An unusual form of familial acrocephalosyndactyly

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SUMMARY A family is described in which at least six members have an unusual form of acrocephalosyndactyly showing autosomal dominant inheritance. The most characteristic feature in the more severely affected individuals is duplication of the distal phalanx of the hallux. Review of family photographs suggests that the cosmetic outcome in apparently affected infants may be much better than anticipated.

Craniosynostosis may occur in isolation or as a component of a large number of pleiotropic malformation syndromes. The acrocephalosyndactylies comprise a group of hereditary disorders characterised by premature fusion of cranial sutures in association with distal limb abnormalities. In addition to neurological complications secondary to the premature synostosis, considerable cosmetic problems may occur. This report describes an unusual form of acrocephalosyndactyly showing autosomal dominant inheritance in a family, in which the ultimate facial appearance of affected members may be much more pleasing than might otherwise be expected.

Case reports

The family pedigree is shown in fig 1.

Case 1 (III.16), the proband aged 10 years, is asymptomatic and of normal intelligence. Review of early photographs shows marked frontal bossing and maxillary hypoplasia with gradual normalisation of facial appearance, as shown in fig 2. Examination revealed brachycephaly with hypertelorism (canthal index = 44.2), a normal palate, mild soft tissue syndactyly in both hands, and broad halluces, as shown in fig 3. Both height and weight lie on the 25th centile, whereas head circumference (50-6 cm) is below the 10th centile. Skull x-ray showed coronal suture synostosis with prominent copper beating. In both halluces there was an accessory epiphysis lying lateral to the interphalangeal joint, with partial duplication of the distal phalanx, as shown in fig 4.

Case 2 (II.6), the proband’s father, is also asymptomatic. Examination revealed mild maxillary hypoplasia with marginal hypertelorism (canthal index = 41), brachyactyly of the hands, and bilateral cutaneous syndactyly of the fourth and fifth toes. Skull x-ray was normal.

Case 3 (III.1), aged 18 years, is a healthy and attractive female. At birth marked frontal bossing was present, as shown in fig 5. At the age of 5 years bilateral decompressive craniectomies were performed because of severe headaches with visual disturbance and radiological signs of raised intracranial pressure (copper beating and bulging of the middle fossae). Examination revealed mild hypertelorism (canthal index = 42.1), a high arched palate, and a double left hallux, as shown in fig 3.

Cases 4 (III.2), 5 (III.4), and 6 (II.1) all show mild features of the disorder. Case 4 had telecanthus with brachycephaly, a high arched palate, and broad laterally deviated halluces. Case 5 also showed these features in addition to bilateral ptosis. Case 6 showed maxillary hypoplasia with antimongoloid slanting of the eyes and a prominent glabella. In addition, he had broad laterally deviated halluces. All of these individuals are of normal intelligence.

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FIG 2 Case I at the age of 6 weeks, 6 months, and 10 years.

FIG 3 Upper picture shows the left foot of case 3 with double hallux. The feet in the lower picture are those of case 1.

FIG 4 X-ray of the feet of case I to show the partial duplication of the distal phalanx in the big toes.

FIG 5 Case 3 during infancy and aged 18 years.

Cases 3 to 6 were examined at home and no x-rays are available.

Discussion

The classification of the acrocephalosyndactylies is controversial, with uncertainty as to whether they should be lumped or further subdivided. Although the affected subjects of this report do show mild intrafamilial variation, their phenotype is sufficiently consistent to suggest the action of a specific pleiotropic mutant gene rather than a non-specific predisposition to premature craniosynostosis and distal limb dysmorphism. The disorder in these individuals cannot be readily classified as any well recognised form of acrocephalosyndactyly. The broadening of the forehead with maxillary hypoplasia is consistent with a diagnosis of Pfeiffer syndrome, but the presence of normal thumbs and the unusual pattern of involvement in the big toes with splitting or duplication of the distal phalanx are more in keeping with the "Robinow-Sorauf" syndrome as defined by Carter et al elsewhere in this journal.

Two lessons may be learned from this family. The first is that parents, who may be understandably
concerned by the alarming facies of their newly born baby, can be advised that the ultimate cosmetic outcome may be much better than expected. Cases 1 and 3 both presented an unusual appearance during early infancy but are now able to conceal a mild degree of frontal bossing behind a strategically placed fringe so that their facial appearance is not unattractive.

More serious is the history of probable raised intracranial pressure in case 3, for which bilateral decompressive craniectomies were performed at the age of 5 years. Similar surgical intervention has been reported in at least four patients with Pfeiffer syndrome \(^5\)–\(^7\) and in the proband of the large family described by Robinow and Sorauf,\(^3\) although in this case the indication may have been cosmetic rather than neurological. There would thus seem to be a strong case for reviewing these children regularly during their early years with the option of surgical intervention if there is evidence of persistently raised intracranial pressure. In the absence of such evidence the indications for surgical action should be carefully considered since the majority of affected individuals in this family have reached adult life with normal intelligence and acceptable physiognomy without surgery.

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References


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