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Case Report

Accessory belly of digastric muscle presenting as a submandibular space mass

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Introduction

Digastric muscle is a suprahyoid neck muscle consisting of anterior and posterior bellies joined by an intermediate tendon. The anterior belly of digastric lies in the submandibular space superficial to the mylohyoid muscle with its fibers running in anteroposterior direction. Various studies have demonstrated its anatomic variations. The present case report highlights a case of accessory belly of digastric muscle which was clinically misdiagnosed as a mass but correctly diagnosed by ultrasound, computerized tomography CT scan and magnetic resonance imaging MRI.

Case report

A 22-year-old male patient presented with a painless mass in the submental region of 2 months duration. He felt a firm mass in this region while shaving. He was initially treated by his family practitioner with antibiotics who had assumed it to be a lymph node secondary to a presumed throat infection as the patient had sore throat at that time. A course of antibiotics was followed by a period of reassurance from his family practitioner. A plain CT scan done elsewhere was reported as a midline mass in the submandibular space with a differential of lymph node, haematoma and tumour. Following this he consulted the surgical outpatient department of our hospital who referred him to the radiology department for an ultrasound.

On clinical examination, though no obvious mass was visible on inspection, a nontender mass of approximate size 3×2 cm was palpable in the submental region (Fig. 1). Examination of oral cavity revealed normal findings.

Ultrasonography (Philips HD15 10 MHz linear transducer) revealed a lesion in the midline between the anterior bellies of digastric muscle and superficial to the mylohyoid (Fig. 2). The echogenicity of the lesion was strikingly similar to that of the adjacent digastric muscles with no colour uptake on Doppler. The appearances were characteristic of accessory muscle.

Subsequent CT scan (Siemens Somatom Emotion, 6 slice MDCT), showed a 5.5×3.6 cm sized fusiform shaped, homogenous density lesion in the midline in the submandibular

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Fig. 1 – Clinical photograph of the patient showing the site of palpable swelling (arrow).

space between the two anterior bellies of digastric (Fig. 3). After contrast, there was homogenous enhancement equal to that of muscle. The Hounsfield units of the lesion was equal to that of muscle on plain and contrast scans. Anteriorly it was extending up to the posterior surface of mandible and posteriorly up to hyoid bone. No other lesions were found in the rest of the neck. A diagnosis of accessory belly of digastric muscle was made. On MRI (Siemens Essenza 1.5T) the lesion was having a signal intensity equal to that of muscle on all sequences (Fig. 4).

No biopsy was done in view of typical findings. The patient was reassured and a follow up ultrasonography after 3 months showed the same findings with no change in the size or appearance of the lesion.

Fig. 2 – Ultrasound image showing muscles in floor of the mouth. D1 & D3 – Anterior bellies of digastric, D2 – Accessory belly of digastric, GH – Geniohyoid, MH – Mylohyoid.

Discussion

Anatomically, the digastric muscle has two bellies joined at an intermediate tendon.¹ The posterior belly originates from mastoid notch of the temporal bone and passes downwards and forwards. The anterior belly originates from the digastric fossa on the posterior surface of symphysis menti and passes downwards and backwards. The two bellies are joined by an intermediate tendon which is attached to hyoid bone by a fibrous sling.¹ The anterior bellies lie superficial to the mylohyoid and are covered by skin, platysma and connective tissue.

Radiologically, the anterior belly of digastric lies within the submandibular space which is a superficial space located deep to platysma and superficial to mylohyoid muscle.^{2,3} Other contents of this space include superficial portion of submandibular gland, lymph nodes, facial artery and vein, twelfth cranial nerve (inferior loop) and fat.² The anterior bellies of digastric muscle are in a paramedian location and the space between the two anterior bellies is known as submental space where the submental nodes are located.⁴

Lesions which could occur in the submandibular space include lymphadenopathy, abscess, haematoma, diving ranula, congenital and developmental cysts like second branchial cleft cysts and thyroglossal duct cysts, benign tumour like lipoma and dermoid and benign and malignant tumour of submandibular gland.² Anomalies of anterior belly of digastric are an uncommon cause of mass in this region.⁴

Various studies have demonstrated the anatomical variations of digastric muscle.^{5,6} Fugimura et al.⁷ reported 13 cases of variations from 54 cadavers. De-Ary-Pires et al.⁸ reported 18 cases from 73 cadavers. From a radiological point of view, knowledge of these variations is important as they can be mistaken on CT and MR for a lymph node or a mass in the floor of the mouth.⁵ From a surgical point of view, knowledge of these anomalies is important because mobilization of myocutaneous flaps is a part of reconstructive plastic surgery procedures.⁹

Clinically, asymptomatic nature of the mass differentiates it from an abscess or a haematoma. Radiologically, a fusiform shape and solitary nature of the lesion differentiates this from lymph nodes which are round to ovoid and usually multiple. Homogenous enhancement on contrast CT differentiates it from an abscess which shows peripheral enhancement. A haematoma shows a heterogeneous appearance and no enhancement following contrast. Solid nature of the mass differentiates it from ranula and developmental cysts. A separate and normal submandibular gland excludes a submandibular tumour. The echogenicity of the lesion on ultrasound, the density and enhancement pattern on both plain and contrast CT and the signal intensity on MRI equal to muscle establishes the diagnosis of an accessory muscle. The characteristic location between the two anterior bellies of digastric, origin from hyoid and insertion onto mandible between the insertions of anterior bellies of digastric establishes the diagnosis of accessory digastric.⁹ The characteristic imaging features established a correct diagnosis and unnecessary biopsy or surgery was avoided.

Fig. 3 – Plain and contrast CT showing accessory belly of digastric (#) between the two anterior bellies of digastric (*).

Fig. 4 – T1W Axial MR showing accessory belly of digastric (#) between the two anterior bellies of digastric (*).

Conclusions

Anomalies of anterior bellies of digastric muscle are not common. Knowledge of these anomalies is important as they can be mistaken for a lymph node or a mass during radiological examinations. Establishment of correct diagnosis can avoid unnecessary biopsy and surgery.

Conflicts of interest

The authors have none to declare.

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