J Med Genet 1990; 27: 637–639

A de novo interstitial deletion of 15(q21.2q22.1) in a moderately retarded adult male

Fiona Martin, J Platt, E Janet Tawn, J Burn

Abstract

An adult male is described with a de novo deletion 15q21.2–q22.1. He shares some minor dysmorphic features with similar cases but the degree of mental retardation is markedly less severe.

Interest in deletions of chromosome 15 has focused on the region 15q11 and its association with Prader-Willi syndrome and, more recently, Angelman's syndrome.[1] There have been only four reports of deletions in the more distal 15q2 region,[2–4] all involving severely handicapped infants. We report a similar deletion in a moderately retarded adult male with comparable dysmorphic features.

Case report

The proband was born on 13.6.67, the youngest of three brothers, to unrelated European parents. His father was aged 36 years and his mother 34 years. He was delivered at term weighing 3710 g after an uneventful pregnancy. Moderate jaundice persisted for one month while being breast fed and he was referred to hospital at 5 months with a pertussis infection. Assessment at 12 months showed developmental delay; he was noted to be hypotonic and had not begun to crawl. By 2 years 3 months he was walking with support; his intellectual development was assessed at the 12 to 18 month level. At 3 years 9 months he was fully mobile but using only single words.

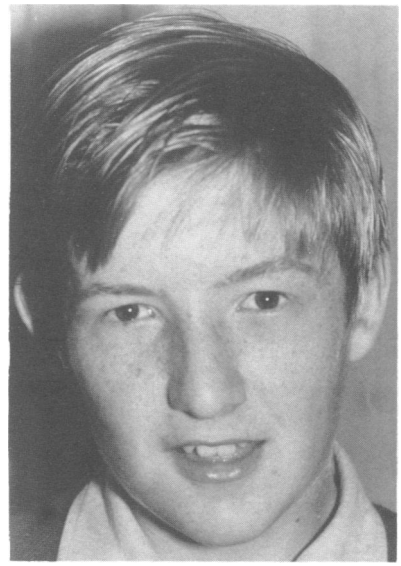

Figure 1 Facial appearance of the proband.

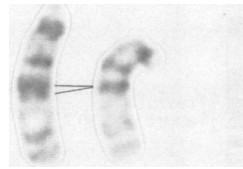

Figure 2 Partial karyotype, produced using a Cytoscan CS2, showing normal and deleted chromosomes 15.

By the age of 5 years a developmental age of 3 years had been attained and he attended a school for the educationally subnormal. Apart from strabismus, vision was normal, as was his hearing. He grew on the 10th centile for height and the 25th centile for weight with persistent mild truncal obesity. Head circumference was normal (90th centile). A disproportionate delay in emotional development was noted with frequent crying and occasional aggressive outbursts.

Geoffrey Schofield Cytogenetics Laboratory, British Nuclear Fuels plc, Seascale, Cumbria CA20 1PG.
F Martin, E J Tawn

Department of Paediatrics, West Cumberland Hospital, Hensingham, Whitehaven, Cumbria CA28 8JG.
J Platt

Division of Human Genetics, University of Newcastle upon Tyne, Newcastle upon Tyne NE2 4AA.
J Burn

Correspondence to F Martin.

Received for publication 23 January 1990.
Revised version accepted for publication 20 March 1990.

Comparison of physical features in the proband with the other reported cases.

