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DIAGNOSTIC CHALLENGE OF SHORT RIB POLYDACTYLY SYNDROME IN LIMITED RESOURCES SETTING: CASE REPORT

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DIAGNOSTIC CHALLENGES IN A CASE OF SHORT RIB POLYDACTYLY SYNDROME IN LIMITED RESOURCE SETTING: CASE REPORT

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SUMMARY

We report on a Congolese stillbirth with clinical and radiologic presentation consistent with short-rib polydactyly syndrome born from unrelated parents caring different private mutations each, in the same gene as well as in different genes. From research perspectives, this first case ever in the region could have brought some insights on genetics of short-rib thoracic dysplasia in Congo as previously evidenced in other genetic conditions.

INTRODUCTION

The short-rib polydactyly syndrome (SRPS) is a rare lethal skeletal dysplasia characterised by constricted chest, short ribs, shortening of tubular bones, and a 'trident' appearance of the acetabular roof (1). The prevalence of the SRPS is still unknown. This entity represents a group of autosomal recessive skeletal ciliopathies known as "short-rib thoracic dysplasia" (SRTD). The condition is pleiotropic and at least five major clinical types of SRTD are reported. Many of these different types are overlapping each other. The genetic of SRTD is heterogenenous (1). Beside consanguineous families, compound heterozygotes and digenic patients have also been reported (2). They were born from unrelated parents caring different private mutations each, in the same gene as well as in different genes.

We report on a Congolese stillbirth with clinical and radiologic presentation consistent with SRPS.

CASE REPORT

The patient is a stillbirth born at the University hospitals of the University of Lubumbashi in DR Congo. His mother and father, 32 and 40 years old respectively, are unrelated and of Congolese origin. The mother had three reportedly normal children before two consecutive spontaneous unexplained miscarriages. The sixth pregnancy was uneventful until the 30th week gestational age when the mother reported absence of fetal movements. An ultrasound examination was carried out and reported the absence of heartbeats along with multiple congenital malformations including hydrops, dilatation of brain ventricles, hypoplastic face, short limbs, pulmonary hypoplasia and ascites. Heart and kidneys had normal appearance. The interruption was decided and the induced delivery took place two days later.

The female stillbirth weighted 1720g and presented with hydrops, smelly and crumbling skin corresponding to grade three maceration (Figure 1). She had hypoplastic face; lowly inserted hears, low posterior hairline and short neck. The chest was severely constricted with thoracic circumference of 29 cm and her belly was bloated. Limb malformation encompassed short limbs predominantly at distal parts, brachydactyly, bilateral postaxial polydactyly of hand and feet (Figure 1). The external genitalia were consistent with female gender.

Radiologic examination revealed hypoplasia of lower maxillary bones, short thoracic cage, 12 short ribs, and dysplastic humerus, radius, ulna, femur, tibia, fibula and iliac bones (Figure 1).

Figure 1

Dimorphism in the stillbirth. From top to bottom, overview of the body with hydrops, hypoplastic face, short limbs, narrowed chest, bloated belly, crumbling skin, low set posterior airline, short heck, postaxial polydactyly of hands and feet. At the bottom is a radiograph of the all body showing hypoplasia of maxillaries, ribs, long and pelvic bones

DISCUSSION

The reported stillbirth had multiple congenital malformations mainly characterised by thoracic dysplasia, short ribs, dysplasia of long and pelvic bones and polydactyly. This clinical presentation is more likely to fit to the type 1 of SRTD (Saldino-noonan type) in which previous patients had severe thoracic dystrophy, micromelia, hypoplastic long bones, polydactyly,rudimentary toes without nail beds and multiple internal congenital anomalies (3). However, congenital heart defect anal, urinary, genital and visceral malformation, were absent in the stillbirth. Such uncertainty in clinical classification is not rare in pleiotropic diseases. Because of clinical overlap between clinical types it has been suggested that SRTD could be a continuum with different spectra from less severe to lethal forms.

We anticipate that the severity of thoracic constriction is consistent with the lethal form and would have been non-compatible with extra-uterine survival.

The transmission pattern in the families with short rib polydactyly syndrome was consistent with autosomal recessive inheritance (4). In our observation, parents of the stillbirth are unrelated and from different geographic background. This denies the identity by descent and the founder possibilities. However, other possibilities may be envisioned: first, by chance the stillbirth may have inherited exactly the same mutation from each of his parents and be homozygote for that mutation; second, she may be compound heterozygote with two private mutations inherited each from different parent; third, the causal defect may be digenic as previously reported (4). Such reasoning should be kept in mind when it comes to genetic counseling and risk calculation.

Unfortunately, proper genetic material was not drawn from the reported stillbirth because of advanced degradation of the body at birth. From a clinical perspective, resource consuming genetic investigation for such heterogeneous disease would not have been worthwhile in limited resources settings like DR Congo. However, from research perspectives this first case ever in the region could have brought some insights on genetics of SRTD in Congo as previously evidenced in other genetic conditions (5).

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