INTRODUCTION

The sternocleidomastoid is a major muscle of the neck with an important anatomical location. It divides the neck into an anterior and posterior triangle. The muscle arises from the sternum and the clavicle and inserts into the mastoid process. It is supplied by the spinal root of the accessory nerve. The main action of the sternocleidomastoid is rotation of the head to the opposite side along with flexion of the neck. It also acts as an accessory muscle of inspiration. The depression between the sternal and clavicular head is called the lesser suprascapular fossa. The greater suprascapular fossa lies behind the sternocleidomastoid and in front of the anterior border of the trapezius. The sternocleidomastoid is of major interest to physicians and surgeons working in the neck area because it is an important landmark for locating structures such as the carotid artery, jugular veins, nerves, and plexuses. Such anatomical insight is essential for procedures including central line placement, anesthetic procedures, and nerve and ganglion blocks. The muscle can also be used as a myocutaneous flap for facial defects and oral cavity defects. Anatomical variations of the sternocleidomastoid have been documented mostly in cadavers. Any similar anatomical variation in a patient could cause problems for physicians, anesthetists, and surgeons performing interventional procedures on the neck because of possible confusion of anatomical landmarks.
physicians and surgeons working in this complex area if they are unaware of the possible variations. Congenital muscular torticollis is a rare pathology seen mostly in neonates. The main cause is shortening and fibrosis of the sternocleidomastoid muscle (also known as fibromatosis colli). Torticollis in adults resulting from variation in sternocleidomastoid origin is extremely rare, and this fact can lead to a missed diagnosis. Unilateral anomalies of the sternocleidomastoid and the resulting subtle effects may delay the diagnosis until adulthood. Timely management of the condition can lead to significant improvement of symptoms.

Here, we report a case of torticollis caused by an accessory clavicular head of the sternocleidomastoid in a young adult male. Informed consent to publish this report was obtained from the patient.

**CASE DESCRIPTION**

A previously healthy 27-year-old man presented with a fixed, mild right tilt of the head and left rotation of the neck since childhood. His birth history was not available. He was an infantry soldier by occupation. The abnormality was mild and was ignored by the patient because it was asymptomatic. Healthcare professionals also were unaware of the condition due to its subtlety. The patient presented with pain in the neck and shoulder after doing heavy manual work that required continued posturing. He also complained of chronic cervicogenic headaches and chronic dull-aching, nonradiating, mild to moderate intensity pain of the upper posterior thorax. On inspection, a bipartite right sternocleidomastoid, dividing above midway, was identified. The lateral belly of the muscle was inserted at the middle of the clavicle, whereas the medial belly fused at the sternal and medial clavicular insertion point (Fig. 1). Palpation of the neck musculature revealed a nontender sternocleidomastoid muscle dividing in the middle into two bellies, and one accessory clavicular head arising from the middle of the clavicle (Fig. 2). There was no abnormal posturing of other body parts. The patient had a limited cervical range of motion (ROM). Neck rotation was 70° with a 38° tilt on the left side, and neck extension was 40°. Right rotation was 65°, with a tilt of 46°.

Musculoskeletal ultrasound examination confirmed the diagnosis of accessory clavicular head of the sternocleidomastoid. X-ray images of the cervical spine and electromyography were normal.

On a trial basis, the patient was prescribed diclofenac sodium 50 mg three times a day and tizanidine 2 mg twice a day. Physical therapy (PT) was also prescribed and included three times a week application of ultrasound therapy of the affected muscles, followed by stretching and strengthening exercises of the neck. However, although regular PT sessions lasted for 3 weeks, the ROM did not improve. Interestingly, the pain reduced from a visual analogue scale of 6/10 to 3/10.

A surgical referral was made because conservative treatment did not improve ROM. The surgeon advised the patient to undergo a myectomy of the lateral accessory bipartite clavicular belly of the right sternocleidomastoid; however, the patient refused any form of surgical treatment. At present, the patient occasionally takes oral analgesics with occasional massage and sessions of physical therapy for pain relief.