	Yip *et al*[2]	Fryns *et al*[3]	Formiga *et al*[4] Case 1	Formiga *et al*[4] Case 2	Present case
Monosomic region of 15	q21.1–q22.1	q21	q22–q25	q21–q24	q21.2–q22.1
Origin of monosomy	ins(5;15)pat	de novo	de novo	de novo	de novo
Age at review	15 mth	14 y	18 mth	7 mth	18 y
Age at death	–	–	2 y	8 mth	–
Pregnancy					
Polyhydramnios	+	+	–	–	–
Diminished fetal movement	+	+	–	–	–
Infancy					
Failure to thrive	+	+	+	+	–
Growth retardation	+	+	+	–	+
Mental retardation	Severe	Severe	Severe	Severe	Mild/moderate
Head					
Microcephaly	–	+	+	+	–
Low hair implantation	+	+	–	–	–
Low set ears	+	+	–	–	–
Face					
Beak-like nose	+	+	–	–	+
Hypoplastic alae nasi	+	+	–	–	+
Thin upper lip	+	+	–	–	+
Mouth	Large	Small	Open	Open	Normal
Strabismus	–	–	+	+	+
Hypopigmentation of irides	–	+	+	+	–
Extremities					
Small hands and feet	–	+	–	–	+
Clinodactyly	+	+	–	+	–
Bilateral simian creases	+	–	–	+	–
Genitalia					
Sex	Male	Female	Female	Female	Male
Undescended testes	+				–
Hypoplastic labia majora		+	–	–	
Motor function					
Severe spastic paraplegia	–	+	+	–	–
Hypotonia	+	–	Hypertonia	+	+
Spine					
Scoliosis	+	–	–	–	–
Trunk					
Obesity	+	+	–	–	+

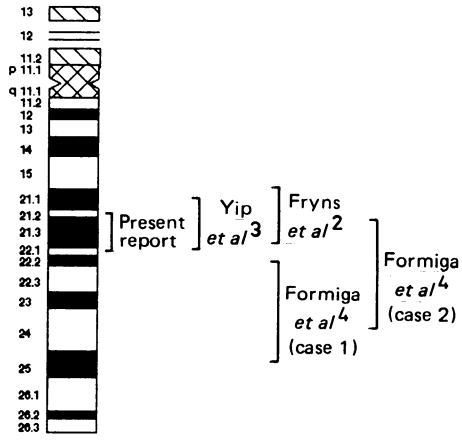

Figure 3 Comparison of position and size of deletions in reported cases compared to the proband.

Clinical review at 18 years showed a moderately retarded, pleasant young man with only minor dysmorphic features (fig 1). He had short palpebral fissures, a prominent nose, and thin upper lip. His medial upper incisors were broad. Bilateral breast enlargement, possibly related to late onset of puberty, and mild truncal obesity, particularly over the hips, were noted, but he had normal male genitalia of adult maturity. His hands and feet were relatively small. He had a persistent occasional strabismus and somewhat diminished distance vision on the right. By the age of 22 he had attained the 90th centile for height and weight at 1·87 m and 73 kg respectively.

CHROMOSOME ANALYSIS

Chromosome analysis indicated a karyotype of 46,XY,del(15)(q21.2q22.1) (fig 2). Parental karyotypes were normal but examination of polymorphic variants indicated that the deleted 15 was paternally derived.

Discussion

The physical features of the present case and those of previous cases involving deletions of the same region of chromosome 15 are compared in the table. It is notable that the degree of handicap is considerably less in the proband. This may be attributed to the smaller size of the deletion (fig 3), but phenotypic–

karyotypic correlations are not easily defined and many more reports will be needed to establish the cardinal features of deletions in this region.

The two cases reported by Formiga *et al*[4] involve far larger deletions and have few features in common, but those reported by Yip *et al*[3] and Fryns *et al*[2] are more cytogenetically and phenotypically comparable with the proband. The common features of beaked nose, small alae nasi, thin upper lip, truncal obesity, small hands and feet, growth retardation, and early hypotonia may constitute a recognisable phenotype associated with this chromosomal region.

The outcome in this case offers a more favourable prognosis than has been reported to date for deletions in this region of chromosome 15.

1 Magenis RE, Brown MG, Lacy DA, *et al.* Is Angelman syndrome an alternative result of del(15)(q11q13)? *Am J Med Genet* 1987;**28**:829–38.
2 Fryns JP, de Muelenaere A, Van Den Berghe H. Interstitial deletion of the long arm of chromosome 15. *Ann Genet (Paris)* 1982;**25**:59–60.
3 Yip MY, Selikowitz M, Don N, Kovacic A, Purvis-Smith S, Lam-Po-Tang PRL. Deletion 15q21.1–q22.1 resulting from a paternal insertion into chromosome 5. *J Med Genet* 1987;**24**: 709–12.
4 Formiga LF, Poenaru L, Couronne F, *et al.* Interstitial deletion of chromosome 15: two cases. *Hum Genet* 1988;**80**:401–4.