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Case Report

Unilateral Accessory Cleidohyoid Muscle: A Case Report

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Abstract : This study reports the discovery of a neck muscle: the "accessory cleidohyoid muscle," identified during the anatomical dissection of the infrahyoid muscles in a 90-year-old male cadaver. The muscle was unilateral (on the left) and lateral to the omohyoid muscle, originating from the middle third of the clavicle and inserting into the body of the hyoid bone. This muscle, larger than the omohyoid muscle, was classified as the accessory cleidohyoid muscle, co-existing unilaterally with the superior belly of the omohyoid muscle. No symmetrical muscle was found on the right side of the neck. This case report underscores the clinical implications of this rare muscular variation that can cause diagnostic confusion and significant surgical complications. The findings highlight the need for increased awareness of this additional muscle.

Keywords : Infrahyoid muscles, Accessory cleidohyoid muscle, Omohyoid muscle, Muscle variation

INTRODUCTION

The infrahyoid muscles, encompassing the sternohyoid, sternothyroid, omohyoid, and thyrohyoid muscles, play an active role in swallowing through the laryngeal movement [1]. Variations of these muscles were first identified in the 19th century and have been recurrently reported since then [2]. The cleidohyoideus accessorius, or accessory cleidohyoid, is a muscle extending from the clavicle to the hyoid bone and is termed so when the omohyoid muscle is intact [3]. Sasagawa's literature review included ten reports mentioning the accessory cleidohyoid muscle [4]. Bergman also recorded several variations of accessory muscles to the omohyoid muscle, one of which included a fascicle with attachments to the medial head of the clavicle and the hyoid bone [5]. Compared to other infrahyoid muscles, the omohyoid muscle shows more frequent variations, such as additional bellies, atypical attachments, muscular replacements of the fascial sling, and the absence of the superior or inferior bellies [3,6]. Despite these diverse variations, the prevalence of the accessory cleidohyoid muscle is about 1-3% [7], and there has been only a single case reported in Korea in 2009 [8].

In the present case, the accessory cleidohyoid muscle, discovered in the cadaver dissection course at the medical school, is discussed anatomically, embryologically and clinically.

CASE REPORT

During a cadaver dissection course for medical students

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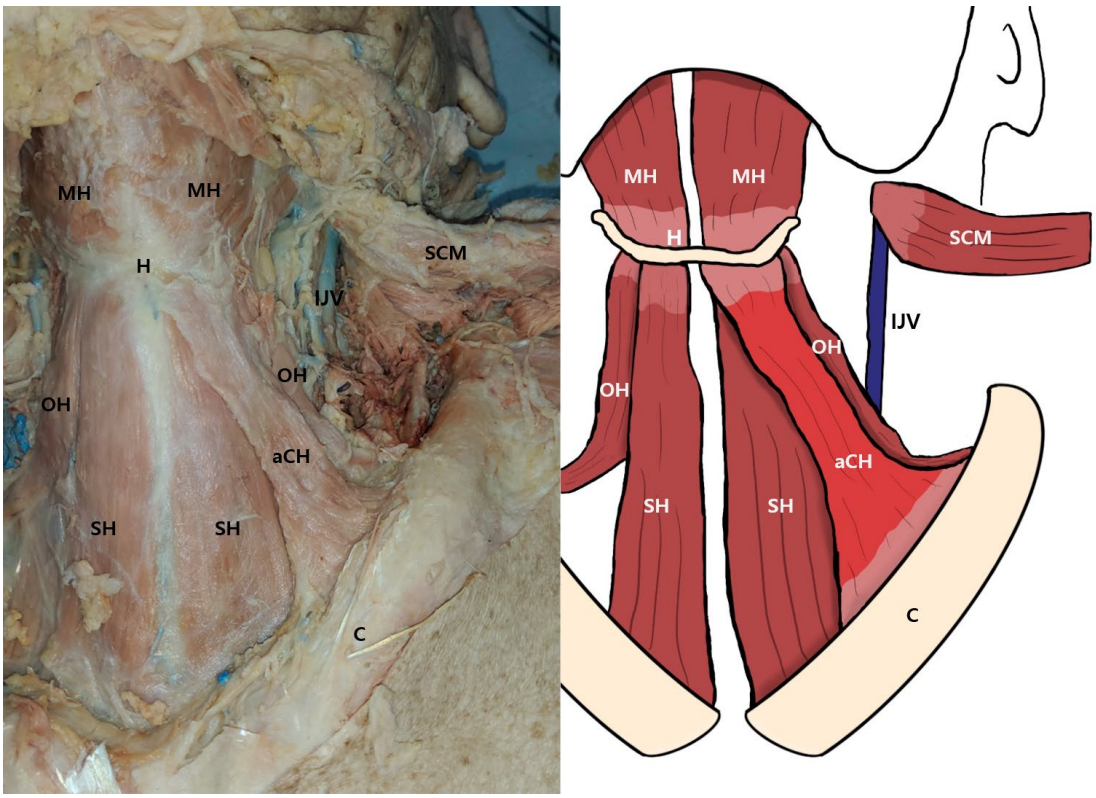