Informed consent was obtained from the patient.
DISCUSSION

In humans, there are several known variations of the sternocleidomastoid muscle, e.g., it can have different layers, superficial and deep, and can have many insertions/branches.1–4) Most of the documented variations are located in the origin, with different numbers of insertions/branches and locations in the sternal and clavicular areas. In our case, the anomaly was an additional belly from the mid-clavicle fusing with the normal sternoclavicular portion in the middle, forming an inverted Y-shaped muscle.

Less commonly, such abnormalities are reported in the insertion area of the mastoid and the superior nuchal line. The anomalous muscle can have sternomastoid, sterno-occipital, or cleido-occipital parts and insertions/branches.6) There can be separate sternomastoid and cleidomastoid portions of the muscle, or fusion with the trapezius.7) The findings can be unilateral or bilateral.

Variations in the sternocleidomastoid muscle origin and insertion have been documented in the literature.6–8) Most of the documented cases of anomalous sternocleidomastoid have been reported in anatomy and morphology journals from authors working in medical colleges and involved in dissection of cadavers for teaching purposes.4,8–11) These variations can have practical significance in patients undergoing various procedures in the head and neck regions, where the sternocleidomastoid muscle is used as an important anatomical landmark. Any variation may lead to problems in reaching the desired anatomical region in certain blind procedures. Therefore, the physicians, surgeons, and anesthetists involved in interventional procedures in the neck area need to know the possible variations in the sternocleidomastoid origin and insertion.

In this case report, another dimension of sternocleidomastoid muscle variation has been highlighted. An accessory clavicular head of the sternocleidomastoid muscle led to mild torticollis, restriction in neck movements, and pain on prolonged posturing. The patient had a limited range of neck rotation to the opposite side, along with limited extension, as a result of the physical limitation effect of the accessory clavicular head. The current case is also unusual because the patient was not diagnosed until he reached adulthood. He was 27 years old at presentation and was examined for neck and shoulder pain. It was only at this point that the anomaly was detected.

Congenital muscular torticollis (CMT) was an important differential diagnosis in this case. CMT is unilateral muscular shortening or contracture of the sternocleidomastoid muscle.
caused by muscle atrophy and fibrosis, leading to persistent neck posturing and tilt. It usually resolves by the age of 8 months and rarely progresses into adulthood. This condition has been reported in the literature in adults with mild torticollis, misdiagnosis, and cervical dystonias. We differentiated CMT by the clinical history, the age at presentation, physical examination, and by musculoskeletal ultrasound examination of the sternocleidomastoid muscle. Cervical dystonia was also ruled out because of the absence of spasm, tremor, or sensory deficits. Findings of electrodiagnostic studies of the sternocleidomastoid were also unremarkable.

In the current case, the accessory clavicular origin of the sternocleidomastoid muscle could have resulted from abnormal splitting in the mesoderm of the post-sixth brachial arch. However, this additional clavicular head of the sternocleidomastoid muscle could be of use to plastic surgeons planning to use it as a muscle graft elsewhere.

Anomalies of the sternocleidomastoid muscle are liable to be misdiagnosed as muscular spasm, cervical dystonia, or fibromatosis colli, and such misdiagnosis can lead to prolonged morbidity for the patient. A high index of suspicion and clinical acumen needs to be developed to diagnose such rare cases of torticollis.

The presence of an accessory head of the sternocleidomastoid can cause torticollis. In some cases, this condition can remain undiagnosed until adulthood. It can also be confused with cervical dystonia and fibromatosis colli. Such anomalies can be a concern for surgeons, physicians, and anesthetists performing interventional procedures in the neck area because of confusion of local anatomical landmarks. Knowledge of sternocleidomastoid morphology and anomalies is of the utmost importance to doctors involved in the diagnosis and management of problems in the neck area.

ACKNOWLEDGEMENT

The authors duly acknowledge Miss Fiona JVW Stephen- son, FRCA, RN, for her invaluable time in improving the English grammar and syntax of the manuscript.

CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest.

REFERENCES