

Unusual isolated ossification of falx cerebri: a case report

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ABSTRACT

Awareness of anomalous ossification of the falx cerebri is a useful guide for both in studies of human anatomy and in clinical practice today. It is of significant practical importance for the neurosurgeons and radiologist, to know the form, degree of severity and range of extension of such changes. Images of skull and brain with such ossification patterns may lead to confusion in interpretation. The relations of this ossification with neighboring brain tissue, blood vessels and other structures are important for an accurate diagnosis and to prevent further surgical complications during routine surgery.

In our routine dissections for the preparation of teaching and museum specimens, in one elderly Trinidadian African male cadaver, we observed isolated islands of ossification in the falx cerebri. *Neuroanatomy*; 2007; 6: 54–55.

Key words [ossification] [dura mater] [falx cerebri] [meninges]

Introduction

Ossification of dural folds is very rare in humans. Several reports have shown mineralization of both lepto- and pachymeninges [1,2]. Recently Tubbs et al [3] have reported a rare case of complete ossification of falx cerebri. In some studies, the ossification of falx cerebri was associated with some endocrine disorders. We report an African male cadaver without any medical disorder, showing isolated patches of calcification in the falx cerebri.

Case Report

Out of twelve adult cadavers, nine males (6 Africans, 3 East Indian origin) and three females (all Africans) were dissected in the Anatomy Unit during regular dissections for the purpose of preparation of anatomical specimens for teaching and museum. In each cadaver, the skullcap was removed and the convexity of the cranial dura mater, as well as the individual dural folds were carefully examined. The meningeal and cerebral blood vessels together with the underlying brain were grossly inspected.

In one of the adult African male cadaver, patches of ossification in the falx cerebri at three different regions were encountered. Two were on the right side, one in the anterior part of the falx cerebri measuring about 6 mm and the other just behind the middle part of falx cerebri measuring about 20 mm (Figure 1). One on the left side a patch of about 14 mm was present (Figure 2). There was no such anomalous ossification in any other

dural component. The brain appeared grossly normal. The ossified tissues were subjected to histological examination to confirm their structure. On histological sections stained with hematoxylin and eosin, concentric lamellae of mature bone with the trabecular spaces containing adipose tissue and small blood vessels were observed (Figure 3).

Discussion

Ossification of dural meninges in the cranial cavity is very rare in the medical literature. Sands et al [4] have studied magnetic resonance images of 3,000 patients and demonstrated merely small islands of ossification of falx cerebri in twelve individuals. Lee et al [5] have reported that falx ossification was present in 0.7% of cases. Teir and Ohela [6] have studied on 100 autopsies and found 11 cases of anterior falx cerebri bony islands. Incidence of ossification of falx has been reported in certain medical disorders such as endocrine disorders, basal cell nevus syndrome, Maroteaux type brachyolmia, hypertelorism and pseudoxanthoma elastrium [7-9]. Miaux et al [10] found partial ossification of falx cerebri in two cases out of 13 patients with adult form of myotonic dystrophy.

Since falx cerebri is derived from embryonic mesenchymal cells, occasional ossification might be seen due to friction, hemorrhage or trauma, which results in some osteogenic changes leading to the formation of membranous bone. Manifestation of a generalized disease such as hyperparathyroidism, vitamin D-intoxication or chronic

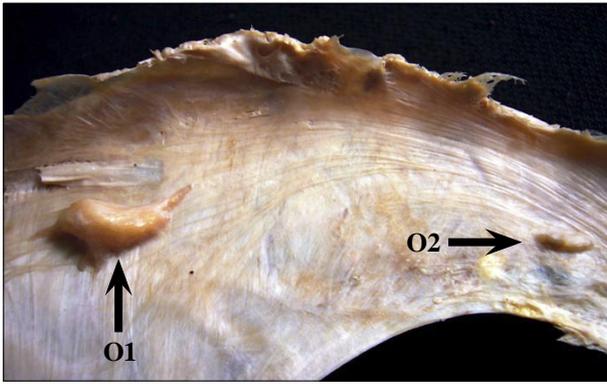


Figure 1. Ossifications of falx cerebri on the right side. Arrows showing the ossifications. Color version of figure is available online. (*O1: 20 mm; O2: 6 mm*)

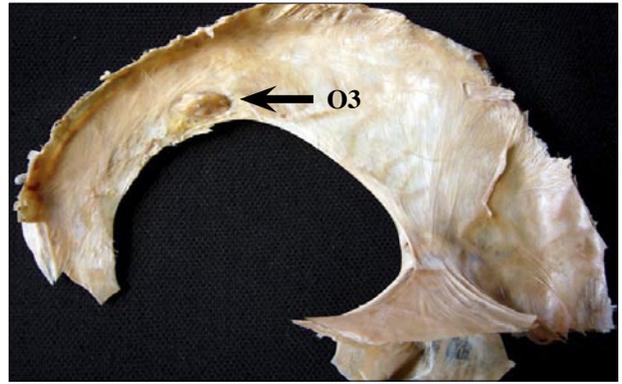


Figure 2. Arrow showing ossification of falx cerebri on the left side. Color version of figure is available online. (*O3: 14 mm*)

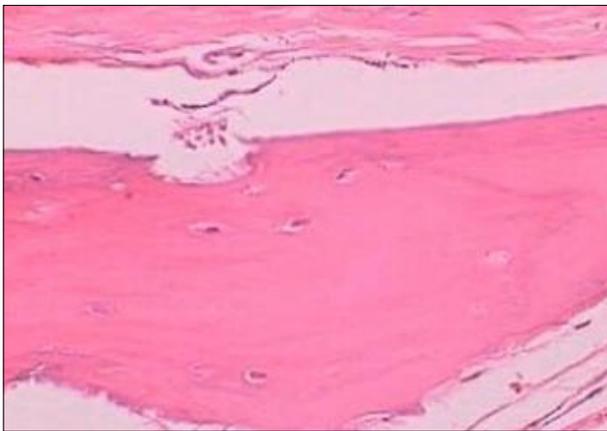


Figure 3. Section of falx cerebri showing the ossification. Color version of figure is available online. (*HE-40X*)

renal failure might lead to ossification of falx cerebri. In our present findings there was no such a history for any of these generalized diseases. None of the available

literature had mentioned whether the gender/ethnicity plays any role in falx ossification. As far as we are aware, there is no published report comparable to the present study on ethnicity. However, the relevance of the gender/ethnicity in falx ossification needs to be evaluated in further studies.

Conclusion

Even though, ossification of an isolated site of the falx cerebri in humans is very rare in medical literature, these changes should be kept in mind while interpreting images of the skull and brain. Patients with a falx lipoma, which is rare congenital entity, should not be confused with falx ossification. Clinical assessment and laboratory investigations are required to determine whether these changes are due to manifestation of a generalized disease such as hyperparathyroidism, vitamin D-intoxication, or chronic renal failure and also further studies have to be confirmed about the role of genetics in falx ossification.

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