

A case with subclavius posticus muscle

Levent Sarikcioglu, Muzaffer Sindel

Department of Anatomy, Akdeniz University, Faculty of Medicine, Antalya, Turkey

[Received 4 July; Revised 16 July 2001; Accepted 16 July 2001]

During routine dissection studies, we encountered an aberrant muscle in the neck region of a 50 year-old female cadaver. The accessory muscle was on the left side. It arose from the superior angle of the scapula and lay over the brachial plexus and brachial artery then inserted to the first rib's cartilage. According to its origin and insertion, the aberrant muscle was considered to be the subclavius posticus. The accessory muscle was innervated by a branch coming from the suprascapular nerve.

key words: aberrant subclavius muscle

INTRODUCTION

Eisler (cited by Akita [1]) reported a muscle, termed by Rosenmüller as subclavius posticus muscle, which arose from the first costal cartilage and inserted into the coracoid process or the upper margin of the scapula.

Tountas et al. [15] reported that this aberrant muscle arises from the first rib cartilage, and passes behind and beneath the clavicle and normal subclavius (above or beneath the subclavian vessels and brachial plexus) to attach to the upper or cranial border of the scapula or to the fascia over supraspinatus. Forcada [6] reported a case with subclavius posticus muscle which arose from the upper margin of the scapula and transverse scapular ligament, inserted in the superior side of the first rib's cartilage. Akita et al. [1] reported the existence of this muscle in 12 sides (4.8%) of 11 cadavers (8.9%) among 248 sides of 124 cadavers.

Several other muscles associated with the clavicle and first rib have been described. Tountas et al. [15] reported that M. scapulocostalis minor arose from the scapular notch and inserted onto the first rib. Macalister (cited by Tountas [15]) found this muscle in 7%, Mori [10] in 1% of 250 cadavers, Nishi

(cited by Tountas [15]) in 12%, and Eisler (cited by Akita [1]) found only three examples. Scapulocostoclavicular muscle, a variant of scapuloclavicularis muscle, arises from the upper border of the scapula and inserts partly on the clavicle and partly on the first costal cartilage [15].

Sometimes, subclavius muscle may have a fascicle which lay from superior angle of the scapula to the manubrium [7]. Tountas et al. [15] reported that a subclavius muscle had two slips. The upper slip inserted onto the middle third of the clavicle. The lower slip, after crossing the cords of the brachial plexus and axillary artery, passed deep to coracobrachialis and terminated by fusing with the tendons of latissimus dorsi and teres major in the bicipital groove. In a second type, a lateral extension of subclavius may join the scapula at the root of the coracoid process or extend to the superior margin of the scapula.

CASE REPORT

During routine dissection studies, we encountered an aberrant muscle in the neck region of a 50 year-old female cadaver. The accessory muscle was on the left side. It took its origin from the superior angle of

the scapula and lay over the brachial plexus and brachial artery then inserted to the first rib's cartilage (Fig. 1). The accessory muscle was innervated by a branch coming from the suprascapular nerve.

