Case Report

Ossified Cephalhematoma: An Unusual Cause of Calvarial Mass in Infancy

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INTRODUCTION

Cephalhematomas, in the neonate, occur due to bleeding in the subperiosteal layer of the scalp and are common in parietal area. They are frequently associated with traumatic labor such as assisted vaginal delivery using forceps or vacuum extraction although may be seen even after normal delivery.[1,2] Rarely, coagulation disorders and head injury are related.[3] They are found in <1% of newborns and usually resolve spontaneously within a month.[1,4] Rarely, they may persist and the periosteum undergoes ossification. This may result in either cosmetic deformity, inward compression of the soft calvarial bones, or rarely craniosynostosis.[2,5]

More importantly, the diagnosis per se may be missed unless one is aware of this rare phenomenon of ossification in cephalohematomas. Furthermore, no consensus exists on the management protocol (conservative vs. surgery) and the surgical techniques used for ossified cephalhematoma (OC). There are reports of spontaneous remodeling even after ossification sets in a cephalhematoma.[4,6] Hence, surgical intervention may not be necessary in every child and is only selective. We hereby report an infant with an OC who was managed conservatively.

CASE REPORT

A 3-month-old, developmentally normal child presented with a hard swelling over the right parietal region. At birth, the parents had noticed a soft scalp swelling which was apparently overlooked. Although initially soft, it became progressively less pliable. The child was born by forceps-assisted vaginal delivery at term. His neurological examination was unremarkable. A computed tomography (CT) scan showed an additional layer of bone overlying the right parietal area and separated from calvarium by a hypodense area. The normal calvarium was not depressed [Figure 1]. In view of the relevant history and CT imaging, a diagnosis of OC was made.

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Parents were reassured of the benign condition and the child is being followed up.

**Discussion**

Cephalohematomas do not cross suture lines due to periosteal attachments and thus differ from caput succedaneum and subgaleal hematoma. They are probably secondary to tearing of subperiosteal blood vessels due to sudden compression of skull with inward movement causing the bone to move away from periosteum. The shearing force between skull and periosteum may also cause stripping of periosteum from underlying bone.[1,3] In general, cephalohematomas are managed conservatively. Needle aspiration may be helpful when there is suspicion of infection or to prevent possible calcification in a long-standing swelling.[7,8] Although usually disappearing in a month’s time, occasionally cephalohematoma becomes organized and subperiosteal osteogenesis occurs resulting in calcification. Of late, their formation is considered to be a phenomenon of ossification rather than simple calcification process as described in earlier reports.[1,3] OCs are classified into two types: Type 1 where there is no depression of the inner layer and hence no inward encroachment and Type 2 where this is present.[2]

The management of OC is controversial. Occasionally, they may undergo spontaneous remodeling which suggests that observation is an option in certain children with no major cosmetic concern.[4,6] Surgery is advocated in cases of significant deformity and/or secondary cranial complications as described earlier. For calcified Type 1 hematomas, Wong et al. propose an ostectomy of the outer layer while in Type 2, they have advocated a flip-over bull’s-eye craniectomy or a cap radial craniectomy.[2] For incompletely OC in children <12 months old, Petersen et al. have advocated a “passive cranial molding helmet therapy” though others have expressed concerns that this might convert a Type 1 into a Type 2 variant.[2,9] A technique of simple excision and periosteal reattachment has also been described.[7]

A differential diagnosis of OC is likely to be missed unless the physician is aware of this rare entity. It can be misinterpreted as a bony tumor. This is likely to cause unwanted distress to parents. Further, considering the possibility of OC would lead the attending physician to seek appropriate imaging (X-ray/CT scan) and skip fine-needle aspiration which may be unwarranted in such lesions. Supported by relevant history and classical CT imaging, the parents could be convinced of such benign condition which may require just follow-up in cases with no significant cosmetic or cranial effects. Spontaneous regression of these lesions with growth of the cranium has been described by Daglioglu et al. who advocate follow-up up to 2 years and likewise in our case too, we have reassured the parents and asked them to keep the child on regular follow-up.[4]

**Conclusion**

OCs may present as hard scalp swelling in early infancy. Although rare, they should be considered as a differential. The management has to be tailored on case-to-case basis depending on cranial or cosmetic effects. Observation may be an option in some.

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**Conflicts of interest**

There are no conflicts of interest.

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