Terminal deletion (14)(q32.3): a new case

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Abstract

A mildly dysmorphic, 2 year old girl with mental retardation was found to have a small de novo terminal deletion of the long arm of chromosome 14, del(14)(q32.3). She was found to have features in common with two previous terminal deletion cases and particularly with the well documented ring 14 syndrome, although seizures, a characteristic feature of ring 14, were notably absent.

More than 30 cases of ring chromosome 14, associated with terminal monosomy 14q, have been reported, most recently by Howard *et al.*¹ This is now recognised as a distinct syndrome.²⁻³ There are only two previous reports of distal monosomy 14q without ring formation or other chromosome rearrangement, del(14)(q32.3)⁴ and del(14)(q31.1).⁵ We present a further case and compare it with previous reports.

Case report

A Caucasian girl, aged 2 years 2 months, was referred for examination with delayed mental development and a mildly dysmorphic appearance (fig 1). She was born at term, with a birth weight of 3460 g, after a forceps delivery because of a delay in the second stage of labour. The baby's mother and father were healthy, non-consanguineous, and aged 27 and 31 years, respectively. The mother was admitted to hospital during this, her only pregnancy, because of poor fetal movements. During the neonatal period, the baby was floppy and had mild jaundice and a slow feeding problem, which were both quickly corrected.

The current examination showed the patient to have an oval face with a prominent forehead, dolichocephaly, and a flat occiput. There was a broad,

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Figure 1 G banded partial karyotypes showing chromosomes 14 of (a) the father, (b) the mother, and (c) the proband (normal chromosome 14 left, deleted chromosome 14 right) with arrows to indicate the breakpoint and the suggested inheritance by satellite polymorphism.

flattened nasal bridge, slightly anteverted nostrils, and a fish shaped mouth with a high arched palate. The vision was normal, but the eyes were slightly downward slanting, with ptosis and epicanthic folds. The formation and position of the ears were normal, but there was a minimal hearing loss probably owing to middle ear fluid. She also had short, chubby

Figure 2 The proband aged 2 years 5 months.

fingers. The child was large for her age, weight 13.65 kg (75th centile) and length 91 cm (75th centile) yet with a head circumference of 47.5 cm (25th centile), possibly indicating microcephaly. She had generalised,

mild hypotonia, marked hypotonia of the legs and pelvis, and was hyporeflexic. The patient also had a moderate deficit in mental ability with play, attention control, social skills, and comprehension at a 14 month age level. Language expression was confined to immature babbling and was below a 12 month age level.

In contrast to previous findings in 14q deletion and ring 14 cases, there was no apparent cardiac defect, no skin dyspigmentation, and no history of seizures or recurrent respiratory infections.

CYTOGENETICS

Thymidine synchronised peripheral blood lymphocyte cultures were used to produce metaphase chromosomes which were G banded using a standard (GTL) technique.

The patient had a karyotype 46,XX,del(14)(q32.3). Both mother and father had apparently normal karyotypes and so the proband has a *de novo* deletion. The appearance of satellite polymorphisms in the G banded preparations suggests that the abnormal chromosome 14 is maternal in origin (fig 2).

Discussion

The present case has dysmorphic features and mental retardation in common with previous 14q terminal deletion and ring 14 cases, although the above average size and weight of our patient are not consistent with previous findings (table). The deletion 14q32.3-qter

A comparison of features in the present case with previous cases of distal monosomy 14q.

Features	Present case	Yen <i>et al</i> ⁵	Hreidarsson and Stamberg ⁴	Ring 14 syndrome
Breakpoints	14q32.3	14q31.1	14q32.3	
High forehead	+	?	+	+
Dolichocephaly	+	?	+	+
Microcephaly	+	+	-	+
Flat occiput	+	?	?	+
Downward slanting eyes	+	?	-	+
Epicanthic folds	+	+	-	+
Broad/flat nasal bridge	+	-	+	+
Anteverted nostrils	+	-	-	+
Broad philtrum	+	+	+	+
Down turned mouth	+	?	?	+
High arched/narrow palate	+	+	+	+
Micrognathia	-	+	+	+
Low set ears	-	-	-	+
Malformed ears	-	+	+	?
Short neck	-	-	-	+
Strabismus	-	+	-	+
Seizures	-	+	-	+
Hypotonia	+	+	-	+
Mental retardation	+	+	+	+
Congenital heart disease	-	-	+	±
Respiratory infections	-	-	-	+
Dyspigmentation	-	-	-	±

seems to be responsible for many of the features associated with the ring 14 syndrome; however, some features of ring 14, most notably seizures, are absent from our patient. Indeed, the three reported 14q terminal deletion cases had no history of seizures, whereas all 25 ring 14 patients reviewed by Gilgenkrantz *et al*³ had epileptic convulsions. This suggests, contrary to the assumption of Howard *et al*,¹ that monosomy of band 14q32.3 is not responsible for seizures and that this effect is a consequence of the loss of more proximal genes, ring instability at mitosis, or a compound effect including the deletion.

There are many reports of the ring 14 syndrome, the majority having a breakpoint in 14q32, whereas there are only two reports of terminal deletions in this band. However, ring chromosomes are much easier to detect than the small deletion 14q32-qter. Therefore,

there may well be some under-reporting of distal 14q monosomy, as first suggested by Hreidarsson and Stamberg.⁴ With the description of further cases of 14q terminal deletions, a clinical picture more specific than that for ring 14 syndrome should develop.

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