Thanatophoric Dysplasia – A case report

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Abstract

Thanatophoric dysplasia (TD) is one of the rare lethal osteochondrodysplasia. Skeletal dysplasia constitute heterogenous group of bone disorders resulting in abnormal shape and size of skeleton. The reported incidence is about 1 in 60,000 births. A case of G2P1L1 with 15 weeks of gestation was subjected to anomaly scan. USG showed the fetus with short stubby long bones with widened metaphysis, large skull, narrow chest and absent ossification of vertebral bodies. Ultrasonographic visualisation of craniofacial and limb deformities were suggestive of thanatophoric dysplasia. Medical termination of pregnancy was done at 15 weeks of gestation.

Key words: Thanatophoric dysplasia; lethal osteochondrodysplasia; dwarfism; ultrasound

Introduction

Thanatophoric Dysplasia (TD) is a congenital, sporadic, usually lethal skeletal dysplasia characterized by shortening of the limbs, small conical thorax, platyspondyly and macrocephaly[1,2]. It was first described by Maroteaux et al in 1967[3]. The word "thanatophoric" is derived from Greek word "thanatophorus'' which means "death bringing". Some studies have reported there may be association of dominant gene mutation. Maternal rubella infection is one of probable etiological factor. The vast majority of cases are due to de novo mutations. There are two types of TD type 1 is short curved femur, type 2 is straight femur with clover leaf skull. It is difficult to differentiate TD from other forms of dwarfism like achondroplasia and diastrophic dysplasia. TD has similar configuration as that of achondroplasia.

Case Report

A 20year old patient G2P1L1 with history of 4 months amenorrhea came for first antenatal check up to outpatient department of obstetrics and gynaecology department, HSK Hospital, Bagalkot. Last delivery was one year back, which was full term normal vaginal delivery with outcome being alive, healthy female baby with no anomalies. Patient had ultrasonography at local hospital which was found to be abnormal for which patient was referred to HSK Hospital for further management. There was no family history of genetic disorders or congenital anomalies. No history of fever or vaginal discharge was noted in first trimester. At this visit, ultrasonography was done and the findings were as below.

Ultrasonography: Head appeared large. Depressed nasal bridge noted. Chest was narrow. Abdomen appeared distended. Absent ossification of vertebral bodies noted. All limbs were short and stubby. Long bones were short and bowed (Figure 1). CRL=93mm; EDD=21-11-2016; FHR=136bpm

Impression: Single intrauterine pregnancy of average 15weeks 1 day with lethal skeletal dysplasia (Thanatophoric bony dysplasia)

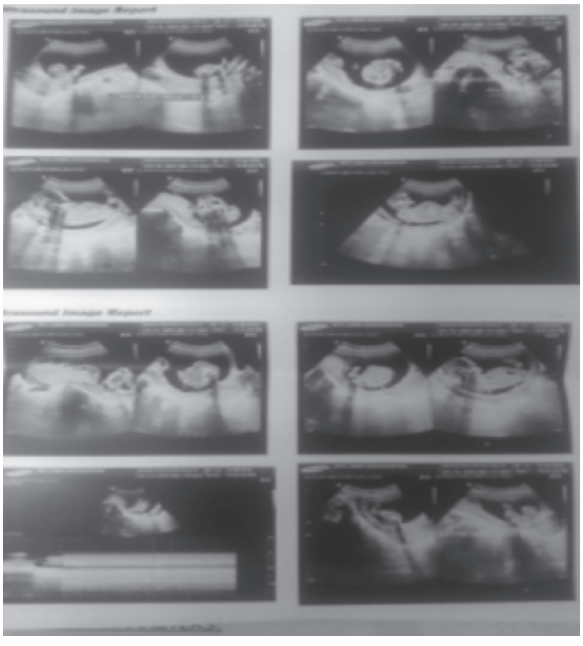

Figure 1. Ultrasonography at 15 weeks of gestation

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Patient and patient's relatives were explained about the condition and prognosis. Consent for termination of pregnancy was taken. With one dose of misoprostol 100µg per vaginally, patient expelled male abortus. On examination the fetus was weighing 140gm and was small in length, with macrocephaly, depressed nasal bridge, both upper and lower limbs were grossly shortened (Figure 2). Post abortal radiography (Figure 3) showed short stubby long bones with widened metaphysis, large skull, narrow chest, widened interpeduncular distance of spine.

