Trisomy 13 and Rubinstein–Taybi syndrome*

Summary. Initial diagnosis of Rubinstein–Taybi syndrome was made in an infant with a prominent nose and broad thumbs and first toes. However, due to the presence of other anomalies such as low-set, malformed ears, antimongoloid slant of the eyes, colobomata of the iris, and cleft palate, cytogenetic studies were carried out and the diagnosis of trisomy 13 was confirmed. Since, occasionally, trisomy 13 syndrome may mimic the Rubinstein–Taybi syndrome, cytogenetic studies should be considered in all patients with clinical diagnosis of Rubinstein–Taybi syndrome.

The clinical diagnosis of trisomy 13 syndrome is based upon the findings of major congenital defects of eye, nose, lip, forebrain of holoprosencephaly type, skin, hands, and feet (Smith, 1969). The syndrome of Rubinstein–Taybi is identified clinically by recognition of a constellation of abnormal features which include broad thumbs and toes, characteristic facies with beaked or straight nose, antimongoloid slant of palpebral fissures, hypoplastic maxilla, and other somatic abnormalities, ie, short stature, microcrania, mental and motor retardation (Rubinstein, 1969). Theoretically, these two syndromes are two distinct and different clinical entities. The diagnosis of trisomy 13 can be confirmed cytogenetically, but the diagnosis of Rubinstein–Taybi syndrome is entirely a clinical one. Wilson (1968) reported three infants with trisomy 13 all of whom had broad thumbs and first toes; two of these patients were initially diagnosed as having Rubinstein–Taybi syndrome. We wish to report an additional infant with trisomy 13 who was also initially diagnosed as having Rubinstein–Taybi syndrome.

Case report

The patient, a full-term female infant, was born on 10 September 1970 to a 21-year-old mother. The father was 37 years of age. Both parents and one two-year-old sister are of normal phenotype. There were no abortions or stillbirths. The family history showed no consanguinity and no affected member with any congenital abnormality.

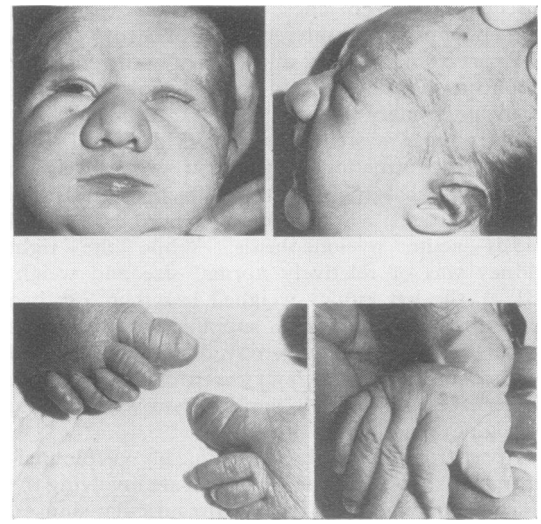

FIG. 1. The patient showing prominent nose and broad thumbs and first toes.

The pregnancy and delivery were uncomplicated. Birth weight was 2 800 g, birth length was 50 cm, head circumference was 33·5 cm, and chest circumference 31·0 cm. However, at birth, the baby had Apgar score of 3 at 1 min and 5 at 5 min. Immediately after birth, the following abnormalities were noted: narrow forehead; antimongoloid slant of the eyes; bilateral colobomata of iris; very large and broad-bridged nose, malformed and slightly low-set ears, cleft soft palate, broad and malopposed thumbs, broad big toes, and rocker-bottom feet (Fig. 1). Frequent seizure-like movements and apneic episodes were noted after 2 days of age. At 6 days, an eye examination showed lens opacity (left greater than right) and retinal haemorrhages in addition to iris colobomas. At 12 days, although there was no cardiac murmur, chest radiology showed a globular heart suggestive of congenital heart disease.

