

CASE REPORT

Complete Unilateral Absence of Trapezius Muscle

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ABSTRACT: Congenital partial absence of the trapezius muscle is a relatively common variation. Several cases of partial absence of the trapezius muscle have been reported. However, complete unilateral agenesis of this muscle has not been previously reported. In our case, a complete cadaver dissection of an 87-year-caucasian male was performed at the Department of Anatomy, College of Medicine in Saskatoon, Canada. The entire body dissection revealed a complete agenesis of the left trapezius muscle fibers. No other significant congenital anomalies were found.

KEY WORDS: trapezius; congenital; nuchal ligament; Poland's syndrome; prune belly syndrome

INTRODUCTION

Trapezius muscle is normally a broad triangular or trapezoid shaped muscle, extending over the posterior aspect of the neck and the upper half of the posterior aspect of the back (1). The muscle's origin includes the medial third of superior nuchal line, external occipital protuberance, nuchal ligament, spinous processes and supraspinous ligaments of C7 to T12 vertebrae. The insertion is the posterior aspect of the lateral third of clavicle, medial aspect of the acromion of scapula and the superior border of the scapular spine (1). Anatomists divide the Trapezius muscle into three parts; upper, middle and lower. Fibers of the upper part extend from the neck downward toward the shoulders. The middle part is the smallest, and its fibers are oriented transversely. The lower part forms the largest portion of the muscle, and its fibers usually extend upward in superior-laterally direction (2).

The normal actions of Trapezius muscle are related to its different parts. The superior part elevates the scapula, the middle retracts or adducts the scapula and the lower part depresses the scapula (1,2). Various parts of trapezius along with other shoulder muscles combine, producing a variety of scapular rotations (1).

The normal motor innervation to Trapezius muscle is usually by the spinal root of accessory nerve (XI) and proprioception by branches of the cervical plexus anterior rami C3 and C4 (3,4). Its arterial blood supply is commonly by the dorsal scapular artery which usually originates from the third part, or less commonly from the second part, of the subclavian artery. If the dorsal scapular artery is absent, the superficial cervical artery from the thyrocervical trunk of the first part of subclavian gives a deep branch that supplies the muscle. In this case the superficial cervical artery is called transverse cervical artery. In addition, the occipital artery off the external carotid artery and posterior intercostal arteries off descending thoracic aorta may contribute to the blood supply of Trapezius.

CASE REPORT

We are reporting a unique case of a complete unilateral absence of the left side of trapezius muscle in an 87-years-old-Caucasian male cadaver (Figures 1 and 2). The contralateral muscle was unremarkable in its attachments, nerve and arterial blood supply. The cause of death of this individual was cardiopulmonary arrest. There were no signs of trauma or past surgical procedures.

This unilateral absence of the trapezius muscle was accompanied by a loss of the trapezius part of the left spinal accessory nerve, loss of the related arterial blood supply and a double palmaris longus muscle in the left

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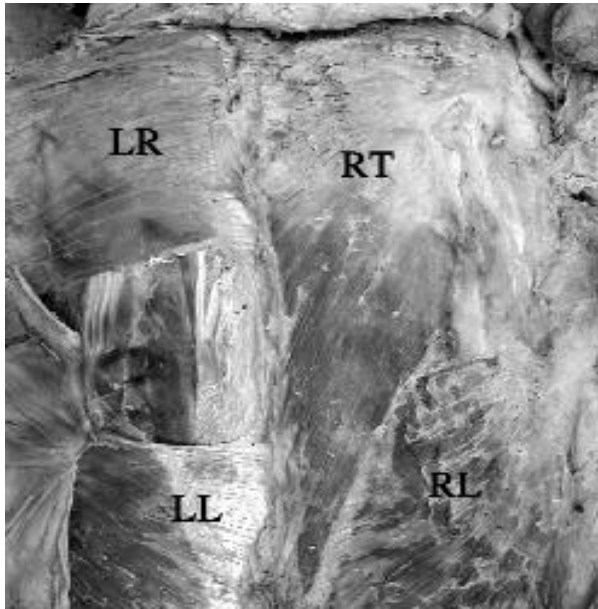


Figure 1. Superficial dorsal view showing the superficial fascia (SF) and part of the left rhomboid muscles (LR).

