

(b) *Feeding experiments on guinea-pigs*

Three guinea-pigs were kept on a diet consisting of 60 parts of starch, 15 of powdered egg white, 10 of groundnut oil, 5 of sodium chloride and 10 of cane sugar. This diet lacks calcium and vitamin C. These animals were kept in a metabolic cage.

The animals were examined at the commencement of the experiment and then at intervals till death which occurred at the latest on the 27th day. Their urine was daily examined for sugar, but it was always found absent although there was loss of weight and submucous hæmorrhages. This shows that a lowering of the blood calcium and vitamin C by itself cannot cause glycosuria. The glycosuria of pregnancy as already stated (Batliwalla, 1948) is due to some local disturbing factor which when associated with low calcium and vitamin C content of blood reduces the renal threshold for glucose.

Conclusion

On administration of adequate doses of vitamin C and calcium, there is a complete disappearance of pregnancy glycosuria. Also, there is a rise in the blood sugar level (fasting as well as after administration of glucose). The efficacy of each of these two substances is less than that of their combination and vitamin C administration *per se* raises the renal threshold to a greater extent than calcium administration alone.

Administration of suitable doses of vitamin C and calcium in renal glycosuria cases in males raises the renal threshold for glucose, but here the rise is less marked than in the foregoing cases inasmuch as here some unknown causative factors continue to be in operation.

In perfusion experiments on frog's heart, when the perfusing fluid contains vitamin C, the utilization of glucose is greater.

Guinea-pigs on a diet lacking in calcium and vitamin C show no sugar in urine.

REFERENCES

BATLIWALLA, K. C. (1947). *Indian Med. Gaz.*, **82**, 191.
Idem (1948). *Ibid.*, **83**, 125.
 CLARK, A. J., GADDIE, R., *J. Physiol.*, **72**, 443.
 and STEWART, C. P. (1931).

INCIDENCE OF FRONTAL OR METOPIC SUTURE AMONGST PUNJABEE ADULTS

By INDER JIT, M.S.

and

M. A. SHAH, M.S.

(Formerly of the King Edward Medical College, Lahore)

FRONTAL bone is developed in two halves. At birth they are united together by frontal or metopic suture which usually disappears between

sixth and tenth years. In some individuals this suture remains complete throughout life and the condition is called 'Metopism'. Metopism is said to be more frequent amongst higher races than amongst lower races and in brachycephalics than in dolichocephalics. According to Gray (1946) it is present in 9 per cent of skulls. According to Rau (1934) metopism was present in 4 per cent of cases in skulls representing the Dravidians of the Madras Presidency. No case of metopism is seen in anthropoid apes though according to Schwalbe (quoted by Rau, 1934) it is found in Colobus and Semnopithecus.

The remains of the frontal suture can be seen in a large number of adult skulls at or about glabella. No statistics are, however, available regarding their percentage and appearances.

Present work

We examined eighty adult skulls from dissection-hall subjects of the King Edward Medical College, Lahore, during the years 1944-47. The subjects were all Punjabees and were not classified according to communities or age groups. Only adult skulls were examined. The following are our findings:

	Number of cases	Percentage
Absent	14	17.5
Present—		
Complete (<i>see figure 1, case 16</i>).	4	5.0
Incomplete	62	77.5
Total present	66	82.5

Incomplete Sutures

1. Single

	Number of cases	Percentage
(a) Linear without any sutural bones.	36	45.0
Average length ..		8.7 mm.
Maximum		24.0 mm.
Minimum		4.0 mm.

(In case 13 the direction of the suture was upwards and to the right. In case 78 direction was slightly to the left.)

(b) Linear with a sutural bone at the lower end (<i>see figure 2, case 50</i>).	3	3.7
Length		8, 10 and 12.5 mm.
(c) Linear with a sutural bone at the upper end (<i>see figure 3, case 17</i>).	2	2.5
Length		9 and 22 mm.

	Number of cases	Percentage
(d) Linear with two sutural bones Length at the upper end.	1	1.2
		8 mm.
(e) Only a sutural bone present at the site of the lower end of the suture.	10	12.5
		Average dimension 8×6 mm.
		Maximum " 15×10 mm.
		Minimum " 6×4 mm.
Total	52	65.0

2. Double

- (a) In three cases both the sutures were vertical—13, 13 and 6.5 mm. long and 3, 6 and 4 mm. apart.
- (b) In one case the suture was 'H' shaped, each limb being 8 mm. long with a maximum distance of 8 mm. in between (see figure 4, case 59).
- (c) In one case the sutures 13 mm. long converged at the upper end so that the distance in between them was 4 mm. above and 6 mm. below.
- (d) In one case the sutures 21 mm. long converged at the lower end so that the distance in between them was 9 mm. above and 4 mm. below.
- (e) In one case the sutures went upwards and outwards from the lateral angle of the fronto-nasal junction towards supraorbital margin on each side (see figure 5, case 14).
- (f) In one case the sutures went outwards from nasion towards the orbit (see figure 6, case 56).
- (g) In one case the two sutures united at the nasion giving a 'V'-shaped appearance.

