SHORT REPORTS

A lethal skeletal dysplasia with generalised sclerosis and advanced skeletal maturation: Blomstrand chondrodysplasia?

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Abstract

The clinical and radiological features in a baby thought to have Blomstrand chondrodysplasia are presented. The hallmarks of this rare lethal disorder are an increase in bone density and advanced skeletal maturation. A high incidence of parental consanguinity is consistent with autosomal recessive inheritance.

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In 1985 Blomstrand *et al*¹ documented the clinical and radiological features in a female Finnish baby who died shortly after birth with a 'hitherto unknown' skeletal dysplasia. The most characteristic finding was advanced skeletal maturation. Autosomal recessive inheritance was proposed in view of parental consanguinity. We have recently encountered another

pair of consanguineous parents who have had a similarly affected child.

Case report

CLINICAL FEATURES

The female infant was delivered after spontaneous onset of labour at 30 weeks' gestation and lived for only 40 minutes. Polyhydramnios was noted during the later stages of pregnancy. Growth parameters at birth were weight 1094 g (10th centile), length 35 cm (<3rd centile), and head circumference 28 cm (50th centile). On examination the baby had multiple abnormalities (fig 1). The eyes were widely spaced and protruding. The nasal bridge was depressed and the columella was extremely short. There was severe micrognathia with a long philtrum and intact palate. The chest was long and narrow with splaying of the lower ribs, and the abdomen was not abnormally distended. The upper limbs were very short

Figure 1 Post mortem view of the baby.

Figure 2 Lateral skull x ray showing advanced dentition with ossification of the hyoid bone and laryngeal cartilage.

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Figure 3 Whole body radiograph.

Figure 4 X rays of the right hand and left foot showing advanced ossification.

and bowed. The lower limbs were also shortened but to a lesser extent. There was no polydactyly.

At necropsy the foramen magnum was found to be very small, as was the larynx. The lungs were also hypoplastic. No abnormality was noted in the heart or great vessels. In the abdomen there was a malrotation of the bowel. No other internal abnormalities were identified.

RADIOGRAPHY

Lateral skull x ray (fig 2) confirmed the clinical findings of depression of the nasal bridge with micrognathia and a small facial skeleton. There was also marked sclerosis of the base of the skull with ossification of the hyoid bone and laryngeal cartilage. Whole body radiography (fig 3) showed a generalised increase in bone density with advanced ossification. The vertebral bodies showed mild platyspondyly and ossified coccygeal segments. The clavicles were short and broad as were the ribs, which were expanded both medially and laterally. The long bones in the limbs were short with expanded irregular metaphyses and fragmented irregular capital femoral epiphyses. The ulnae and radii showed acute angulation. Three carpal/four tarsal bones could be identified in each hand/foot (fig 4).

FAMILY HISTORY

This baby was the product of the third pregnancy of healthy Asian parents who were first cousins through their fathers and more distant relatives through their mothers. These parents have embarked upon a total of six pregnancies with only the first and fifth resulting in the delivery of healthy infants. Their second pregnancy resulted in a stillborn macerated hydropic male infant who was reported at necropsy as having a normal skeleton. Their fourth pregnancy was terminated at 16 weeks' gestation when ultrasonography indicated short limbs. No necropsy or radiography were undertaken. Their sixth pregnancy was also terminated at 16 weeks' gestation. Necropsy showed hydrops, a midline cleft palate, and multiple pterygia. This fetus had a normal skeleton.

Parental chromosome studies and amniocentesis during the fourth pregnancy yielded normal karyotypes.

Discussion

The differential diagnosis of lethal short limbed dwarfism embraces a large and increasing number of disorders. The subject of this report presented with the very unusual combination of several micrognathia, short limbs, long trunk, and malrotation in association with generalised sclerosis and advanced bone age. These radiological features most closely resemble those in a female infant described by Blomstrand *et al*¹ with the findings in common being the long narrow thorax, calcified hyoid

Clinical and radiological features of Blomstrand chondrodysplasia.

Features	Blomstrand <i>et al</i> ¹	Spranger and Maroteaux ²	Present case
Clinical			
Sex	F	M	F
Polyhydramnios	+		+
Hydrops	+		—
Gestation at delivery (w)	29	26	30
Age at death	'Within minutes of birth'	'Shortly after birth'	40 min
Macroglossia	+		—
Micrognathia	+		+
Short limbs	+	+	+
Long narrow chest	+	+	+
Internal anomalies	Coarctation of aorta		Malrotation
Parental consanguinity	+	+	+
Radiological			
Generalised sclerosis	+	+	+
Advanced skeletal maturation	+	+	+
Calcified hyoid/ laryngeal cartilage	+	+	+
Short tubular bones with flared metaphyses	+	+	+

bone and laryngeal cartilage, flared long bone metaphyses, and advanced skeletal maturation. Spranger and Maroteaux² have briefly referred to a further case of this disorder and pointed out that increased bone density is also a feature. Our case differs slightly from these two reports in that the long bones, particularly

those in the lower limbs, are not as severely involved and clinically the baby did not have macroglossia. Nevertheless, the degree of overlap and similarity of the radiological features in these infants, as summarised in the table, suggests that they all had the same disorder. All three of these cases were born to consanguineous parents, a clear indicator of autosomal recessive inheritance, as is the fact that the mother of our case almost certainly subsequently had another affected baby in her fourth pregnancy. The paucity of published reports and the high incidence of parental consanguinity indicate that this is an extremely rare condition. The parents of our case appear to be particularly unfortunate in being at risk for having children with two distinct autosomal recessive disorders, that is, the aforementioned skeletal dysplasia and a lethal form of multiple pterygium syndrome.³

1 Blomstrand S, Claesson I, Säve-Söderbergh J. A case of lethal congenital dwarfism with accelerated skeletal maturation. *Pediatr Radiol* 1985;15:141–3.
2 Spranger J, Maroteaux P. The lethal osteochondrodysplasias. In: Harris H, Hirschhorn K, eds. *Advances in human genetics*. Vol 19. New York: Plenum Press, 1990:1–103.
3 Hall JG. Editorial comment: the lethal multiple pterygium syndromes. *Am J Med Genet* 1984;17:803–7.