75. A Case of Holoprosencephaly with Familial *inv(9)(p11q13)*

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The literature refers to some chromosomal studies in holoprosencephaly associated with certain aberrations or showing no anomaly. The present paper reports a case of holoprosencephaly evidently related to pericentric inversion of chromosome no. 9.

Case reports. The propositus is a male infant born as the third child between a 30-year-old mother and 38-year-old father. They have no history of artificial and spontaneous abortion, stillbirth, atomic bomb exposure, and consanguinity. Clinically his parents, elder sister and brother were phenotypically normal showing no evidence for mental deficiency.

The propositus was 2900 g in birth weight with circumference of 34 cm in head and 30 cm in breast at 38 weeks of gestation. His remarkable clinical signs were monkey-like face, flat nasal bridge, hypotelorism, exophthalmus, cleft lip and palate, single nasal orifice, low set ears, and malformed auricle (Fig. 1). Computed tomography

Fig. 1. Clinical features of the propositus.

revealed that his brain was monoventric having a part of frontal and lateral lobe.

Cytological findings. The chromosomes were investigated in

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well-delineated cells from leucocyte cultures established from the proband, his elder sister and brother, and his parents. Their chromosomes were analysed following the G- and Q-banding procedures.

The mother's karyotype was normal. The chromosome number of the proband was 46 and one of no. 9 chromosomes showed pericentric inversion at its bands p11→q13. The same aberration was observed to occur in cells from elder sister and brother, and his father. The proband's karyotype is represented by 46,XY,inv(9) (p11q13)pat (Fig. 2).

Fig. 2. (A) G-banding partial karyotype of the proband showing pericentric inversion of chromosome no. 9 (p11→q13). G-banded no. 9 chromosome of his father (B), elder sister (C), and elder brother (D) showing the same pericentric inversion 9 (p11→q13).

Remarks and conclusion. Following the initial information on holoprosencephaly by Kundrat (1882), many faciocerebral malformations have been reported clinically and pathologically, and some were subjected to chromosomal studies. Some of the studied cases were found to be associated with D-trisomy or deleted short arm of no. 18 chromosome, but no chromosome anomaly has been detected in many others (review of Arakaki and Waxman 1969; Hashimoto *et al.* 1977; Seki *et al.* 1978; Agbata *et al.* 1979). The proband with holoprosen-

cephaly concerned here a carried pericentric inversion of no. 9 chromosome. Though the same chromosome aberration was detected in his father, and his elder sister and brother, they were proved to be clinically normal showing no sign of malformation. It is then apparent that there is no consistency in holoprosencephaly in relation to the chromosomal condition. It seems probable that certain possible non-chromosomal etiologic factors may be involved in relation to this malformation. Arakaki and Waxman (1969) postulated that some environmental factors at a critical time during embryogenic development could cause the clinical picture seen in these conditions. Seki *et al.* (1978) has stated that maternal diabetes mellitus, toxoplasma infection, deformed ovum, disturbances in O₂-CO₂ relation, physical injuries, and effects of chemical substances and X-rays may be those environmental factors to cause the clinical picture.

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