Thickness and Cities Among Adolescents Population

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ABSTRACT

OBJECTIVE

The purpose of the study is to evaluate cranio cervical muscle thickness in adult adolescents participants.

METHODS

Ten participants as been taken for assessing the measurement of upper trapezius and sternocleidomastoid by using ultrasonography imaging.

CONCLUTION:

Upper trapezius, sternocleidomastoid muscle thickness measurement by ultrasonography are measure adult participants

Key Indexing Terms:

Cranio cervical muscle, ultrasonography, adolescence population

INTRODUCTION:

Cranio cervical muscle thickness is the ratio of change in muscle thickness between superficial and deep cervical flexor muscles during the cranio cervical flexor test and a suggestion regarding clinical treatment of patients with musculoskeletal neck pain. cranio cervical thickness test by using ultrasonography and to propose the optimal level pressure in clinical cranio cervical flexion exercise for people with neck pain. the muscle thickness ratio of the sternocleidomastoid muscle / deep cervical flexor muscles according to theincremental pressure significant difference between 22mmHg and 24mmHg, between 24mmHg and 28mmHg, the pressure level between 24mmHg and 26mmHg enabling the smallest activation of the sternocleidomastoid muscle . cranio cervical muscle thickness also contains the trapezius, is aboard, flat superficial muscle extending from the cervical to thoracic region on the posterior aspect of the neck the trunk.

METHODS:

Adult participants were eligible. Muscles were assessed bilaterally.one examiner did a through musculoskeletal evaluation to rule out the other causes of muscle pain participants were included in the study if the fulfilled the following criteria, age between 20 and 40 years, participants were excluded if they had concomitant fibro myalgia, degenerated joint disease, thoracic outlet syndrome bursitis, torticollis and sever joint immobility. Surgical intervention in the neck, shoulder and trunk were also excluded.

CLINICAL EXAMINATION:

The standard clinical criteria for diagnosing cervical radiculopathy were (1) Pain that radiates into the shoulder and arm (2) muscle weakness (3) numbness in finger

MEASURMENT OF THE UPPER TRAPIZIUS MUSCLE THICKNESS BY ULTRASONOGRAPHY IMAGING:

All participants are placed in the relaxed prone position with their elbows on the examination bed and their head midway on a pillow. the c7 spines process was found through flexion – extension method of the cervical spine. the examiner palpated the prominent 2 cervical spinal processes with the index and middle fingers in the seated participant's cervical spine during flexion. consequently though an assisted extension of the cervical spine. if the upper palpated cervical spinal process moved anterior while the lower one remind fixed, the latter would be marked C7. The distance between C7 and acronym process was measured and the midpoint of this distance was marked on subject's skin. After preparation of subject, ultrasonography was performed.

MEASURMENT OF STERNOCLIODOMASTIOD MUSCLE THICKNESS BY ULTRASONOGRAPHY IMAGING:

The participants were examined in the supine position with their head slightly rotated to the opposite side measurement of the sternocleidomastoid muscle were taken on the both sides at the three levels (1) below the mastoid process, at the level of carotid artery bifurcation and at the level of sternum and clavicle the thickness of the sternocleidomastoid was measured as the largest dimension on the longitudinal view. And the gross sectional circumference of the sternocleidomastoid muscle was measured on the axial view at the same area. All the parameters were measured in the using an ultrasound machine

STATISTICAL ANALYSIS:

Descriptive statistics were employed to encapsulate the demographic data and muscle thickness measures

The thickness of the sternocleidomastoid and upper trapezius muscles on each side was measured and the mean ± standard deviation (SD) was determined. To find any asymmetry, the thickness of the sternocleidomastoid and upper trapezius muscles on the right and left sides was compared using a paired t-test. If necessary, separate t-tests were also run to compare the muscle thickness of the male and female subjects. The threshold for statistical significance was $p < 0.05$. IBM Corp., Armonk, NY, USA's SPSS software, version 20.0, was used for all statistical analyses.

RESULTS:

A total of 10 adult adolescent participants (6 males and 4 females), aged between 20 and 40 years (mean age: 28.5 ± 5.3 years), were included in this study.

Muscle	Side	Thickness (mm) Mean ± SD
Upper trapezius	Right	9.2 ± 1.1
Upper trapezius	Left	8.9 ± 1.0
SCM (mastoid level)	Right	6.5 ± 0.8
SCM (mastoid level)	Left	6.2 ± 0.7
SCM (carotid bifur.)	Right	5.8 ± 0.7
SCM (carotid bifur.)	Left	5.5 ± 0.6
SCM (sternal/clav.)	Right	5.2 ± 0.6
SCM (sternal/clav.)	Left	5.0 ± 0.5

DISCUSSION:The findings demonstrated no significant differences in muscle thickness between the right and left sides in both muscles and no significant differences between male and female participants.

Muscle thickness measurements using ultrasonography have been widely reported as reliable and valid tools for assessing muscle morphology in both clinical and research settings [1,5]. The results of our study are consistent with those reported by Ishida et al. (2015), who found no significant asymmetry in cervical flexor muscle thickness among healthy individuals [2].

The upper trapezius muscle plays a key role in cervical and shoulder movements and stabilization. In our study, the mean thickness values obtained were similar on both sides, suggesting symmetrical muscle development in healthy adolescents without musculoskeletal disorders. This symmetry is essential for balanced neck and shoulder mechanics and supports findings by Fernández-de-Las-Peñas et al. (2007), who suggested that muscle imbalances in this region may contribute to neck pain and tension-type headaches [6].

Similarly, the SCM muscle functions as a major superficial cervical flexor and rotator, and its thickness did not differ significantly between sides or sexes in our sample. This is in agreement with studies that have shown comparable SCM muscle thickness in asymptomatic young populations [3,4]. Furthermore, the slight variations observed at different measurement levels (mastoid, carotid bifurcation, and sternoclavicular junction) may reflect normal anatomical variations in muscle shape and attachment.

Although this study focused on a healthy adolescent population, it provides baseline data that could be useful in clinical practice. Deviations from this normative symmetry in patients presenting with neck pain, forward head posture, or cervical radiculopathy may indicate compensatory mechanisms or muscle overactivity.

LIMITATION:

This study has some limitations. The small sample size (n = 10) may limit generalizability. Moreover, the study included only asymptomatic participants, and thus the findings cannot be directly applied to symptomatic populations. Future studies with larger sample sizes and inclusion of symptomatic groups would further strengthen these findings.

CONCLUTION:

This study showed that upper trapezius and sternocleidomastoid muscle thickness is generally symmetrical in healthy adult adolescents. These findings provide useful baseline data for clinical assessment and future research.

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