Case reports

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Trisomy 18 in a 13 year old girl

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SUMMARY A 13 year old girl with trisomy 18 is described. She showed profound mental and growth retardation, severe kyphoscoliosis, and unusual ocular features including discontinuous eyebrows, distichiasis, and blue sclerae.

It is well known that survival in trisomy 18 is poor, with a recent study reporting median and mean life expectancies of five and 48 days respectively.¹ It is not so well known that long term survival may occur, albeit very rarely. In 1978 Smith *et al*² reviewed six reports of survival beyond 10 years and added a seventh. We now report a 13 year old girl with trisomy 18 whose natural history is typical of those few long term survivors and who shows, in addition, several very unusual physical features.

Case report

The proband, now aged 13½ years, was the only child of a 41 year old mother and 40 year old father who were healthy and unrelated. The mother had one normal son from a previous marriage. Intrauterine growth was poor and fetal movements were reduced. Following delivery by Caesarean section at 39 weeks, she weighed 1.47 kg, was 43 cm long, and had a head circumference of 28 cm.

Multiple abnormalities were noted at birth and the diagnosis of trisomy E (17 to 18) was established at 5 weeks, an extra E group chromosome being present in all 10 metaphase spreads analysed from a lymphocyte culture. She was discharged from hospital to the care of her devoted parents at 10 weeks weighing 2.5 kg and, apart from a few brief hospital admissions, she has remained with her parents ever since. Health problems have included persistent constipation, frequent upper and lower respiratory tract infections, three fractures of the right humerus and one of the left all associated with minor and inappropriate trauma, and one proven urinary tract

infection. From the age of 10 years she has had an increasingly severe kyphoscoliosis. Development has been very poor and at 13 years her skills were comparable to those of a 3 month old baby. All food had to be liquidised and she had no regular sleep pattern.

On examination at 13 years growth parameters were weight 12.7 kg, height 105 cm, and head circumference 46.6 cm. Abnormalities included (figs 1 and 2) a gross kyphoscoliosis, narrow forehead with normal skull shape, bushy, discontinuous eyebrows, long eyelashes with distichiasis, blue sclerae, simple, cupped, rotated ears with tiny external auditory meati, small mouth, high arched palate, and micrognathia. Her limbs showed small proximally placed floppy thumbs, short fifth fingers and toes, small convex nails, hyperextended metacar-

FIG 1 Lateral view of the patient aged 13 years. Note the severe kyphoscoliosis, bowing of the upper arm, and the small thumb.

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FIG 2 AP view of the patient aged 13 years.

pophalangeal and interphalangeal joints, and bilateral pes planus. There was bilateral partial syndactyly involving the second and third toes. Other features included hypoplastic nipples, clitoromegaly with hypoplastic labia, a convergent concomitant strabismus, and wasted hyperreflexic limbs. No cardiac abnormality was detected. She responded to sound and showed interest in colourful children's television programmes.

Investigations giving normal results included routine haematology and biochemistry. X-rays showed thin long bones with bowed humeri. Repeat karyotyping with G banding at 13 years showed trisomy 18 in all 50 metaphase spreads analysed from a lymphocyte culture.

Discussion

This child shares many features with other long term trisomy 18 survivors who are all invariably severely mentally and growth retarded. The overlapping fingers and prominent occiput, so characteristic of the neonate with trisomy 18, tend to disappear with age to be replaced by a progressive kyphoscoliosis and increasing limb hypertonicity. Frequent respiratory and urinary tract infection also occurs. Unusual features in this patient include her discontinuous eyebrows, distichiasis, blue sclerae, and history of pathological fractures. These latter features are suggestive of osteogenesis imperfecta, but in the absence of a positive family history and the typical skull shape of osteogenesis imperfecta it is more likely that this child's blue sclerae and fractures are

manifestations of her chromosome anomaly, particularly since blue sclerae have been noted in trisomy 18³ and thin long bones have been documented in other long term survivors.²

It is unclear why a few children with trisomy 18 survive infancy, since even without a lethal malformation the median life expectancy is only 40 days.¹ It has been suggested that repeated careful cytogenetic analyses of different tissues from long term survivors might reveal low grade mosaicism,^{4,5} although the point has been made that a normal cell line in such persons might have resulted from subsequent non-disjunction in the original aneuploid cell line.⁵ No low grade mosaicism has been noted in the girl reported here, in whom repeat chromosome studies at 13 years revealed an additional chromosome 18 in all 50 cells analysed, thus excluding mosaicism of 6% or greater with 95% confidence.⁶

Factors which are likely to have contributed to longevity in this child include the absence of a serious cardiac abnormality, the excellent care given by her devoted parents, and the five week time interval in establishing the diagnosis, thereby precluding the effect of a self-fulfilling prophecy.⁷ Whatever the explanation, this child illustrates the point that a baby with trisomy 18 may rarely survive well into childhood, an observation of relevance for those involved in counselling the parents of an affected newborn infant.

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