Physiotherapy reduces the risk of deformational plagiocephaly in infants who have a preferred head position when lying supine

Synopsis


Question: Does physiotherapy reduce the risk of severe deformational plagiocephaly in infants who exhibit a preferred head position while in supine lying? Design: Randomised controlled trial with concealed allocation and blinded assessors. Setting: General hospital in the Netherlands. Participants: Infants at 7 weeks post-gestational age who exhibited head rotation to either the right or the left side when in the supine position for approximately three-quarters of the time of observation, without active rotation of the head over the full range of 180 deg (minimal time of observation, 15 minutes). Torticollis, dysmorphisms and syndromes were exclusion criteria. Randomisation of 65 infants allotted 33 to the physiotherapy group and 32 to a control group. Interventions: Parents of the infants in both groups received a leaflet describing basic preventive measures for plagiocephaly and advice from health care providers at well-child clinics. The control group did not receive any further intervention. The physiotherapy group also received up to eight sessions of physiotherapy at least a week apart before babies reached the age of 6 months. These sessions included exercises to reduce positional preference and to stimulate motor development, parental counselling about counterpositioning, handling, nursing, and the causes of positional preference. Greater playing time in the prone position when awake was encouraged. Sessions were ceased when positional preference disappeared, parents had incorporated the advice about handling and there were no signs of motor developmental delay or asymmetry. Outcome measures: The primary outcome was severe deformational plagiocephaly, defined as a ratio of the longest:shortest oblique diameter of the head of 1.04 or greater. Secondary outcomes included symmetry in posture and active movements, motor development, and passive range of motion of the cervical spine. All outcomes were measured at 6 and 12 months of age. Results: All infants completed the 6-month assessment and data were carried forward for three (5%) who then deviated from their allocated treatment. Physiotherapy significantly reduced the risk of severe deformational plagiocephaly at 6 months (Relative Risk (RR) 0.54, 95% CI 0.30 to 0.98) and at 12 months (RR 0.43, 95% CI 0.22 to 0.85). This indicates that for every 3 infants with positional preference treated with physiotherapy, one case of severe deformational plagiocephaly at 12 months will be prevented (95% CI 2 to 12). The groups did not differ significantly on the secondary outcomes. Conclusion: In infants with positional preference, physiotherapy intervention in addition to usual care reduced the risk of severe deformational plagiocephaly at one year. [95% CI for the number needed to treat calculated by the CAP Co-ordinator.]

Commentary

Deformational plagiocephaly (DP), a frequently occurring pediatric condition, is characterised by changes in skull shape in the absence of craniosynostosis. The cranial sutures are open and normal, therefore conservative management, such as physiotherapy and helmet therapy, is frequently used to treat this condition. Despite anecdotal evidence that suggests that these forms of management are effective in reducing DP, there is a paucity of high quality evidence that underpins these two treatment methods (Bialocerkowski et al 2005). Therefore, this high quality randomised controlled trial makes a welcome addition to the evidence regarding the effectiveness of treatments for DP. It provides strong evidence that physiotherapy with advice to parents is more effective than advice alone in reducing DP. Moreover, these effects are maintained for at least six months following physiotherapy.

From a clinical standpoint, the physiotherapy delivered seems intuitive, as it addressed asymmetries associated with infant handling using counterpositioning and parental education as well as stimulating motor development. This program appears to be relatively easy to replicate in the clinical setting, as it does not require costly equipment or advanced pediatric physiotherapy skills. Potentially, this physiotherapy program could be delivered in hospital and community-based settings. This study, however, does not provide evidence regarding the effectiveness of each type of physiotherapy technique. Thus clinicians should use all of these techniques as a package of care.

Although it appears that physiotherapy tends to decrease DP, cost-benefit analyses should be undertaken to determine the economic as well as physical benefit of treating infants with physiotherapy compared to advice and other forms of conservative management. Moreover DP is not only a cosmetic disorder, as DP has been found to be associated with developmental difficulties (Miller and Claren 2000). Because its secondary effects may be long lasting and costly to treat, consideration needs to be given to programs that prevent this disorder from occurring.

Andrea Bialocerkowski
The University of Melbourne

References