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Congenital muscular torticollis: Implementation of clinical practice guideline and reliability of the severity classification system

Statement of the Problem: Congenital muscular torticollis (CMT) is a musculoskeletal deformity observed at birth or in infancy characterized by unilateral contracture of the sternocleidomastoid muscle. It is the third most common congenital musculoskeletal disorder after congenital hip dislocation and clubfoot. Clinical presentation consists of persistent head tilt toward the involved side with the chin rotated toward the contralateral shoulder. Since introduction of the back to sleep program by the American Academy of Pediatrics in 1992, the incidence of CMT in infants and young children has been on the rise and is currently thought to be as high as 16%. In 2013 clinical practice guideline, published by the American Physical Therapy Association (APTA), a CMT severity classification system (CMT-SCS) was proposed based on the child's age at the time of referral, differences in cervical rotation passive ROM restrictions, and presence or absence of sternocleidomastoid mass. The purpose of this study was to establish intra- and inter-rater reliability for determining severity grades of CMT in infants.

Methodology: A prospective reliability study was conducted, using a fully crossed design. One hundred forty-five physical therapists from North America and Europe recorded severity ratings on 24 randomly ordered patient cases with the following clinical information: age of infant, cervical range of motion measures, and presence or absence of sternocleidomastoid mass. To compute intrarater reliability, cases were randomly re-ordered and graded by 82 of the original raters. ICC estimates and 95% confidence intervals were calculated based on a single rater ($k=1$), absolute agreement, 2-way mixed-effects model.

Results: For the CMT-SCS, overall reliability was good with an interrater reliability ICC (2,1) of 0.83 (95% CI 0.74-0.91) and intrarater reliability ICC (3,1) of 0.81 (95% CI 0.66-0.91).

Conclusion & Significance: The CMT-SCS has good reliability for infants up to 12 months of age, permitting medical professionals to use the scale during initial assessment of infants with suspected CMT. The CMT-SCS should be considered a priority for standard documentation for infants with CMT in USA and globally.

a. Interrater reliability based on raters' years of pediatric experience						
Raters' experience	Measure	Raters	Cases	95% CI		ICC
				Lower Bound	Upper Bound	
0-3 years	ICC (2,1)	25	23*	0.771	0.931	0.85
4-10 years	ICC (2,1)	34	23*	0.784	0.925	0.86
11-20 years	ICC (2,1)	43	23*	0.703	0.890	0.80
21 or more years	ICC (2,1)	37	23*	0.663	0.871	0.77

b. Interrater reliability based on raters' caseload size of infants with CMT						
Raters' caseload size	Measure	Raters	Cases	95% CI		ICC
				Lower Bound	Upper Bound	
No babies with CMT	ICC (2,1)	18	23*	0.513	0.855	0.68
1-3 babies with CMT	ICC (2,1)	43	23*	0.769	0.929	0.85
4 or more babies with CMT	ICC (2,1)	41	23*	0.747	0.908	0.83

Table: Inter rater reliability based on rater's characteristics:
a. Years of pediatric experience; b. Caseload size of infants with CMT

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Recent Publications

1. Oledzka M and Suhr M (2017) Postsurgical physical therapy management of congenital muscular torticollis. *Pediatr Phys Ther.* 29:159-65.
2. Suhr MC and Oledzka M (2015) Considerations and interventions in congenital muscular torticollis. *Curr Opin Pediatr.* 27:75-81.
3. Oledzka M and Kaplan S L (2014) Commentary on adapting to higher demands: using innovative methods to treat infants presenting with torticollis and plagiocephaly. *Pediatr Phys Ther.* 26:346.

Biography

Magda M Oledzka is the Director of the Pediatric Rehabilitation at Hospital for Special Surgery in New York City. She has completed her Graduation in the Physical Therapy Program at Hunter College in 1998 and an MBA in Healthcare Administration at Baruch College in 2008; currently, she is a Doctoral candidate at Rocky Mountain University of Health Professions with her primary research focus on Congenital Muscular Torticollis. She is a Board Certified by the American Physical Therapy Association as a Pediatric Clinical Specialist and is trained in Neuro-Developmental Treatment (NDT) in the management and care of children with cerebral palsy and other neuromotor disorders. She often lectures on topics related to infants and cerebral palsy.

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