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Does SCM muscle size affect upper trapezius muscle thickness in patient with congenital torticollis?

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Purpose
To study the upper trapezius muscle thickness (UTMT) using ultrasound (US) in patients with congenital muscular torticollis (CMT) and correlation among sternocleidomatoid muscle thickness (SCMT), accessory nerve (AN) and UTMT in CMT.

Method
The study recruited 17 infants with the difference of the thickness of the SCM muscle on both sides greater than 2 mm on ultrasonography (group 1-CMT) and 21 infants with the difference of the thickness of the SCM muscle on both sides less than 2 mm (group 2-postural torticollis (PS)). A physiatrist performed B-mode US measured the SCMT, UTMT, and calculated the cross-sectional area (CSA) of the AN in both groups (Figure 1). We calculated SCMT, UTMT, and AN ratio (affected/unaffected thickness) in both groups. We also evaluated the correlation among sternocleidomatoid muscle thickness (SCMT), CSA of AN and UTMT in both groups.

Result
SCMT, UTMT, and CSA of the AN in affected side in group 1 was significantly greater than that in group 2 (Table 1). SCMT, UTMT, and CSA of the AN in affected side was significantly greater than that in unaffected side in group 1. However, there was no significant differences in group 2 (Table 2). CSA of the AN in affected side in group 1 was positively correlated with UTMT (r=0.55, Table 3) and not with SCMT. There was no correlation among SCMT, UTMT, and CSA of the AN in affected side in group 2.

Conclusion
This study demonstrated SCM size affect upper trapezius muscle thickness via accessory nerve in patients with congenital torticollis.

table1. SCM, Sternocleoidomastoid muscle; UT, Upper trapezius muscle; CSA, Cross sectional area. * P<.05 statistically significant differences obtained in independent T test between group 1 and group 2.

Parameter	Group 1 (n=17)	Group 2 (n=21)	*P*
SCM thickness, mm	11.83±3.2	6.74±1.41	0.001*
UT thickness, mm	5.1±1.2	3.12±0.41	0.000*
Accessory nerve CSA, mm2	1.26±0.55	0.47±0.23	0.033*

table2. SCM, Sternocleoidomastoid muscle; UT, Upper trapezius muscle; CSA, Cross sectional area. * P<.05 statistically significant differences obtained in paired T test.

Parameter	Affected side	Unaffected side	*P*
Group 1			
SCM thickness, mm	11.83±3.2	5.79±0.73	0.000*
UT thickness, mm	5.1±1.2	2.56±0.44	0.000*
Accessory nerve CSA, mm2	1.26±0.55	0.41±0.15	0.000*
Group 2			
SCM thickness, mm	6.74±1.41	6.52±1.33	0.081
UT thickness, mm	3.12±0.41	3.09±0.5	0.569
Accessory nerve CSA, mm2	0.47±0.23	0.48±0.21	0.76

Values are Mean±SD

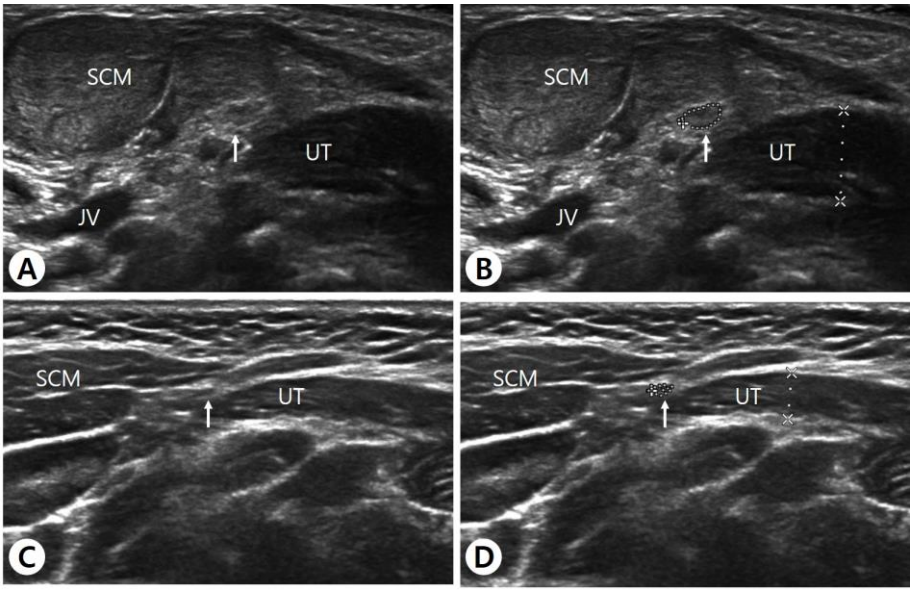

fig1. Representative transverse ultrasound image of sternocleidomastoid muscle, accessory nerve and upper trapezius in group 1(A-B) and group 2(C-D). (A, B) B-mode image showed fibrosis of sternocleidomastoid muscle with enlarged accessory nerve (Arrow) in group 1. (C, D) In group 2, cross sectional area of accessory nerve and diameter of upper trapezius were measured. SCM, Sternocleoidomastoid muscle; UT, Upper trapezius muscle; JV, Juglar vein