

An unreported accessory muscle on the neck region

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Abstract

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Abstract

Anatomical variations or accessory muscles on the neck region are important for clinicians and surgeons. This case report aims to contribute to the literature by demonstrating the presence of a previously unrecognized muscle on the lateral neck region. During routine gross anatomy dissection of a 59-year-old male cadaver; an unreported muscle was observed next to the scalene muscles on the left lateral neck region. The distance between the center of the scalenus medius and the insertion of the muscle was 6.17 cm, and the distance between the scapular notch and the insertion of the muscle was 1.56 cm. The distance between the aponeurosis that connects the superior and the inferior bellies of the omohyoideus muscle and the first head of the muscle was 6.24 cm. This anatomical formation, which is not included in the literature, has anatomical and clinical importance in controversial clinical cases in neck pathologies.

Keywords: Accessory Muscle, Clinical Anatomy, Lateral Neck Region, Neck Surgery, Variation

INTRODUCTION

The neck is an anatomically complex region consisting of nested compartments containing structures extending from head to thorax or from thorax to head. The neck and thorax are separated by the line passing through the lower edge of the mandible, the mastoid process, and external occipital protuberant, and the line passing through the upper edge of the sternum and clavicle, the acromion and the process of the 7th vertebra separates the neck and head (1). In this region, there are many major veins and nerves, vital organs of the respiratory and digestive systems, and muscles that enable the head to move (1).

Many variations of omohyoid, digastric, sternocleidomastoid, sternothyroid, and scalene muscles have been described in the literature (2-8). In this article, a unilateral accessory muscle in the neck region, which has not been previously described in the literature, is described and its clinical and surgical significance is discussed.

CASE

During a routine gross anatomic dissection at the laboratory of the Anatomy Department of Akdeniz University, Faculty of Medicine, on the neck region of a 59-year-old male cadaver fixated in a 10% buffered formalin solution, a case of accessory muscle was observed that was unilateral and lateral to the scalenus medius muscle. This study was approved by Akdeniz University Clinical Research Ethics Committee on June 07, 2023, with decision No. KAEK-455.

After carefully removing the skin, subcutaneous tissue, superficial fascia and platysma, the muscles on the left lateral neck region were exposed. The presence of a new accessory muscle between the scalene muscles that did not fit the anatomical description was observed. The origin, insertion and shape of the muscle were investigated and its distance to other muscles was measured.

The muscle was observed between the scalenus medius and the scalenus posterior muscles and underneath the omohyoideus muscle. The muscle had two heads; the first

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head started from the transversal process of the C4-C5 vertebrae to the posterolateral of the scalenus medius muscle. It had a long thin tendon. The second head was fan shaped and started from the insertion point of scalenus medius on the costa prima, costa secunda, and the external intercostal muscle fibers lying between these two costas. The ventral part of the first head and the second head united to form a large and common muscle mass. The common muscle mass was attached to the superior margin of the scapula, medial to scapular notch, and lateral to levator scapulae muscle. The insertion part of the muscle was located between the scapular notch and the levator scapulae muscle (Figure 1a, 1b).



Figure 1a. Anterior view of the accessory muscle on the left neck region. FO: First origo; SO: Second origo; V: Venter; C: Clavicula; SMM: Scalenus medius muscle; SPM: Scalenus posterior muscle; LTN: Long thoracic nerve; LTNB: Branches of long thoracic nerve.

The distances between the muscle to the other neck muscles were measured with the help of Microscribe-G2x software. The distance from the belly of scalenus medius muscle to the insertions of the accessory muscle was 6.17 cm, and the distance from the scapular notch to the insertion of the muscle was 1.56 cm. The distance from the intermediate tendon of the omohyoid muscle to the first head of the accessory muscle was 6.24 cm. The accessory muscle had blood supplied by the branches of the transverse cervical artery from the left thyrocervical trunk and it was innervated by branches from the long thoracic nerve.

DISCUSSION

Anomalies of normal variants of the muscles, vessels and nerves of the neck were reported by many authors (2-16). The presence of variations and accessory structures may affect diagnostic and therapeutic procedures, making neck dissection difficult, and increasing its clinical and surgical importance.

Any variation may cause problems in reaching the desired anatomical region to be treated in some procedures. Therefore physicians, surgeons, and anesthetists performing interventional procedures in the neck region should be aware of the possible variations of the origin and insertion of both these muscles and the accessory muscles that have not been classified and reported in the literature. In addition, variational muscles' may exert pressure on underlying structures during, and this may occur in different clinical situations.

Mansoor et al. (4), in the examination of a patient with neck and shoulder pain, torticollis, limitation of neck movements, and pain in long-term posture determined that the right sternocleidomastoid muscle had an accessory clavicular head. The origin and insertion of the identified accessory muscle may restrict the right rotation and lateral flexion of the head. In patients who apply to the clinic with the complaint of limitation of rotation and lateral flexion of the head, the patient should be approached by considering the presence of such accessory muscles. Diagnosis and treatment processes should be planned considering the existence of such variations. We think that the use of musculoskeletal ultrasound examination in the differential diagnosis will be helpful when evaluating patients with these complaints.

Natsis et al. (6) stated that unilateral or bilateral asymmetric muscle variations in the submental region is clinically significant because they can sometimes be confused with enlarged lymph nodes, benign cervical masses, or neoplasia.



Figure 1b. Anterior view of the accessory muscle on the left neck region. FO: First origo; SO: Second origo; V: Venter; C: Clavicula; SMM: Scalenus medius muscle; SPM: Scalenus posterior muscle; LTN: Long thoracic nerve; LTNB: Branches of long thoracic nerve. (In fig. 1b, the borders of the accessory muscle are surrounded by punctuation for easier understanding).

Muscle variations and accessory muscles in the neck area can also be confused with masses (6, 14-16). Variations of structures in the neck area had also radiological importance, especially when computed tomography or magnetic resonance imaging is used in the detection and staging of tumors. It is essential to be able to distinguish between tumors, metastatic lymph nodes, and muscle variations. Because not all asymmetrical images show tumors, clinicians should be careful to avoid misinterpretation. Variations can easily be misinterpreted as a false mass or a normal or metastatic lymph node (15, 16). Therefore, advanced imaging techniques such as ultrasound, computed tomography, and magnetic resonance imaging should be used in the differential diagnosis of masses.

CONCLUSION

This case, which is not included in the literature, has anatomical and clinical importance in neck pathologies, controversial clinical cases and when performing procedures in the lateral neck. Therefore, the need to understand muscle variation is more important than ever to avoid iatrogenic injuries when performing surgery or examining the neck.

Such variations may be of concern to surgeons and anesthesiologists performing interventional procedures on the neck region due to the confusion of local anatomical landmarks. Information about the variations, anomalies of the muscles on the neck region and the accessory muscles newly defined in the literature is extremely important for doctors who are interested in the diagnosis and treatment of the problems on the neck region.

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Conflict of Interest

The authors declare that they have no conflict of interests regarding content of this article.

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Previously Report

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Ethical Declaration

This study was approved by the Akdeniz University Clinical Research Ethics Committee on June 07, 2023, with decision No. KAEK-455.

Authorship Contributions

Concept: SG, MÖ, GA, NO, Design: SG, MÖ, GA, Supervising: SG, NO, Financing and equipment: -, Data collection and entry: SG, MÖ, Analysis and interpretation: SG, MÖ, Literature search: SG, MÖ, Writing: SG, MÖ, Critical review: SG

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