## Table 7. Studies of Long Term Follow-Up

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| **Author, Year, Journal** | **Study Design / Level of Evidence** | **Participants** | **Residual CMT** | **Developmental Outcome** |
| Cabrera-Martos. 2015. | prospective cohort | 175 infants with DP with or without torticollis followed from initiation of tx for DP and/or torticollis until standing without support (Spain) | NA | Infants with DP without torticollis acquired creeping and unsupported standing later than infants with DP and torticollis when adjusting for the severity of DP and age at referral to treatment. There was no difference in the age of acquisition of rolling and sitting.  Mean age of acquisition of skills in all infants was 7.5 mo for rolling, 8.7 mo for sitting without support, 11.3 mo for creeping, and 12.3 mo for standing without support. |
| Ohman. 2013 | cohort | 58 children with history of CMT followed up at 3.5-5 yrs (Sweden) | 7% had a head tilt. | At 3.5-5 yrs, 7% (3/58) had a head tilt considered to be distinct (2) or extensive (1, received surgery).  At 3.3-5 yrs, 26% (15/58) had some degree of asymmetry in PROM. The clinical significance is uncertain because only children with CMT were followed. All had ≥ 85° of rotation PROM to each side, and 7 children had a lateral flexion PROM difference between sides of only 5-10°; it’s not clear if age matched children without CMT would present with similar results. |
| Ohman, 2009 | Case control | 122 infants with and without CMT at 2-18 mo of age (Sweden) | At 10 mo, 47% (n=27/57) had evidence of CMT.  At 18 mo, 6 infants still had evidence of CMT. | At 2 mos, gross motor function of 38% (n=11/25) of infants with CMT, compared to without CMT (11%, n=4/35), was ≤ 10th percentile (assessed using AIMS). – significantly different between groups  At 6 mos, gross motor function of 19% (n=11/54) of infants with CMT, compared to without CMT (3%, n=1/39), was ≤ 10th percentile (assessed using AIMS). At 6 mos, infants with CMT, compared to without CMT, spent less time in prone. - both gross motor function and time spent in prone significantly different between groups.  At 10 mos, gross motor function of 23% (n=13/57) of infants with CMT, compared to without CMT (10%, n=4/39), was ≤ 10th percentile (assessed using AIMS). – not significantly different between groups.  At 18 mo, all infants with and without CMT achieved the total score on the AIMS.  Both CMT and prone time had an impact on motor development at 2 and 6 months of age. Prone time had a higher impact and also had an impact at 10 mo of age. |
| Ohman. 2013 | case control | 81 children with and without history of CMT followed up at 3.5-5 yrs (Sweden) | NA | At 3.5-5 yrs, infants with a history of CMT, as compared to without a history of CMT, are at no greater risk for motor delay (assessed using MABC-2). |
| Schertz ,et al., 2008 | prospective cohort | 83 infants with history of CMT followed at 8-15 mo (Israel) | NA | At initiation of tx for CMT (performed at 2.9 [SD 1.5] mo), gross motor function of 34% (n=35/101) of infants with CMT was ≤ 10th percentile (assessed using AIMS). – lower than the general population  At 8-15 mos, gross motor function of 9.6% (n=8/83) of infants with history of CMT was ≤ 10th percentile (assessed using AIMS). - not different from general population  At 8-15 mos, cognitive function of 13.6% (n=9/66) of infants with history of CMT was classified as below normal (assessed using CAT-CLAMS). - not different from general population |
| Schertz, et al, 2013 | prospective cohort | 68 children with history of CMT followed up at 7-9 yrs (Israel) | NA | Presence of NDD assessed via clinical assessments (n=38; DSM-IV-TR for ADHD and ASD; BOT-2 or MABC for DCD, MAASE for LI) or telephone interview (n=30; DCD-hebrew for DCD; parent report for ADHD, ASD, DCD, LI)  At 7-9 yrs, 32% (n=22/68) of children with a history of CMT were diagnosed with a NDD (8.8% [n=6/68] ADHD only, 8.8% [n=6/68] ADHD + DCD, 10.3% [n=7/68] DCD only, 1.5% [n=1/68] LI, and 2.9% [n=2/68] LI + ADHD + DCD). Prevalence of DCD and ADHD in this sample of children with a history of CMT in Israel is higher than reported in other samples, which is 4% for DCD in the general population of children in the United Kingdom and 7% for ADHD in the general population of children in the United States). |
| Watemberg. 2016 | retrospective cohort | 173 infants with postural CMT followed from initiation of Rx for CMT to 2 years (Israel) | At 2 yrs, 21.7% (n=26/120) had evidence of CMT. | At initiation of tx for CMT, motor delay and DP were more common in infants with CMT and functional motor asymmetry versus CMT and no functional motor asymmetry (n=173).  At 1-2 yrs, 27.2% (n=11/33) of infants with motor asymmetry at initiation of tx for CMT, continued to have motor asymmetry. |

Abbreviations: ADHD, Attention deficit hyperactivity disorder; ASD, autism spectrum disorder; AIMS, Alberta Infant Motor Scale; BOT-2, Bruininks-Oseretsky Test of Motor Proficiency, 2nd edition-Short Form; CAT-CLAMS, Clinical Adaptive Test/Clinical Linguistic Auditory Milestone Scale; CMT, congenital muscular torticollis; DCD, developmental coordination disorder; DSM-IV, Diagnostic and Statistical Manual of Mental Disorders, 4th edition; DP, deformational plagiocephaly; LI = language impairment, MABC = Movement Assessment Battery for Children 1st/2nd editions; MAASE, A test for spoken language processing (in Hebrew); mo, month; NDD, neurodevelopmental disorder; tx, treatment; wk, week; yrs, years; /, per.