	Number of cases	Percentage
Total	9	11.25
3. Single below but double above	1	1.25

Frontal bone is ossified from two main primary centres, one for each half of the bone. Various types of double sutures seen in 11.25 per cent skulls suggest that the bone in the region of the glabella may be ossified from more than two centres.

According to Cunningham (1943) obliteration begins usually at the level of the frontal eminences extending upwards and downwards from there, so that before the suture is completely closed, traces may be left only above and below. In our series no remains of the suture could be seen at the upper end of bones.

Summary

1. Eighty adult Punjabee skulls from dissection-hall subjects were examined for the remains of the frontal sutures. It was found that metopism or complete frontal suture was present in 5 per cent of cases.

2. Remains of the frontal sutures could be seen at the lower part of the bone in 77.5 per cent of cases.

3. In about 11 per cent of skulls, the remains of the suture were represented by double sutures at or about the glabella, suggesting thereby that this part of the bone in these skulls was ossified from more than two centres.

4. Since the remains of the frontal suture were not seen at the upper part of the bone, it appears that the closure of the suture takes place from above downwards.

REFERENCES

- CUNNINGHAM, D. J. *Textbook of Anatomy*. (1943). Oxford University Press, London.
- GRAY, H. (1946) .. *Anatomy*. Longmans, Green and Co., New York.
- INMAN, V. T., and SAUNDERS, J. B. DE C. M. (1937). *J. Anatomy*, **71**, 383.
- RAU, R. K. (1934) .. *Ibid.*, **69**, 109.

A REPORT OF 46 CASES OF ANÆMIA IN THE PUNJAB WITH SPECIAL REFERENCE TO NUTRITIONAL MACROCYTIC AND ADDISONIAN ANÆMIA

By P. N. CHHUTTANI, M.D. (Punjab), D.T.M. (Cal.)
Balakram Medical College and Sir Gangaram Hospital,
Lahore

A SERIES of forty-six consecutive anæmia cases, studied at Mayo Hospital, Lahore, in 1939, is being reported to record the findings of interest. The series is not representative of the provincial population, because the hospital, although fed by the whole province for its clinical material, had only a few beds for women and children. There was also considerable selection of material as only severe anæmia cases could secure admission.

Technique

The Sahli's hæmoglobinometer used was standardized. The hæmatological observations recorded were all made by a single observer on capillary blood. Cytological nomenclature adopted was after Whitby and Britton (1937).

Tallqvist scale and Eve's halometer which were in routine use at the institution were tested against Sahli's hæmoglobinometer and Price-Jones curves respectively. Duplicate hæmoglobin readings were made on 113 samples of blood by the two methods and both Tallqvist scale and Eve's halometer were found to be unsatisfactory in the study of anæmias (Chhuttani, 1942).

The mean diameter (Price-Jones) was measured only in thirty-one instances. The

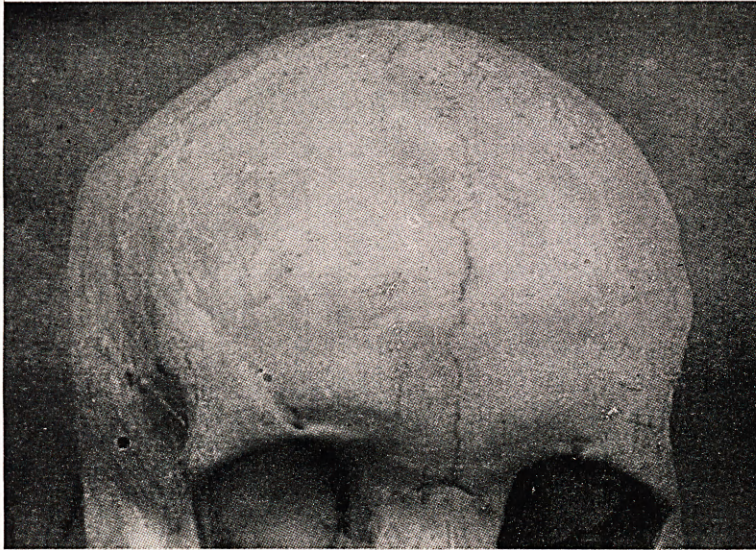


Fig. 1.—Case 16.