Fig. 1. Anterior view of the left side of the neck and a schematic drawing. MH, mylohyoid muscle; H, hyoid bone; SH, sternohyoid muscle; aCH, accessory cleidohyoid muscle; OH, omohyoid muscle; SCM, sternocleidomastoid muscle; C, clavicle; IJV, internal jugular vein.

at Chonnam National University, an uncommon "accessory cleidohyoid muscle," was found in the neck of a 90-year-old male cadaver. This muscle, discovered while dissecting the infrahyoid, was located unilaterally on the left side, lateral to the omohyoid muscle. It originated from the middle third of the clavicle and inserted into the body of the hyoid bone. The flat muscle measured 6.7 cm in length and 1.4 cm in width, originating 3.5 cm from the midline of the upper border of the left clavicle and inserted into the midline of the lower border of the hyoid bone. It was located alongside the superior belly of the omohyoid muscle, with a distance of 0.4 cm from the anterior margin of the omohyoid muscle to the posterior margin of the accessory cleidohyoid muscle. The accessory cleidohyoid muscle resembled the omohyoid muscle but was larger, with its lower third covering the internal jugular vein (IJV). No symmetrical muscle was found on the right side of the neck.

DISCUSSION

Steinbach classified four muscle variations previously considered to be the cleidohyoid muscle [2]. The omo-cleido-hyoideus muscle originates from the clavicle and scapula, inserting into the hyoid bone. The cleido-hyoideus muscle originates from the clavicle and inserts into the hyoid bone, with no attachments to the scapula. The cleido-hyoideus accessorius muscle is an additional muscle that co-exists with a normal omohyoid muscle. The cleido-sterno-hyoideus muscle originates from both the sternum and the clavicle, inserting into the hyoid bone. In this case, we observed a flat muscle larger than the omohyoid muscle, originating from the upper border of the left clavicle and inserting into the lower border of the hyoid bone. It was located unilaterally along with the superior belly of the omohyoid muscle. Based on Steinbach's classification, we identified this muscle as the accessory cleidohyoid muscle, an additional muscle that co-exists with the omohyoid muscle.

The infrahyoid muscles originate embryologically from a muscle precursor in the anterior neck region, which later splits into two layers: superficial and deep. The deep layer evolves into the sternothyroid and thyrohyoid muscles, while the superficial layer transforms into the splenius that

expands in the cervical area. The central portion of this layer degenerates in humans, leading to the separation of the splenius into internal and external muscles. The internal muscle develops into the sternohyoid muscle, and the external muscle forms the omohyoid muscle, which extends obliquely in the lateral part of the neck [9]. The possible presence of an extra muscle, the cleidohyoid, may result from the persistence of the fetal omohyoid and may be linked to the primitive morphology of the splenius [10].

The omohyoid muscle is a critical landmark in cervical surgeries as it directs the dissection plane and helps locate the neurovascular bundle in the carotid sheath [11]. Moreover, the presence of an additional muscle, such as the accessory cleidohyoid muscle, may cause complications during diagnostic and surgical procedures. Located close to the internal jugular vein (IJV), this muscle may hinder vessel access and create complications in the central venous catheterization [12,13]. Furthermore, the unilateral accessory cleidohyoid muscle can be misinterpreted as soft tissue pathologies in radiographic examinations, which is problematic for observing lymph nodes that show similar intensity to muscles in computed tomography. Therefore, recognizing the accessory cleidohyoid muscle is important for cervical lymphadenectomy to prevent metastases [14,15].

While the infrahyoid muscles variations are well-documented anatomical findings, the accessory cleidohyoid muscle is rare. Given the recent prevalence of radical neck or lymph dissection for metastatic observation, surgeons and radiologists should be aware of this variant for accurate diagnosis and surgery in this region.

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