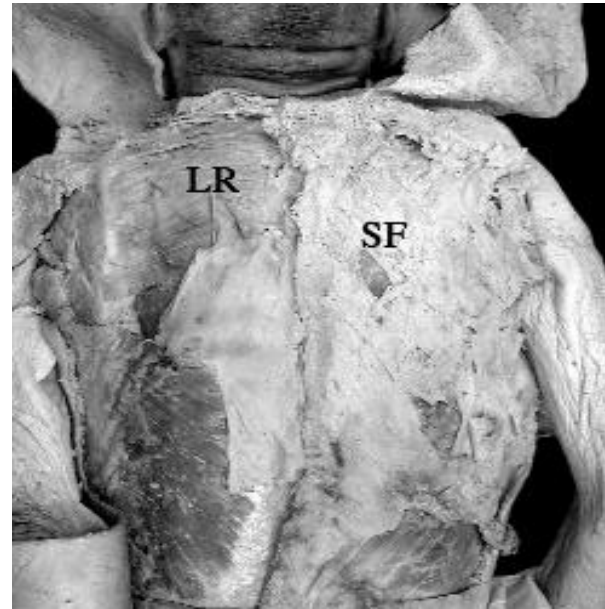


Figure 2. deep dorsal view showing the right trapezius muscle (RT), left rhomboid muscle (LR), left latissimus muscle (LL) and right latissimus muscle (RL).

forearm. Photos were taken with Nikon Coolpix 4500 camera.

DISCUSSION

Complete congenital absence of both left and right Trapezius had been reported by Gross-Kieselstein and Shalev in 1987 (5) and Horan and Bonafede in 1977 (6). Partial unilateral absence in the lower part of the left Trapezius was reported by Emsley and Davis in 2001 (7) and by Garbelotti et al. In the same year (8). The latter report also included aponeurotic tissues replacing the ascending fibers of Trapezius.

In our case, the entire left trapezius muscle was absent. This is the first report of complete unilateral absence of this muscle. In addition, its arterial blood supply, the trapezius part of the left spinal accessory nerve and the left dorsal scapular vessels or their equivalents were also absent.

A premortem history was unremarkable for any left shoulder abnormal movements. Presumably, synergistic muscles are compensating for the unilateral absence of trapezius. As a result, the posterior boundary of the left posterior cervical triangle was formed by both enlarged left rhomboids and left levator scapulae muscles. This triangle is normally bounded posteriorly by the anterior border of the left trapezius.

Acquired causes of the absence of the trapezius might include damage to the muscle's motor innervation and/or absence of arterial blood supply that would eventually lead to muscle atrophy. However, these causes are unlikely in our case since there was neither remaining muscle tissue nor any signs of

trauma or surgical procedure. The congenital absence of the entire innervation of the left spinal accessory nerve should result in abnormal function of the left sternocleidomastoid, a muscle also supplied by this nerve. This cause was also excluded by the presence of the normal left sternocleidomastoid muscle.

Anomalies of the trapezius are also caused by known congenital aberrations including Poland's Syndrome and Prune Belly Syndrome or Eagle-Barrett Syndrome. However, Poland's Syndrome is associated with a unilateral absence of the sternal portion of pectoralis major muscle (9,10). Likewise, Prune Belly Syndrome or Eagle-Barrett Syndrome is concurrent with congenital absence of the anterior abdominal musculature (11). Palmaris longus is one of the most variable muscles in the body, and its incidental anomaly in this cadaver has no known relation to Trapezius absence. A congenital cause related to the absence of innervation or embryological anomalies of the origin of trapezius are more likely explanations (12,13).

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