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New guidelines review evidence on PT, helmets for positional plagiocephaly
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Positional plagiocephaly is a common condition encountered by pediatricians and referred to pediatric subspecialty physicians such as neurosurgeons and plastic surgeons.

About one in four U.S. infants has some degree of positional plagiocephaly. The incidence has increased since the Academy initiated the Back to Sleep campaign in 1994 to prevent sudden infant death syndrome.

Due to practice variation in diagnosis and treatment paradigms for this common condition, the Joint Section on Pediatric Neurosurgery of the American Association of Neurological Surgeons and the Congress of Neurological Surgeons (CNS) sought to develop evidence-based management guidelines. A multidisciplinary task force conducted a systematic review of the literature from 1966 to October 2014 on pediatric plagiocephaly. Nearly 400 abstracts were reviewed yielding 110 articles for full review; 60 were deemed relevant.

The task force made 10 recommendations pertaining to imaging diagnosis, repositioning, physical therapy and helmet orthoses. The guidelines are published in CNS’ journal Neurosurgery and have been endorsed by the Academy. They are available at http://bit.ly/2d7NzS1.

Definition of positional plagiocephaly

In the guidelines, the term positional plagiocephaly encompasses both positional occipital plagiocephaly (unilateral flattening of parieto-occipital region, compensatory anterior shift of the ipsilateral ear, bulging of the ipsilateral forehead) and positional brachycephaly (symmetric flattening of the occiput, foreshortened anterior-posterior dimension of the skull, compensatory biparietal widening) and the combination of both of these deformities.

Positional skull deformities can result from intrauterine constraint or extraterine deformation. They can be perpetuated by postnatal sleeping position and exacerbated by concurrent torticollis or other neuromuscular conditions.
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Diagnosis and management

The diagnosis of positional plagiocephaly is made clinically. If it is not clear from the clinical examination, referral to an expert in cranial deformities is warranted. Imaging ultimately may be necessary in unusual cases.

CT scan is the gold standard for diagnosis of craniosynostosis and should be used sparingly in cases when the benefit of the diagnosis is worth the radiation exposure. MRI has no role in the diagnosis of positional plagiocephaly.

The management of positional skull deformation is nonsurgical and involves ruling out craniosynostosis and determining the timing and need for intervention such as physical therapy or helmet orthosis.

Repositioning education is effective in affording some degree of correction in virtually all infants with positional plagiocephaly. However, most studies suggest that a properly fitted helmet orthosis corrects asymmetry more rapidly and to a greater degree than repositioning. This is especially the case if the deformity is severe and if helmet therapy is applied during the appropriate period of infancy.

There are no standardized criteria regarding the measurement and quantification of deformity or the most appropriate time window in infancy for treatment of positional plagiocephaly with a helmet. In general, infants with a more severe presenting deformity and infants helmeted early in infancy tend to have better reported correction or even normalization of head shape.

The only randomized data pertaining to helmet orthosis showed no benefit of helmet therapy in the treatment of mild positional plagiocephaly. However, many have raised concerns over flawed design and execution of this randomized study. These shortcomings may contribute to the randomized data conflicting with the majority of the nonrandomized evidence.

Torticollis frequently is associated with cranial deformity. In that situation, physical therapy is an important adjunct in allowing effective repositioning to occur. Positioning pillows have been used to treat cranial deformity, but it is important to note that the Academy warns against the use of soft pillows and blankets in the safe sleeping environment.

Weighing all the evidence, it appears that the current commonly accepted management paradigm of positional plagiocephaly in infants can be justified.

Many groups use conservative therapy such as repositioning and physical therapy for treatment of mild to moderate deformity in younger infants and reserve helmet therapy for more severe deformity, especially older infants who have failed to see improvement with conservative measures.

Evidence in favor of helmet use is annotated by the lack of data regarding the extent of natural history improvement in positional plagiocephaly, the long-term effects of helmet therapy and of residual plagiocephaly, and costs associated with helmet therapy.

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