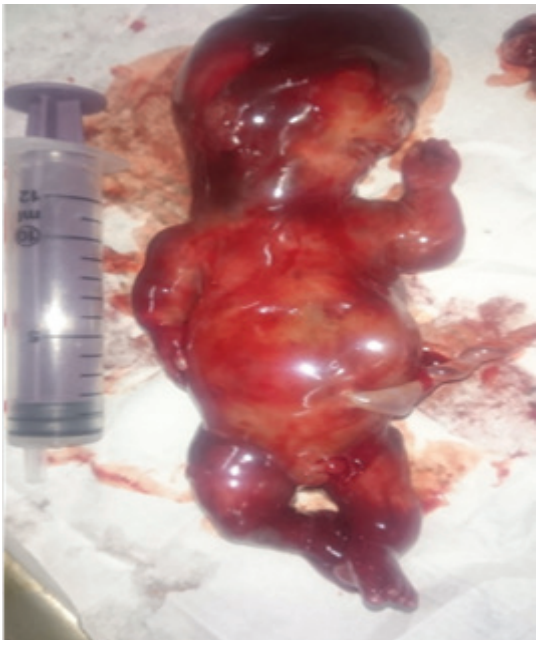

Figure 2. Abortus weighing 140 gm with 'Thanatophoric' features

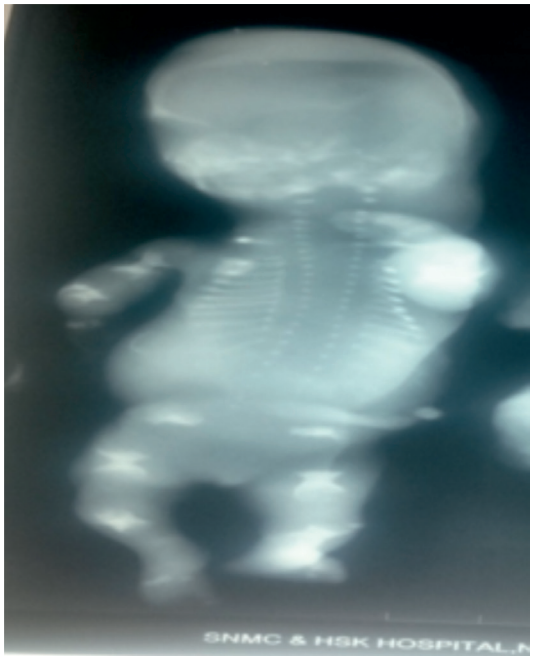

Figure 3. Post abortion radiograph

Discussion

Thanatophoric Dysplasia (TD) is characterized by an abnormal head, face, thorax, and skeleton. Features suggestive of TD are megacephaly, occasionally with cloverleaf-shaped skull. The face has excess skin which usually yields a "boxers face" appearance, with frontal bossing and depressed nasal bridge with very short limbs and small scapula. The vertebral bodies are greatly reduced in height with wide spaces between them. The rib cage is small, leading to respiratory insufficiency and often to death[4]. Autosomal mutations in the fibroblast growth factor receptor 3 gene (FGFR3), which has been mapped to chromosome band 4p16.3, results in both subtypes. TD can be diagnosed prenatally because of characteristic sonograghic features. Fetus with TD usually dies within 48 hours because of pulmonary hypoplasia which is because of narrowing of thorax which leads to respiratory insufficiency. The sonographic criteria regarding the long bones in the diagnosis of TD are severe rhizomelic micromelia with bowing, length of limbs being less than third percentile for gestational age[5].

Bowing of tubular bones may be explained by diminished mechanical stability. The perichondral spurs and linguiform endochondral growth plates result in 'Maple leaf like' contour of metaphyses of tubular bones and acetabular roof[6]. The pelvis characteristically shows decreased vertical height of iliac bones with increased horizontal width. The acetabulae are flat. Nevertheless X-ray examination must be performed after birth to confirm various findings which along with the autopsy diagnosis helps in counseling of the parents[7].

The counseling is very important to the parents of the affected children. Without proper genetic counseling, most families having had a fetus with TD would be too worried to have further pregnancy. Since the majority of cases occur sporadically, it is important to counsel that the recurrence risk is low for only one previously affected fetus. A general empiric recurrence risk for this entity was estimated at only 2%. Prenatal ultrasound examination must be offered in subsequent pregnancies to identify features such as macrocephaly, vertebral ossification defect, bowed femori, micromelia, and small thorax with protuberant abdomen. If indicated, amniocentesis may be offered and the diagnosis may be done by molecular analysis [8].

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