

STUDY OF METOPIC SUTURES IN ADULT SKULLS IN KARNATAKA REGION

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ABSTRACT

Introduction: The adult human skulls have sutures which are separating the the cranial bones. The larger sutures which are seen are coronal suture, sagittal suture and lamdoid sutures in addition to the smaller sutures separating the smaller bones of the skull. The rare feature in the adult human skull is a complete metopic suture separating the 2 halves of frontal bone, the condition is termed as metopism.

Materials and Methods: The present study was done on adult human skulls in the department of Anatomy S.I.M.S. & R.C. Shimoga where metopic suture was seen in 6 out of 115 skulls and were of linear variety. Some skulls were had sutural bones at coronal suture.

RESULTS AND DISCUSSION: The occurrence of metopic sutures in our study was 5% of the skulls studied. Metopic sutures incidence varies from region to region and also racially. This can simulate a fracture in frontal bone. The knowledge of such type of sutures is helpful for anatomists, radiologists and is of medicolegal help also.

KEY WORDS: Metopic suture, metopism, frontal bone.

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INTRODUCTION

In most textbooks of anatomy, the description of the metopic sutures varies. Variation of the metopic sutures have been mentioned by various workers with some agreement over date of closure, or persistence, whether partial or complete [1]. Majority of the skull bones are held together by fibrous joints termed sutures. Frontal bone is a unpaired bone of the skull forming the forehead which is a common area for scalp & face [2]. According to Gray [3] glabella which is a meeting point of the superciliary margin may show the remains of 2 halves frontal bone (metopic suture) which is present in 9% of the adult

human skulls.

A.K. Dutta [4] reported that at birth the 2 halves of the frontal bone are separate as the metopic suture which is replaced by bone by about 2 years. Remnants of the metopic sutures may persist in some skulls at glabella. G.J.Romanes [5] says the metopic sutures closes by 5 –6th year barring some traces above and below. Breathnach [6] concluded that metopic sutures varied in different races to be present in 7–10% of Europeans, 4–5% in Yellow races and in 1% of African population.

Similar studies were made using Indian skulls

& metopism were found in 5% by Jit & Shah, 3.31% by Das & Saxena & 2.66% by Agarwal, Malhotra & Tiwari [1]. Many factors were responsible for the persistence of metopic sutures in adults which are abnormal growth of the skull bones, hydrocephalus, atavism & genetic causes [2]. Knowledge regarding the metopic sutures in adults is necessary to avoid misinterpretation of radiographs as frontal bone fracture [2], knowledge of it is helpful for anatomists and also be useful for medicolegal purposes.

MATERIALS AND METHODS

The study was conducted in department of Anatomy, S.I.M.S. & R.C. Shimoga, Karnataka which included the 115 adult skulls. We found that metopic sutures were seen in 6 skulls in our study. Malformed or fractured skulls or pathological skulls were discarded and each skull were thoroughly checked for any defects. Results were recorded and photographs were taken accordingly.

RESULTS

Fig. 1: Showing the specimens with metopic suture.



Specimen 1 & 5: Complete metopic suture was present, presence of bilateral sutural bone at the pterion portion of the skull.

Specimen 2: Complete metopic suture present, sutural bone seen in coronal suture & at the left sided pterion of the skull.

Of the 115 adult skulls which were studied, metopic suture was found in 6 skulls and was of Linear variety. The percentage of metopic suture in our study was 5.4%.

DISCUSSION

Metopic suture have been studied by various authors, Woods and Jones [7], however proposed the differing indices which occurred in different races might be useful in anthropological studies. In the present study we found the incidence of metopic sutures was 5.4% in the Karnataka region which is in accordance with the earlier studies done by other authors in Indian population.

The incidence of metopic suture ranges from 1–10% in different races according to study of other workers. It was 1.2% in Negroes as reported by Bryce [8], 3.4% in Nigerian skulls by Ajmani, 8.7% in Europeans & 5.1% in Mongolians by Bryce [8], 3.31% in Indians by Das et al [9]; 5% by Jit & Shah in Indians [10], 5% by Gupta Rakesh and workers [11] in Aligarh Uttar pradesh India; 3.5% by Anjoo Yadav & workers [12] in North Indian skulls. It can be noted that the incidence of metopic sutures varied in different regions of India done by various workers. Our study on these lines is one of the few studies done on metopic sutures in Karnataka region.

CONCLUSION

The study was carried out on 115 adult human skulls in Karnataka region and the incidence of the metopic sutures was 5.4% in our study which is in accordance with the studies done on Indian population. There is however difference in the incidence of metopic sutures in different races and regions as mentioned in the literature.

The knowledge of the presence of metopic sutures is therefore helpful for academic interests, in ruling out fractures of frontal bones radiologically and it is helpful in asceraining & evaluating medicolegal cases. There is certainly geographical differences in the incidence of the metopic sutures globally.

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Conflicts of Interests: None

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