

REFRACTION IN FULL-TERM BABIES*

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THE study of refraction in newborn infants may be helpful in understanding the incidence of refractive errors in later years. In this paper, the refractive conditions of 100 newborn infants are reported.

Not much work on this subject has been done in the past. Sorsby, Benjamin, and Sheridan (1961) reported the refractive condition of the eyes in the age-group 2 to 23 years, and Hosaka (1963) observed that myopia was present in 5 per cent. and astigmatism in 30 per cent. of full-term newborn infants. He stated that the axes of the astigmatism were around 180°. Duke-Elder (1954) wrote: "At birth all eyes are hypermetropic to the extent of 2.50 D to 3.00 D. Myopia is rare at birth although in certain cases it occurs congenitally . . ." He further points out that the origin of myopia from the usual initial state of hypermetropic astigmatism probably dates almost from birth. On curvature astigmatism he is of the opinion that the anomaly is usually congenital. Recently, Graham (1963) examined 98 full-term babies and reported that there was generally hypermetropia of moderate degree. This prompted us to undertake the work of observing refractive conditions in a group of newborn full-term infants.

Materials and Methods

One hundred normal full-term babies were examined either on the day of their birth or on the following day. After local examination of their eyes atropine ointment 1 per cent. was applied twice a day and then refraction was done later on. Both male and female infants were examined and they had apparently no other congenital defects.

Observation

The results of refraction so obtained are summarized in the following Table.

TABLE
RESULTS OF REFRACTION IN 100 FULL-TERM INFANTS

Nature of Refractive Condition	No. of Male Infants	No. of Female Infants	Male Infants per cent.	Female Infants per cent.	Total per cent. either Sex
Hypermetropia up to 3 D	34	16	53.12	44.44	50
Hypermetropia more than 3 D and up to 10 D	18	11	28.12	30.56	29
Astigmatism more than 2 D	6	6	9.38	8.33	12
Myopia	6	3	9.38	16.67	9

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Of the 12 cases of astigmatism of more than 2 D 10 were of the hypermetropic and 2 of the myopic variety. In our series, infants having astigmatism of less than 1 D have been included under the heading of hypermetropia (10 were such cases) as the astigmatism was associated with hypermetropia. Taking into account the number of such cases, the percentage of astigmatism comes to 22—almost in conformity with the report of Hosaka. Of the 10 cases of compound hypermetropic astigmatism 7 were females and 3 males. It has been noted that nearly 80 per cent. of the babies are hypermetropic at birth, of whom 30 per cent. have hypermetropia of more than 3 D and up to 10 D. It was observed that the weight of the infants did not bear any relation to the refractive conditions of their eyes. It also made no difference whether the baby was the first, second, or third child of the parents. Of the 100 babies examined, 8 were delivered after Caesarean section; 7 of these had hypermetropia of more than 5 D.

Summary

- (1) Refraction was carried out in 100 newborn babies.
- (2) Fifty per cent of them were hypermetropes up to 3 D and 29 per cent. of them from +3.25 D up to +10 D.
- (3) Hypermetropia of greater degree was seen in babies born after Caesarean section.
- (4) No relationship was noted between the weight of the child and the refractive condition.

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