Trisomy 18 syndrome with cleft foot

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SUMMARY Ectrodactyly of the feet has been reported only twice in association with trisomy 18 syndrome. A severe form of this anomaly, the first with published illustrative *x* rays, is described in a male infant with trisomy 18 syndrome. It is suggested that this may represent an extreme expression of the foot anomalies more commonly associated with this syndrome.

Since the initial descriptions of trisomy 18 (Edwards) syndrome in 1960, numerous cases have been described. The features have been reviewed by Smith¹ and by Schinzel.² The most common limb abnormalities in trisomy 18 syndrome include the characteristically clenched hand with overlapping digits, nail hypoplasia, and the short dorsiflexed hallux. Equinovarus, rocker bottom feet, and syndactyly of the second and third toes are features in 10 to 50% of cases.¹ Only two previous cases of trisomy 18 syndrome have been reported to have cleft foot.^{3,4} We present a third such case, the first in which this anomaly appears symmetrical and the first where *x* ray evidence distinguishes it from other forms of ectrodactyly.

Case report

The infant, a black male, was born at term to a 45 year old woman, by elective caesarean section for breech presentation. Apgar scores at birth were 0; the child was resuscitated but survived only 10 hours.

Features suggestive of the trisomy 18 syndrome included small size (weight 1998 g, crown-rump length 32 cm), low slung ears with adherent lobuli, narrow palpebral fissures, microretrognathia, high arched palate, excessive lanugo, and the characteristic clenched hands (fig 1). In addition to these features there was a marked ectrodactyly of both feet, with a deep cleft between the hallux and the other toes, which were syndactylous. The hallux itself was severely dorsiflexed (fig 2).

X rays of the feet showed a short hallux bilaterally with complete absence of the second ray on the right and hypoplasia of the third ray. On the left the second ray was markedly hypoplastic and the third ray somewhat less so. The soft tissue syndactyly was evident (fig 3).

Necropsy confirmed the external dysmorphic features and revealed a ventricular septal defect and a unilateral horseshoe kidney. No other internal abnormalities were noted.

Peripheral blood metaphases showed a modal number of 47, karyotype 47,XY,+18, in all 17 cells analysed. No structural abnormality was detected on Giemsa banded metaphases.

FIG 1 The infant, showing features of trisomy 18 syndrome and clefting of the foot.

FIG 2 Close up of the feet, showing clefting between the dorsiflexed hallux and the other syndactylous toes.

FIG 3 X ray appearance of the feet. Note absence of central ray with hypoplasia of the marginal rays.

Discussion

Limb abnormalities in trisomy 18 syndrome are common. Smith's review in 1982¹ distinguishes those features found in more than 50% of cases, those found in 10 to 50%, and those occurring in less than 10% of cases. The first category includes the typical clenched hand with overlapping index finger, nail hypoplasia, and a short dorsiflexed hallux valgus. Foot anomalies present in 10 to 50% of cases include equinovarus, rocker bottom feet, and syndactyly of the second and third toes. A gap between the hallux and the other toes is also common.²

Christianson and Nelson⁵ reported four cases of trisomy 18 syndrome with severe lower limb reduction anomalies, gross talipes equinovarus, and

preaxial poly- or syndactyly being the commonest features. None of their cases exhibited clefts of the foot.

Ramirez-Castro and Bersu⁶ performed detailed necropsies on eight trisomy 18 infants to ascertain patterns of limb abnormalities and to hypothesise on their pathogenesis. Most of their attention was directed to the upper limbs where consistent anomalous patterns of muscle and tendon insertion were thought to explain partly some of the developmental anomalies; no such consistent features were found in the lower limbs.

We are aware of only two previous reports of clefting of the feet in association with trisomy 18 syndrome. In the case described by Butler *et al.*,³ the right foot exhibited a cleft between the hallux and

the fourth and fifth toes with absence of the other toes, and the left foot had a smaller midline cleft with absence of only the third toe. Moerman *et al*⁴ reported a case of trisomy 18 syndrome with a 'lobster claw' deformity of the left foot. Neither of these cases had published illustrative *x* rays.

The present case differs from those previously reported in having a deep cleft of both feet between the hallux and the other toes, which were syndactylous. The *x* ray (fig 3) confirms that the cleft is between the hallux and the other toes and shows loss of the second ray of the left foot, with hypoplasia of the third ray, and hypoplasia of both these rays on the right. As such, the deformity is analogous to the type I split hand/split foot anomaly described by Temtamy and McKusick,⁷ but the hypoplasia of the marginal rays makes it closer to the atypical variety of Lange.

Other chromosomal syndromes which have been associated with foot anomalies similar to those found in trisomy 18 include duplications of 9p, 10q24→qter, and 14p (syndactyly of the second and third toes), and trisomy 13 (cleft between first and second toes, syndactyly).¹ A number of syndromes have occasionally exhibited clefting of the feet; these include Carpenter syndrome, De Lange syndrome, ectrodactyly-ectodermal dysplasia-clefting syndrome, Goltz syndrome, Jarcho-Levin syndrome, Miller syndrome, and Pfeiffer syndrome.¹ The *x* ray appearance of our case distinguishes it from the classical familial split hand/split foot anomaly (following autosomal dominant, recessive, or X linked recessive inheritance),^{7,8} as well as from the autosomal dominant split hand and split foot anomaly described among the Wadoma tribe of Eastern Zimbabwe and the Talaunda of Botswana.⁹

There are certain features in the present case which appear to be an exaggerated form of the foot anomalies more commonly described in trisomy 18

syndrome. A wide gap between the hallux and the other toes with a tendency to syndactyly of the latter is frequent in the trisomy 18 syndrome, while dorsiflexion of the hallux is also a common feature. As such, our case may represent the extreme end of this maldevelopment spectrum.

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Deletion of band 5q21 in association with a de novo translocation involving 2p and 5q

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SUMMARY A six month old girl with developmental delay and dysmorphic features was found to have a translocation involving 2p and 5q as well as a deletion of band 5q21.

Acquired interstitial deletion 5q of bone marrow cells has frequently been found in haematological disorders.¹ Constitutional interstitial deletion of 5q is, however, relatively rare. To our knowledge, there have been only 10 previous published cases of interstitial deletion 5q.²⁻¹⁰ We report here a child with coloboma of the right eye, dysmorphic facial