An 18p− Syndrome due to 15/18 Translocation with Facial Palsy and Deafness

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A case of translocation between chromosomes No. 15 and 18 was described. Phenotype of the patient was almost consistent with that of the 18p− syndrome. In addition to the typical feature of 18p− syndrome, he had perceptive deafness, and abducens nerve and facial nerve palsies. Giemsa-banding technique demonstrated patient’s karyotype to be 45, XY, −15, −18, +t (15; 18) (p12: p11).

− 18p− syndrome; perceptive deafness; facial nerve palsy; case report

More than 80 cases of the 18p− syndrome have been reported so far. A majority of them, however, were de novo 18p− induced by a simple deletion of the short arm. We describe here a boy with the 18p− syndrome resulted from 15q/18q centric fusion translocation. His clinical expression was nearly identical with that of the 18p− syndrome, involving delayed development, nasal hypoplasia, facial nerve and abducens nerve palsies, and perceptive deafness.

Case Report

The proband was born to the healthy parents on November 11, 1974. At that time, the mother was 34 years old and the father 36 years old. The patient was the third child and two elder siblings were both seemingly healthy. Delivery was conducted one week after term and his birth weight was 3040 g. On the third day after birth, he was attacked with fever of 38.5°C. Since then, he often suffered from upper respiratory distress with high fever during the first twelve months. At one year of age, the boy was found to have nasal hypoplasia. He began to walk at 2 years and 3 months, and he did not speak at 3 years of age so that he was suspected to be hard in hearing. Auditory examination revealed him to have perceptive deafness. The patient visited us for the detailed examination in his 5 years of age (Fig. 1). Short stature and delayed development were distinct. The head circumference was 48 cm, height 90 cm, and weight 13 kg. The face was asymmetric with epicanthal folds, ptosis of the eyelids, and the broad based nose. The mouth

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was carp-like and the upper left incisors were absent. The chin was moderately receding, the ears were large and protruding, but not low-set. There was a webbed neck with low hair line and the chest exhibited pectus excavatum. Neurological examinations revealed left facial nerve palsy, left abducens nerve palsy and muscular hypotonia. Dermatographic findings showed palmar simian lines and high axial triradii on both hands and eight whorls and two ulnar loops on 10 finger tips. The feet were rotated inward. Examinations of the heart or lungs showed no abnormal findings, and the external genitalia was also normal.

His EEG showed an abnormal pattern although he had no seizure. Immunoglobulins were normal in level. Growth hormone assay was 2.25 ng/ml (below the normal range). Radioimmunoassay of T₃, T₄, and TSH showed all normal values.

Fig. 1. Countenance of the patient at 5 years of age.

**Cytogenetic Findings**

By the cytogenetic analysis of the patient, the chromosome number was only 45. There were two missing chromosomes; one was from the pair 15, and another from the pair 18. The absent chromosomes were replaced by one extra submetacentric chromosome in group C. Detailed analysis of the Giemsa-banding pattern revealed an centric fusion translocation between long arms of chromosomes No. 15 and No. 18, that resulted in almost disappearance of the short arm of chromosome 18. The karyotype of the patient was therefore considered as 45, XY, -15, -18, +t (15; 18) (p12; p11) (Fig. 2). Chromosome studies in both parents showed neither structural nor numerical abnormalities.
DISCUSSION

To our knowledge, three translocations between chromosomes No. 15 and 18 which were positively identified have been reported so far (Fredga and Rayner 1967; Borgaonkar et al. 1973; Singh-Kahlon et al. 1977). However, they were different from one another in the way of translocation and consequently in their phenotypes. In Borgaonkar’s case, the break point was at the long arm. Singh-Kahlon’s case was a complex mosaic. The present case was more similar to the case of Fredga and Rayner in the type of translocation, although they did not use the banding technique as the method had not yet been developed at the time of their work. Clinical features of Fredga’s case, however, were different from ours. The present case was almost similar to the 18p– syndrome in phenotype, that included a short stature, mental retardation, ptosis of the eyelids, epicanthal folds, strabismus, abnormal dentition, broad based nose, small chin, large ears, webbed neck, pectus excavatum, and muscular hypotonia. In addition to these typical signs, facial nerve palsy, abducens nerve palsy and perceptive deafness were observed in our case. Severity of the phenotypic pattern of 18p– does not necessarily correlate with an amount of material missing from the short arm of chromosome 18. The clinical expression of our patient was considered to be not so severe, although the missing covers a greater part of the short arm.

As to 18p– due to a centric fusion translocation, 13 cases (Pfeiffer 1969; Miller et al. 1970; Malpuech et al. 1971; Šubrt et al. 1971; Cohen and Patnam 1972; Fraccaro et al. 1972; Gilgenkrantz et al. 1972; Leisti et al. 1973; Kistenmacher et al. 1974; Schinzel et al. 1974; Funderburk et al. 1977; Serille et al. 1977) have been reported. Six of the 13 cases were fusions with Gq and the other seven were with Dq. Of the latter seven cases, the long arm of No. 18 chromosome was translocated with No. 13 chromosome in 2 and No. 14 in 2. In the remaining three translocations there was no precise description of the chromosome number within D group. It is known that an occurrence of 18p– was associated with aging of parents (Smith
As to the age of parents in 14 cases of centric fusion translocation, averages were 33 years for mothers and 36 for fathers (Table 1). From these figures, it may be suggested that the parental age factor is also related to the occurrence of translocation type 18p–.

The unbalanced delay in speech development has been reported in the 18p– syndrome. In our case, deafness was noticed in addition to the speech disturbance, but it is not certain whether the speech disturbance of this case was of primary origin or of secondary one resulted from the hearing loss.

<table>
<thead>
<tr>
<th>Author</th>
<th>Karyotype</th>
<th>Birth weight (kg)</th>
<th>Maternal age at birth</th>
<th>Paternal age at birth</th>
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<tr>
<td>Pfeiffer (1969)</td>
<td>−14, −18, +t (14q; 18q)</td>
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<td>47</td>
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<td>Miller et al. (1970)</td>
<td>−D, −E, +t (Dq; Eq)</td>
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<td>Subrt et al. (1971)</td>
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<td>Cohen et al. (1972)</td>
<td>−18, −21, +(18q; 21q)</td>
<td>1.5</td>
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<td>Fraccaro et al. (1972)</td>
<td>−18, −G, +(18q; Gq)</td>
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<td>Fraccaro et al. (1972)</td>
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<td>Gilgenkrantz et al. (1972)</td>
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<td>Leisti et al. (1973)</td>
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<td>Kistenmacher et al. (1974)</td>
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<td>Serille et al. (1977)</td>
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<td>Adachi et al. (1980)</td>
<td>−15, −18, +t (15q; 18q)</td>
<td>3.0</td>
<td>34</td>
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References


