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TITLE: EFFECTS OF PHYSICAL THERAPY VERSUS PHYSICAL THERAPY WITH TORTLE™ ON HEAD SHAPE IN INFANTS WITH PLAGIOCEPHALY.

PRESENTATION TYPE: Poster

CURRENT SECTION: Pediatrics

Author Details

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SPONSOR NAME: None

Student Category - Research Report: Not a Student

Abstract

ABSTRACT BODY:

Purpose/Hypothesis : 1) Determine if infants with plagiocephaly attain more symmetric head shape with physical therapy (PT) and Turtle™ (a positioning beanie with a padded roll positioned over an infant's flat spot) than with PT alone; 2) Determine effect of PT, with and without Turtle™, on neck passive range of motion (PROM), strength, posture, and gross motor development.

Number of Subjects : Twenty subjects received PT at least 1 hour per week, including education on positioning. Infants were included if they had head asymmetry defined as a direct oblique cranial length ratio (OCLR_{palm}) of >106 using the Skull Cap Test (Selby-Silverstein et al, 2016). Through random concealed allocation, 10 subjects also received a Turtle™.

Materials/Methods : Data collections occurred monthly. Primary measures were of head shape: oblique cranial length ratio at 40 degrees from sagittal (OCLR₄₀) (Hutchison et al, 2005) using the Heads-up computer program, and direct measurements (OCLR_{palm}). Secondary measures were Alberta Infant Motor Scale (AIMS) from videotape, neck strength using Muscle Function Scale (MFS), PROM (lateral tilt and rotation) and resting head tilt (supine and sitting) from photographs.

Results : Interrater reliability (ICC 2,1) was > .9 for all measures, except neck rotation (.78) and MFS (.7). With Turtle™ plus PT, both head shape measures improved significantly from baseline to discharge (OCLR₄₀ t=2.68, p=.03; OCLR_{palm} t=2, p=.04), this did not occur in PT alone (control) group (OCLR₄₀ t=-.84, p=.42; OCLR_{palm} t=1.53, p=.08). At baseline, infants in Turtle™ plus PT group started out significantly more asymmetric (OCLR₄₀=109 ± 4) than control group (OCLR₄₀= 106 ± 3); (F(1,17) =10.49, p=.005, η_p^2 =.38). At discharge, they became more symmetric (106±3), while control group did not change (106±3); hence, there was a significant interaction between discharge (OCLR₄₀) and baseline head shape (OCLR₄₀) (F(1,18)=6.62, p=.02, η_p^2 =.27). At discharge there was no difference in head shape between the PT plus Turtle™ and PT alone groups (F(1,18)=.63, p=.44, η_p^2 =.03). AIMS totals showed significant improvement, over the three months, in both groups: PT plus Turtle™ (t=-5.14, p=.0006) and PT alone (t= -4.99, p=.0007). MFS on the weaker side got significantly stronger over time in both groups, PT plus Turtle™ (t=-3.88, p=.004) and PT alone (t=-4.33, p=.002). Cervical rotation PROM on the tighter side showed a significant increase over time for all subjects (t=2.08, p=.05). Discharge head shape was more symmetric the younger the infants started treatment (age to OCLR₄₀, r=.66). At baseline, head shape (OCLR₄₀) was related to supine resting head tilt (r=.62).

Conclusions : These data support early PT plus Turtle™ to improve head shape. It also supports PT to promote gross motor development, and treat asymmetries in neck rotation and strength in infants with plagiocephaly.

Clinical Relevance : Physical therapy was efficacious for infants with plagiocephaly; PT plus Turtle™ improved head symmetry.

KEYWORDS: Plagiocephaly, Physical Therapy, Infants.

References: Limit to only those materials that ensure that the content is evidence-based; minimum 5 references, no more than 10 years old (2008 and forward): 1. Hutchison, LB., Stewart, A., De Chalain, T., Mitchell, E. (2010). A

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