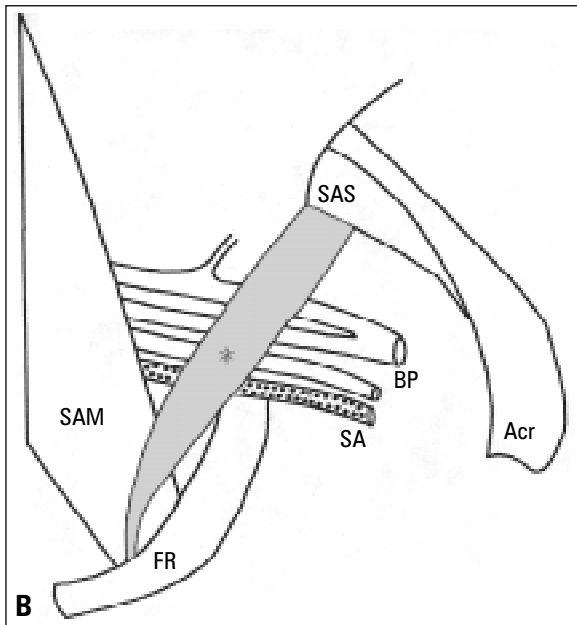
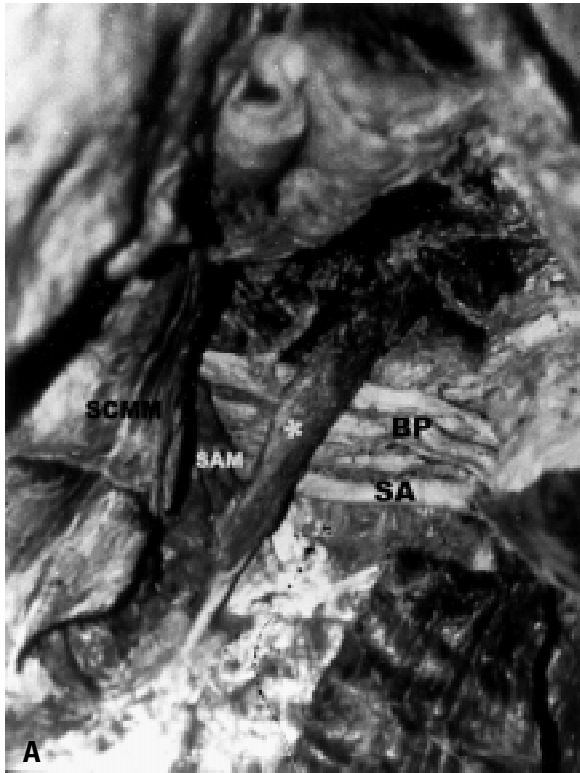


Figure 1. Aberrant muscle in the neck region. **A.** Macrophotography; **B.** Schematic drawing; *subclavius posticus muscle, Acr — acromion, BP — brachial plexus, FR — first rib, SA — subclavian artery, SAM — scalenus anterior muscle, SAS — superior angle of scapula, SCMM — sternocleidomastoid muscle.

DISCUSSION

Akita et al. [2] reported that the origin and insertion of both subclavius posticus muscle and the excess of the inferior belly of the omohyoid muscle were similar; only the origins of the innervating branches differed. They proposed that both muscles are derived from the intermediate region between the subclavius muscle and the inferior belly of the omohyoid muscle, and could be innervated by the nerve to the subclavius muscle or by the branch to the omohyoid muscle arising from the ansa cervicalis. It is suggested that these anomalies are derived from a common matrix, and are similar variations rather than different types of anomalies. Therefore, these aberrant muscles could be termed the subclavius posticus, regardless of their innervation [2].

Tountas et al. [15] reported that these muscles include the scapuloclavicularis, a small muscle passing from the root of the coracoid process and transverse scapular ligament to the back of the clavicle, and pectoralis intermedius, a fleshy slip that arises from the third and fourth ribs between pectoralis major and minor and is inserted onto the coracoid process, derived from the fifth cervical to first thoracic myotomes.

The aberrant muscle can be innervated by different sources. Sato et al. (cited by Akita [1]) proposed that the aberrant muscles which run between the first costal cartilage and the upper margin of the scapula can be classified into two categories:

1. The subclavius posticus muscle, which is innervated by a branch from the nerve to the subclavius muscle.
2. A duplication of the inferior belly of the omohyoid muscle, which is innervated by a branch from inferior belly of the omohyoid muscle.

Apart from these sources, Forcada [6] reported a subclavius posticus muscle innervated by a small branch from the suprascapular nerve. In the present case, innervation was from the same source. Therefore, this innervation pattern can be added to this classification.