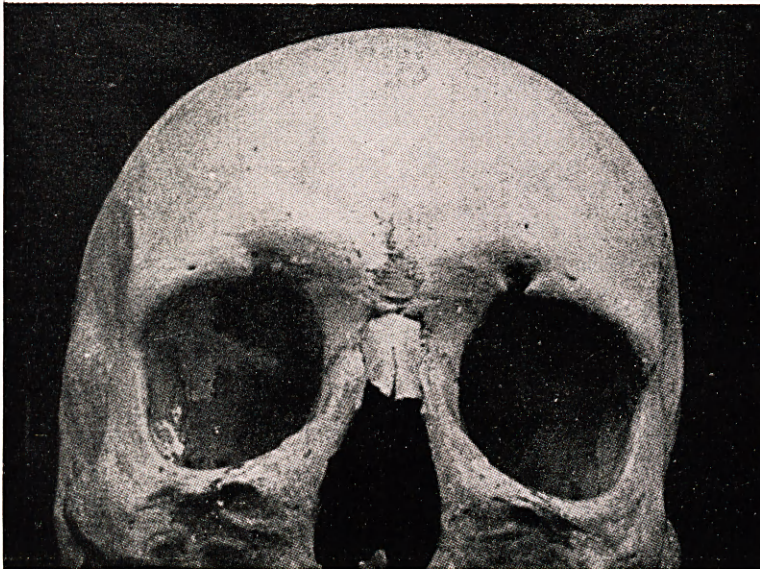


Fig. 2.—Case 50.

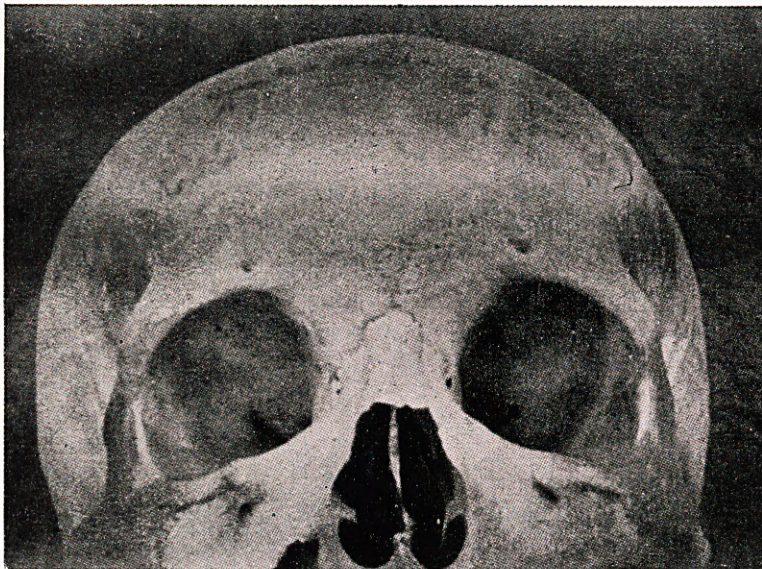


Fig. 3.—Case 17.

Fig. 4.—Case 59.



Fig. 5.—Case 14.

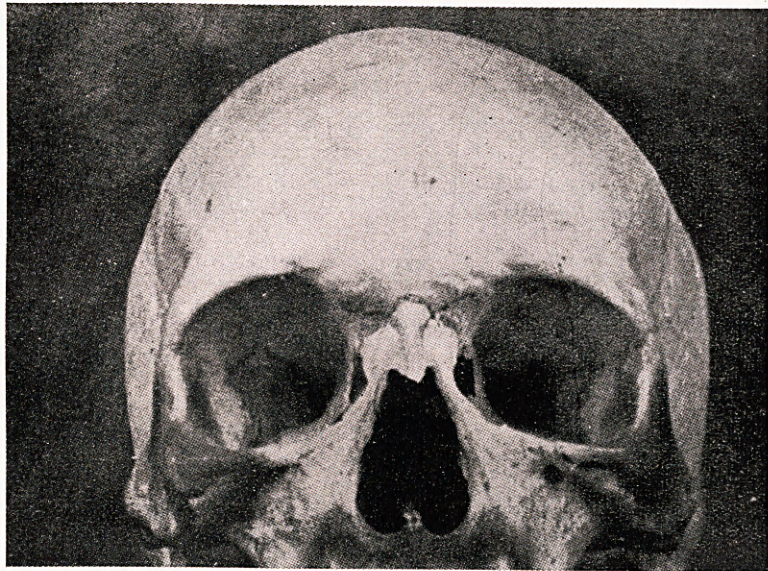


Fig. 6.—Case 56.

