Fryns Syndrome

Alternative Names
FRNS
Diaphragmatic Hernia, Abnormal Face, and Distal Limb Anomalies

WHO International Classification of Diseases
Congenital malformations, deformations and chromosomal abnormalities

OMIM Number
229850

Mode of Inheritance
Autosomal recessive

Description
Fryns syndrome is a rare autosomal recessive disorder, multiple congenital anomaly syndrome with an incidence of 0.7-1 in 10,000 births. The syndrome is characterized by congenital diaphragmatic hernia, unusual facies and distal limb hypoplasia. The spectrum of distal limb hypoplasia includes short and broad hands, short digits, short or absent terminal phalanges, hypoplastic or absent nails, and clinodactyly.

Neurologic and cardiac malformations have been reported in up to 72% and 88% of Fryns syndrome cases, respectively. Fryns syndrome is usually associated with stillbirth and death soon after birth. Patients who survive the neonatal period represent 14% of reported cases. Characteristics of survivors include less frequent congenital diaphragmatic hernia and milder lung hypoplasia, absence of complex cardiac malformations, frequent early myoclonus, and most often, severe neurologic impairment. A significant inter and intra-familial phenotypic variability as well as discordant phenotype in monozygotic twins has been reported. Detection of fetal hydrops, cystic hygroma, and multiple pterygia have allowed prenatal ultrasonographic diagnosis as early as in the 11th week of gestation.

Molecular Genetics
The genetic defect causing Fryns syndrome has not yet been identified. However, certain chromosomal abnormalities have been described, including mosaicism for a tandem duplication of chromosome 1q24-q31.2, ring chromosome 15, terminal deletion of chromosome 6 q, trisomy 22, and XO karyotype.

Epidemiology in the Arab World
Bahrain
Dawani et al. (2004) reported a newborn female from Bahrain with Fryns syndrome. A Doppler ultrasound carried out at 36 weeks of gestation showed an IUGR fetus of 35-weeks size and a right-sided diaphragmatic hernia. The baby was the second of a healthy first cousin parent. The first child was normal. Her initial chest X-ray
showed right-side diaphragmatic hernia with the liver occupying a right hemithorax. On examination, she had coarse facial features with micrognathia, a depressed nasal bridge, facial hair overgrowth, hypoplastic nails of both the left little finger and the toe, a small rudimentary 4 terminal phalanx of the left fifth finger, and non-pitting generalized edema. The patient was operated on the second day of life. Intra-operative findings were right diaphragmatic hernial sac extending to the apex of the chest wall, with a thin membranous sac; the lower lip of diaphragm was well developed, while the upper lip was thin and underdeveloped with no muscle. The liver and small intestine were in the right chest. The right lung was hypoplastic and expanded after relief of the chest content. The skeletal survey showed a broad medial border of the clavicles, and hypoplastic distal phalanges of the left little finger. Her chromosomal analysis showed 45 XO (Turner’s syndrome).

References

Contributors
Ghazi O. Tadmouri: 18.4.2005