as a whole is very significantly higher than that of the A babies as a whole—namely, 1.11 (7,914:7,148) compared with 1.03 (6,359:6,158). It is also worthy of note that there is a very significant shortage of A male babies compared with A mothers of male babies—namely, 6,359 compared with 6,595. The 1924–56 and 1958 white aggregates are shown in Table III.

Non-white Series.—In the aggregate of the two non-white series the sex ratio of the O babies as a whole is 1.20 (499:416), while that of the A babies as a whole is 0.93 (332:356)—a non-significant difference. Here, however, there are 332 A male babies compared with 326 A mothers of male babies.

Statistical Note by W. Brass

For all four ABO blood groups combined the sex ratios do not differ significantly as between individual series, and aggregation does not introduce any appreciable bias. It also seems fair to assume that the method of selection of babies did not introduce any dependence of sex on blood group. Thus the significance of differences in sex ratios has been tested by simple contingency table procedures. Three small white series with incomplete data—those of Koller (1926), Grünfeld and Schmudak (1928), and Wolff and Jonsson (1935)—have been excluded from all the totals.

Conclusion

All known series of blood-grouped newborn babies and their parents are combined and analysed in respect of sex ratio, and three main observations are made. (1) In accordance with Hirsfeld and Zborowski's finding, the sex ratio of the babies of white group AB mothers is, in the aggregate, significantly higher than that of the babies of O, A, and B mothers combined. (2) In accordance with Sanghvi's finding, the sex ratio of the white O babies of O mothers is, in the aggregate, very significantly higher than that of the A babies of A mothers. (3) The sex ratio of the white O babies as a whole is, in the aggregate, very significantly higher than that of the A babies as a whole. From these observations it may be concluded that the existence of blood-group differences in the human sex ratio at birth is now a very strong probability, at any rate in the white races.

APPENDIX

Sex Ratio at Birth According to the ABO Blood Group of Fathers

In 1954 Johnstone noted that in his white series of 2,141 baby–father–mother combinations the sex ratio of the babies of B fathers was much lower than that of the babies of B mothers. In view of this it is notable that in the aggregate of all seven white series of newborn baby–father combinations—the other six are those of Dossena (1924), Klawns (1927), Graff and Werkgartner (1928), Kirwan-Taylor (1930), Haselhorst (1930), and Cohen and Glass (1956)—the sex ratios are, in descending order, 1.22 (144:118) for babies of AB fathers, 1.09 (1,545:1,423) for babies of O fathers, 1.02 (1,506:1,472) for babies of A fathers, and only 0.95 (562:594) for babies of B fathers. None of these intergroup differences, however, is significant.

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SPONTANEOUS THROMBOSIS OF THE EXTERNAL CAROTID ARTERY

BY

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With the modern widespread use of angiography, thrombosis of the carotid artery tree has been increasingly reported in recent years (Johnson and Walker, 1951; Webster, Gurdjian, and Martin, 1956). This interest has been further augmented by the intervention of surgery in the prevention and reversal of some of the disastrous neurological effects (Eastcott, Pickering, and Rob, 1954; Edwards and Rob, 1956; Hamlin, Sweet, and Loughheed, 1958). All these cases deal with thrombosis of the common carotid and internal carotid arteries. We report here a case of spontaneous thrombosis of the external carotid artery.

Case Report

A man aged 65, a gatekeeper with British Railways, experienced a sudden severe pain on the right side of his head which came on within seconds and lasted with

diminishing severity for 48 hours. Simultaneously with this he experienced numbness and tingling of the right side of his face which also gradually subsided. There were no symptoms below his neck. He was seen by one of us (J. L.), who found extreme tenderness on pressing over the bifurcation of the common carotid artery, and an absence

FIG. 1.—Angiography via right common carotid artery: no filling of external carotid artery.

FIG. 2.—Internal carotid (right) angiography: several areas of narrowing and irregularity are apparent.

of pulsation in the temporal and facial branches. He concluded that thrombosis of the external carotid artery had occurred, and asked for an arteriogram to be performed. The patient was admitted to the Churchill Hospital for this purpose under the care of Dr. W. Ritchie Russell on June 2, 1958.

At this time (eight weeks after the event) the patient complained only of occasional discomfort in the right side of the head which would last for about an hour at a time. Apart from the history of severe pain eight weeks previously there was nothing of note in his past history.

Examination revealed a man of poor intelligence but healthy appearance. There were no abnormal physical signs apart from the marked atheromatous changes in the retinal arteries. His blood pressure was recorded as varying from 190/100 to 160/95 mm. Hg. On the left side the pulsation of the common, internal, and external carotid arteries was easily palpable and seemed to be normal. On the right side pulsation of the common carotid artery appeared to cease at the level of a bifurcation, and only on careful palpation could the internal carotid pulsation be felt. Faint pulsation in the palpable branches of the external carotid in the face could be felt, presumably from the development of collateral circulation.

Investigations showed a cerebrospinal fluid protein of 55 mg./100 ml., no cells, a normal Lange test, and negative Wassermann and Kahn reactions. The blood Wassermann and Kahn reactions were also negative. Blood examination gave a haemoglobin of 92% (13.6 g. per 100 ml.), white cells 8,200 per c.mm., and E.S.R. 12 mm. in one hour (Westergren). A skull x-ray film showed no lesion and the chest film only emphysematous lung fields.

A right common carotid angiogram revealed a complete occlusion of the external carotid artery (Fig. 1). The internal carotid was patent but narrowed and irregular, both at its commencement and especially in the siphon region (Fig. 2).

Comment

There seems to be little doubt that in this case the sudden onset of right-sided pain in the head and numbness of the face coincided with the occurrence of spontaneous thrombosis of the external carotid artery. We have been unable to find any reference to a similar case, and hence it is of interest to report that this condition should be added to the considerable list of those which may cause pain on one side of the face and head. It seems to be unlikely, however, that this lesion would cause the pain reported in this case were the vascular system quite healthy. The collateral circulation is usually so adequate that symptoms are not expected after external carotid ligation: indeed, this is practised as a treatment for severe epistaxis (Kuhn and Hallberg, 1955; Wolferman and Dwyer, 1955).

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