Few reports discuss the clinical significance of these aberrant muscles, although anatomic variations at thoracic outlet region frequently cause vascular and/or nerve compression. The Paget-von Schrötter syndrome is one type of symptom complex of the thoracic outlet syndrome, and is recognised as spontaneous or effort-related thrombosis of the axillo-subclavian vein [4, 5, 12]. It is noted that subclavian vein is compressed between the subclavian muscle and the first rib during the movements of abduction

or retraction of the shoulder [3, 14]. Makhoul [9] reported that developmental variations were identified in 86 scalene and 39 subclavius muscles or their insertions in out of 175 patients. Kunkel and Machleder documented osseous and musculotendinous abnormalities in 18 patients [8].

When the clinician refers to a mass as located within the posterior triangle, the lesion may be within the superficial space, the posterior cervical space, or the paraspinal portion of the prevertebral space. In most cases, the lesion can be seen on axial imaging within the posterior cervical space [11, 13]. By careful examinations, using MR imaging of the suprascapular region, such aberrant muscle may be diagnosed. It is recommended to take into account the possible existence of such an aberrant muscle during the examinations of patients with thoracic outlet syndrome, especially in those with symptoms of venous compression.

ACKNOWLEDGEMENTS

We thank Mr H. Gezer, Mr N. Sagiroglu, and H. Savcili for their technical assistance.

REFERENCES

1. Akita K, Ibukuro K, Yamaguchi K, Heima S, Sato T (2000) The subclavius posticus muscle: a factor in arterial, venous or brachial plexus compression? *Surg Radiol Anat*, 22: 111–115.
2. Akita K, Tsuboi Y, Sakamoto H, Sato T (1996) A case of muscle subclavius posticus with special reference to its innervation. *Surg Radiol Anat*, 18: 335–337.
3. Aziz MA (1979) Muscular and other abnormalities in a case of Edwards' syndrome (18-trisomy). *Teratology*, 20: 303–312.
4. Burger P, Schwarzbach C, Wagemann W (1987) Paget-von Schroetter syndrome. Therapeutic possibilities, early and late results. *Zentralbl Chir*, 112: 179–187.
5. Dinkelaker F, Eisele R, Haring R (1982) Paget-von Schroetter syndrome. Current status of diagnosis and therapy. *Med Welt*, 33: 671–675.
6. Forcada P, Rodriguez-Niedenfuhr M, Llusca M, Carrera A (2001) Subclavius posticus muscle: supernumerary muscle as a potential cause for thoracic outlet syndrome. *Clin Anat*, 14: 55–57.
7. Goss CM (1973) *Gray's Anatomy*. Lea & Febirger, Philadelphia, pp. 454.
8. Kunkel JM, Machleder HI (1989) Treatment of Paget-Schroetter syndrome. A staged, multidisciplinary approach. *Arch Surg*, 124: 1153–1157.
9. Makhoul RG, Machleder HI (1992) Developmental anomalies at the thoracic outlet: an analysis of 200 consecutive cases. *J Vasc Surg*, 16: 534–542.
10. Mori M (1964) Statistics on the musculature of the Japanese. *Okajimas Fol. Anat. Jap*, 40: 195–300.
11. Parker GD, Harnsberger HR, Smoker WR (1991) The anterior and posterior cervical spaces. *Semin Ultrasound CT MR*, 12: 257–273.
12. Sievert T, Maik HW, Wildmeister W (1991) Paget-von Schroetter syndrome: case description in the light of the literature. *Z Gesamte Inn Med*, 46: 375–380.
13. Smooker WR (1991) Normal anatomy of the infrahyoid neck: an overview. *Semin Ultrasound CT MR*, 12: 192–203.
14. Terfold ED, Mottershead S (1948) Pressure the cervico-brachial junction (an operative and anatomical study). *J Bone Joint Surg*, 30B: 261–263.
15. Tountas C, Bergman R (1993) *Anatomic variations of the upper extremity*. Churchill Livingstone, New York, pp. 223–224.