The dermatoglyphic analysis showed distally located axial triradii (at *t″*), one arch (right thumb), two radial loops (left fourth and fifth fingers), and seven ulnar loops of the other fingers. Both hallucal areas showed distal loop patterns.

The patient expired at age 33 days despite all supportive measures. The necropsy showed, in addition to the congenital abnormalities noted at birth, many other anomalies. These include autolysis of the nervous system, interatrial septal defect, absence of interlobal fissures of the left lung, and absence of minor fissures of the right lung, ectopic pancreatic tissue in the duodenum, cystic dysplasia of kidneys, hydronephrosis and hydro-

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ureter (right), stenosis of ureteral ostia, lack of involution of fetal adrenal cortex, and accessory spleens.

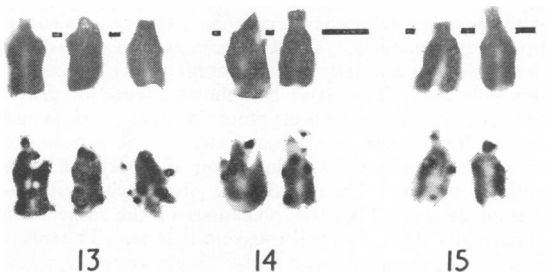

FIG. 2. Partial karyotype of the D-group (Nos. 13, 14, 15) chromosomes, with autoradiograph below showing three No. 13 chromosomes.

Cytogenetics

Chromosome analysis from the peripheral blood leukcocyte cultures revealed 47 chromosomes with an extra D-group chromosome (47,XX,+D) in all 52 metaphases examined. Autoradiographic studies with ^{3}H-thymidine added during the latter part of DNA synthetic period showed this extra D-group chromosome to have a late replicating nature as that of No. 13 chromosome (Fig. 2). Therefore, the diagnosis of trisomy 13 was confirmed.

Discussion

Our patient was initially diagnosed as having Rubinstein–Taybi syndrome mainly because she had the prominent nose, and broad thumbs and first toes characteristic of that syndrome. However, due to the presence of the multiple congenital anomalies and the suspicion of trisomy 13, chromosome studies were carried out. The cytogenetic diagnosis of trisomy 13 was then confirmed. Our patient did have some of the clinical features of trisomy 13 namely, malformed, low-set ears, antimongoloid slant of the eyes, colobomata of the iris, and cleft palate.

There are at least five known cases (including this case) of trisomy 13 associated with broad thumbs and first toes (Wilson, 1968; H. Fox, personal communication). Since an initial diagnosis of Rubinstein–Taybi syndrome was made in four of these infants, it is important for clinicians to be aware that trisomy 13 syndrome may mimic Rubinstein–Taybi syndrome. It is possible that both syndromes may coexist in the same individual. However, since the prognosis of trisomy 13 is so much worse than that of Rubinstein–Taybi syndrome, the diagnosis of trisomy 13 must not be missed. Therefore, cytogenetic studies should be considered in all patients with clinical diagnosis of Rubinstein–Taybi syndrome.

FE PALO GARCIA,* LILLIAN Y. F. HSU,† HOWARD FOX, and DONALD GRIBETZ

The Department of Pediatrics, Division of Medical Genetics and the Neonatology Service, Mount Sinai School of Medicine of the City University of New York, New York, New York 10029, USA

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* Present address: Department of Obstetrics and Gynecology, University of Philippines Medical School.

† A Career Scientist of the Health Research Council of the City of New York (I-716).

Partial 12p deletion: a cause for a mental retardation, multiple congenital abnormality syndrome

Summary. A severely mentally retarded man displayed the following main symptoms: short stature, microcephaly, antimongoloid slant of palpebral fissures, big ears with hyperplastic helices, imperfect dental enamel, short and webbed neck, short arms, short hands, brachymetaphalangy, short second fingers, broad thumbs, short metatarsal bones, and unusually big first toes. It seems almost certain that the syndrome was caused by a chromosome deletion involving about half of 12p which was present in all of the lymphocytes examined.

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