case of partial trisomy 14q an adolescent girl had precocious puberty.⁴ In our case normal puberty occurred in a severely mentally and physically retarded male, approximately 10 years later than normal. He would appear to be the oldest case reported.

The main medical problem is the establishment of an adequate anticonvulsant medication regimen without causing undue sedation.

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sisters, but the same type of translocation was found in a maternal cousin (II.4) whose second and third pregnancies ended in spontaneous abortion. Prenatal diagnosis was performed in the fourth pregnancy and showed a male fetus with a normal chromosome complement.

The present family is the first in which a heterologous whole arm translocation was detected by the occurrence of

FIG 1 G banded partial karyotype of II-1 with the whole arm translocation $t(6p10q;6q10p)$; the rearranged chromosomes are on the right.

FIG 2 Pedigree of the family.

Familial transmission of autosomal whole arm translocation

Centric fission followed by centromeric fusion of either heterologous or homologous non-acrocentric chromosomes is a very rare chromosome rearrangement leading to whole arm translocations in man.¹ Familial transmission has been reported by Breg *et al*² and Schober and Fonatsch.³ Breg *et al*² reported an apparently balanced $t(11p17q;11q17p)$ in a five year old girl with 18q deletion and her phenotypically normal mother. Schober and Fonatsch³ described seven balanced carriers of a $t(1p19q;1q19p)$ in a large family without any evidence of reproductive failure or chromosomal imbalance.

We recently studied another type of heterologous whole arm translocation, $t(6p10q;6q10p)$ (fig 1), in a 24 year old normal female (II.1, fig 2) who had three first trimester spontaneous abortions after the birth of a normal daughter. Chromosomal analysis was normal in her two

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recurrent fetal wastage in the translocation carriers. As in the two other reported families, the balanced transmission of the heterologous whole arm translocation appeared to be harmless for the carrier offspring in the present family.

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