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Combination of botulinum toxin with shock wave therapy relieves sternocleidomastoid muscle fibrosis

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Background

Congenital muscular torticollis (CMT) results from the fibrosis of the sternocleidomastoid (SCM) muscle. In neglected adult cases, the treatment of this entity is more controversial. Extracorporeal shock waves therapy (ESWT) might be responsible for the anti-scarring effect. Botulinum toxin type A (BTA) could be a promising agent against SCM fibrosis in rabbit CMT. We report a case of persistent adult CMT treated with ESWT and BTA.

Case

A 26-year-old man presented a neck mass of right SCM muscle with twisting of the head to the left. Despite physical therapy, the patient still persisted with torticollis. The passive cervical rotation range of motion (PCRROM) of the affected SCM was measured using an arthrodiagonal protractor. The patient had 70 degrees of PCRROM on the right and 90 degrees on the left. Toronto Western Spasmodic Torticollis Rating Scale (TWSTRS) was 16.25 at pre-treatment. Hyperechogenic nodular muscle thickening and low signal intensity was shown at the middle and lower portion of right SCM muscle on ultrasound and magnetic resonance image (MRI) (Fig.1). 20 units of BTA were injected into the fibrosis tissue of right SCM muscle and ESWT was performed once a week for 3 weeks. At each session, An energy flux density of 0.1mJ and 1000 impulses were administered on the fibrotic portion of right SCM muscle. After three sessions of ESWT, PCRROM of right SCM was increased from 70 degree to 90 degree, right SCM fibrotic tissue on ultrasound was decreased from 241.72 cm² to 108.72 cm² (Fig. 2), TWSTRS score was reduced from 16.25 to 4.5 and an improvement in head posture (Fig. 3).

Conclusion

This is a first case report combination of BTA with ESWT shows sufficient improvement in neck range of motion and head posture through relieving SCM muscle fibrosis.

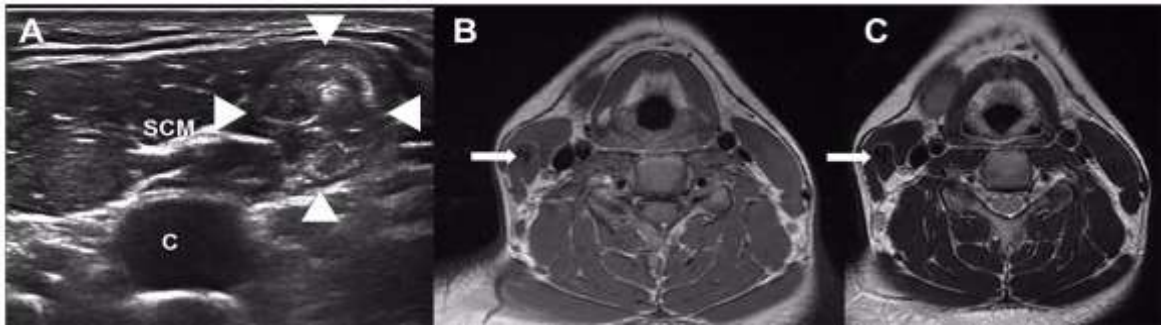


Fig 1. Transverse B mode and neck MRI image of affected SCM muscle at pre-treatment. (A) image shows diffuse enlarged hyperechoic mass (arrowheads). (B) T1 weighted image shows low signal intensity mass (arrow) (C) T1 weighted image shows low signal intensity mass (arrow). SCM; sternocleidomastoid, C; carotid artery.

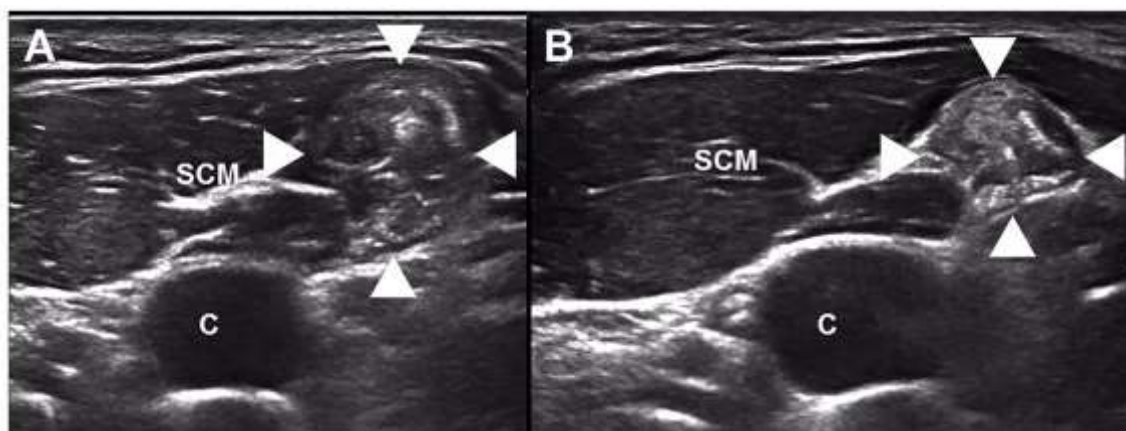


Fig 2. Transverse B mode image of affected SCM muscle. (A) image shows diffuse enlarged hyperechoic mass (arrowheads) and CSA was 241.72 cm² at pre-treatment. (B) image shows reduced hyperechoic mass (arrowheads) and CSA was 108.72 cm² at post-treatment. SCM; sternocleidomastoid, C; carotid artery.



Fig 3. (A) Typical head posture in a 26-year-old man patient with right sided torticollis. (B) Same patient at 6 weeks after ESWT with BTA treatment. ESWT: Extracorporeal shock waves therapy, BTA; botulinum toxin type A