A CASE OF INCOMPLETE DiGEORGE SYNDROME ASSOCIATED WITH PARTIAL MONOSOMY 22q11.1 DUE TO MATERNAL 14;22 TRANSLOCATION

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Summary We report a boy with some clinical symptoms compatible with a diagnosis of incomplete DiGeorge syndrome. He had a dismorphic face, micrognathia, cleft palate, and heart anomalies similar to DiGeorge syndrome, but lacked aplasia of the thymus or hypoparathyroidism typical of the syndrome. High-resolution banding analysis revealed that his karyotype was 45,XY,−14,−22,+der(14)(14pter→14q32.32::22q11.21→22qter), the consequence of a maternal reciprocal translocation between chromosomes 14 and 22. Precise localization of the gene responsible for the present DiGeorge syndrome was assigned to subband 22q11.1.

Key Words translocation 14:22, monosomy 22q11.1, DiGeorge syndrome

INTRODUCTION

In 1965 DiGeorge described a patient with hypoparathyroidism and cellular immune deficiency which was caused by aplasia of the parathyroid glands and thymus. Additional reports indicated that many patients of DiGeorge syndrome, as originally conceived which consists of aplasia of the parathyroid glands and thymus, had additional findings of cardiovascular anomalies (Robinson, 1975) and craniofacial anomalies characterized by hypertelorism, low-set ears, micrognathia, and cleft palate (Gatti et al., 1972). More recent reports reveal that there is more variability in DiGeorge syndrome than was initially thought (Conley et al., 1979).
For some patients that display a hypoplastic thymus, Lischner (1972) advocated the name “partial (or incomplete) DiGeorge syndrome.” In 1981, de la Chapelle et al. reported an association between DiGeorge syndrome and a deletion in chromosome 22. Subsequently other reports of a similar association have been published (Kelley et al., 1982; Greenberg et al., 1984; Pong et al., 1985; Schwanitz and Zerres, 1987; Faed et al., 1987). Using high-resolution banding analysis, we report a patient with incomplete DiGeorge syndrome, who showed a deletion of 22q11.1 band.

CASE REPORT

The patient, a boy born in April 1988, was the third child of a 29-year-old mother and 31-year-old father. There was no consanguinity. There was no known exposure to radiation or drugs during the mother’s pregnancy. The delivery at 34 weeks gestation was not eventful. The first child was a boy, born in 1984 with a heart anomaly, who died immediately after birth. No further information is available about his heart anomaly. The second child, a girl born in 1985, is alive and phenotypically normal.

The patient was admitted to our hospital with a low birth weight (2,054 g) and a heart murmur. Physical findings included dysmorphic facial features, hypertelorism, antimongoloid slant of the eyes, flat nasal bridge, low-set malformed ears, micrognathia, round doe-like eyes (Fig. 1), cleft palate, and abnormal location of the third toes. A chest X-ray revealed neither cardiomegaly nor any abnormal shadow. The thymus was detected faintly with roentgenography (Fig. 2). Electrocardiography was within normal limits. Echocardiography and cardiac digital subtraction angiography revealed a ventricular septal defect, a double-outlet right

Fig. 1a. Face of the patient, showing hypertelorism, antimongoloid slant, round eyes, and micrognathia.
1b. Side view of the face of the patient, showing malformed low-set ear and micrognathia.