Demonstration of a musculus levator clavicularae

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Summary. A musculus levator clavicularae, a variant of M. sternocleidomastoideus was identified on the left side of the neck of a 56-year-old man with multiple cervical lymph node metastases from a non-Hodgkin lymphoma of the epipharynx. Its course is shown on CT scans. The superficial part of the muscle in the region colli lateralis was also seen on inspection of the neck and photographed. A description of this muscle variant and an estimation of its frequency from the literature is provided. This muscle variant is easily recognised as an isolated finding but may not be appreciated in patients with head and neck cancer and multiple enlarged lymph nodes if the muscle is not followed continuously in its course. Rarely this may have an impact on tumour staging or treatment assessment.

Key words: Anatomy — Neck — Muscle variant — CT

In most mammals the M. levator clavicularae is a typical muscle. In man it is regarded as an atavistic variation of the M. sternocleidomastoideus and M. trapezius [1, 10, 11], developing from the third and fourth neck metamere, innervated by branches of the cervical plexus derived from the third and fourth cervical nerve [3, 8].

This muscle variant was probably first described by Kelch [6] in 1813. Many names have been given to this muscle: levator clavicularae, cleido-omo-transversare, omo-trachelian, acromio-trachelian and omo cervicalis to cite but a few.

In the anatomico-pathological literature [3, 6, 8, 10, 11] the origin of the muscle is reported to be the posterior tubercle of the transverse process of the first, the first and second, the third, the first to the fourth, the fourth and fifth, the sixth cervical vertebral body and the anterior tubercle of the transverse process of the first, second or third vertebral body.

The insertion of the muscle is the middle or lateral third of the clavicle and on the acromion in cases of lateral insertion beneath the M. trapezius. The M. levator clavicularae has been found to occur uni- or bi-laterally in the neck. Wood [11] noted 5 cases in 202 dissected subjects, giving an average occurrence rate of between 2 and 3%. In contrast Eisler [3] had only seen one such case in 25 years in the dissection room.

This muscle has also been reported in vivo by Corner [2] and Shaw [9]. Recently Fasel [4] demonstrated the muscle on CT and MR examinations of the neck in a 72-year-old woman. A lateral view of the 3D CT reconstruction of the neck demonstrated the superficial portion of the muscle.

Material and methods

A 56-year-old male patient with a Non-Hodgkin lymphoma of the epipharynx and bilateral cervical lymph node
metastases was seen three times for tumour staging and monitoring the response to chemotherapy in the Department of Medical Radiology over a period of 5 months. Each CT scan of the neck was performed following administration of intravenous contrast media.

The initial scan was performed on a Philips Tomoscan LX CT scanner using a slice thickness of 5 mm, feeding 5 mm. The second and third scans were performed using a Siemens Somatom DRH scanner, slice thickness 4 mm, feeding 4 mm. On the second examination an additional muscle was identified on the left side of the neck. At the end of the course of chemotherapy the patient agreed to be photographed after inspection of the neck.

**Description**

The initial CT in this patient was performed for tumour staging. On the second CT examinations of the neck the author recognised a muscle bundle on the left side in addition to the multiple bilateral lymph node enlargement which was mistaken for enlarged lymph nodes on the first examination (Fig. 1).

The third CT examination (Fig. 2) showed the origin of the accessory muscle from the transverse process of the third vertebral body. The muscle belly with a triangular cross section, largest diameter 1.4 cm, was situated anterior to M. levator scapulae and beneath the superior portion of the M. sterno-cleidomastoideus. More caudally the muscle turned laterally and dorsally to become superficial as it crossed the regio colli lateralis (Fig. 3). The muscle inserted distally into the lateral end of the left clavicle.

**Discussion**

Most CT examinations of the neck are performed for the staging of carcinoma of the pharynx or larynx, particularly the staging of regional lymph node involvement. Also during chemotherapy or radiotherapy the size of the lymph node metastases are used to evaluate the response to the treatment.

The M. levator claviculae was identified among the multiple enlarged lymph nodes not because of a difference in density [7] but by following the structure in a cranio-caudal direction on contiguous sections. In its course deep to the M. sternocleidomastoideus and more caudally in the posterior triangle of the neck, the muscle is located in the same space as the lymph nodes of the spinal accessory group [7]. This muscle variant could also have been detected clinically but often radiologists do not examine all patients and may not realise the asymmetry of the neck particularly as even the patient himself in this case had not been aware of it.

The misinterpretation of the muscle variant as enlarged lymph nodes did not change the status of the regional lymph node involvement in this patient. However, in other patients with cancer of the head and neck, failure to recognise this muscle variant could change the nodal assessment from N₁ (ipsilateral solitary with largest dimension ≤ 3 cm) to N₂ (ipsilateral multiple nodes bilateral nodes or contralateral node < 6 cm). This would change the tumour staging in the TNM classification from stage III to a stage IV [5].

**Conclusion**

Although the M. levator claviculae is easily recognised as an isolated finding, it can be misinterpreted in patients with multiple enlarged lymph nodes and rarely this can have an impact on tumour staging or treatment decisions.

**References**