Unusual association of diseases/symptoms

Cenani–Lenz syndrome-like limb anomaly with more severe involvement of left side

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The authors describe a case of Cenani–Lenz syndrome, in a 3-month-old girl of non-consanguineous parents of Afghani origin. Digital anomalies consist of sandactyly of the fingers of both hands, disorganised phalanges more severe involvement of the left side without radioulnar synostosis. Although our patient lacks facial dysmorphic features reported previously. The cases of patients with CLS need to be carefully evaluated and described to determine if there is distinctive accompanying facial phenotype.

BACKGROUND

Syndactyly is webbing or fusion of the fingers or toes. It may be syndromic or isolated. Syndromic syndactyly is a common hereditary condition that involves fingers and toes, can be cutaneous or bony, unilateral or bilateral.¹ We describe a 3-month-old girl, with complex symmetrical involvement of the hands and feet with more severe involvement of the left hand and foot in the absence of other abnormalities.

Cenani and Lenz in 1967 described two brothers with total syndactyly of the hands (giving them the so called spoon shaped appearance),² both had bilateral radioulnar synostosis and metacarpal fusion. Several authors have since reported individuals with features consistent with Cenani–Lenz syndrome (CLS;MIM 212780),³ it is a rare disorder. Most cases are the product of consanguineous mating (sometimes with more than one affected member) suggesting autosomal recessive inheritance.^{2 4–7}

CASE PRESENTATION

The proband, a 3-month-old girl, was born at term following an uncomplicated pregnancy and delivery, to a healthy 31-year-old mother of Afghani origin. The family history is unremarkable. The parents are not related by blood. They have a 3-year-old healthy daughter. One full-term male infant died inutero of an unknown cause and did not have any facial dysmorphism or abnormalities of the hands and feet. There was no history of exposure to teratogens. Weight was 2.5 (below the 0.4th percentile), length was 55 cm (on the 0.4th percentile) occipitofrontal diameter was 37.5 cm (between 2nd and 0.4th, 3rd percentile).

She had syndactyly of the fingers and toes. The right hand showed soft tissue syndactyly of fingers two to five, webbing between the fourth and fifth fingers, and a hypoplastic fifth finger nail (figure 1A).

The left hand fingers were significantly abnormal with severe brachy-syndactyly, and a hypoplastic fifth finger (figure 1B,C). The right foot examination revealed a short first toe with absent toe nail (figure 1D). The remainders of the toe nails were hypoplastic.

Figure 1 (A) Syndactyly and webbing of the right hand fingers. (B, C) Brachy-syndactyly and hypoplastic fifth finger nail of the left hand. (D) Short first toe with absent nail of the right foot. (E) Complete syndactyly with hypoplastic toe nails of the left foot

Figure 2 Absent terminal phalanges of the second to fifth digits (right hand). Absent metacarpals and phalanges of the fourth and fifth fingers (left hand). Hypoplastic middle and absent terminal phalanges (right foot). Disorganised and absent metatarsals (left foot).

In the left foot there was complete two to five syndactyly with hypoplastic nails (figure 1E). The first toe was short with an absent toenail.

There were no dysmorphic features of the head, neck, face or trunk. Skin and neurological examination were within normal. The remainder of the physical examination was unremarkable and she was otherwise healthy and active.

INVESTIGATIONS

Chromosomal analysis was reported as 46, XY at 500 band resolution. Both echocardiogram and the abdominal

ultrasound were unremarkable. The complete blood count, thyroid function tests, liver enzymes, coagulation profile, urea and electrolytes were all within normal limits.

Radiologically, the right hand revealed absent terminal phalanges of the second to fifth digits (figure 2). The left hand revealed absent metacarpals and phalanges of the fourth and fifth fingers and terminal phalanx of the first finger (figure 2). In the right foot, there were hypoplastic middle phalanges, and absent terminal phalanges. In the left foot, there were disorganised metatarsals with a distally placed third metatarsal, absent proximal phalanges

of the third and fourth toes, absent middle phalanges of the second to fifth toes and a very hypoplastic proximally placed proximal phalanx of the fifth toe (figure 2).

DIFFERENTIAL DIAGNOSIS

Patients presenting with syndactyly of hands and feet with/ or without radioulnar synostosis may have syndromic or isolated cause. Physical examination includes a thorough search for associated anomalies especially oral examination to rule out oculodentodigital dysplasia, oro-facial-digital syndrome especially type 1, skin pigmentation for chromosomal disorders (Filippi syndrome and triploidy) and skull to look for craniosynostosis in Apert syndrome.

DISCUSSION

The two brothers reported by Cenani and Lenz² had proximal radioulnar synostosis. All digits of the hands were syndactylous, giving the appearance of what they described as a spoon hand. One of the siblings had bilateral syndactyly of the third and fourth toes, while the other one had normal feet. A third affected sibling was subsequently born to this family.

In 1962, Yelton reported dizygotic twins of African-American origin with similar anomalies,⁴ Temtamy and McKusick,⁵ mentioned that Lenz knew of two more cases of CLS in a consanguineous Swedish family. Although renal anomalies are not a recognised feature of CLS, Nezarati and McLeod, reported a patient with bilateral renal hypoplasia.⁸ In their elegant study, Dimitrov *et al* detected GREM1-FMN1 genomic rearrangements cause an abnormal phenotype.⁹ Recently, the candidate gene LRP4 has been identified by Li *et al*.¹⁰

In our case, radioulnar synostosis and atypical facial features were absent.¹¹ Additionally, our patient shows more severe involvement of the left hand and foot which has not been mentioned before. Syndactyly of the fingers and toes occur in other syndromes as well. Syndactyly in apert syndrome is complete and is often referred to as the mitten hand. The feet are also affected and there is coronal suture synostosis.

Learning points

- ▶ Accurate clinical diagnosis is crucial for prognostication, for identifying further health issues and for accurate genetic counselling.
- ▶ The clinical approach to patients with syndactyly should include obtaining a three generation family pedigree and an inquiry into prenatal exposure to teratogens.
- ▶ The physical examination should aim to accurately define the digit abnormalities and rule out other associations. These include abnormalities of growth and development or structural abnormalities such as craniosynostosis.
- ▶ A thorough oral examination is essential to rule out oro-facio-digital and oto palato digital syndromes. Irregular skin pigmentation or asymmetry of limb length may point to chromosomal mosaicism.

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Competing interests None.

Patient consent Obtained.

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