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THANATOPHORIC DYSPLASIA (INDIVIDUAL CASE REVIEW)

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SUMMARY

Thanatophoric dysplasia (TD) is a lethal morphological anomaly secondary to a rare osteochondrodysplasia. Prenatal screening is based on obstetrical ultrasound while confirmation is obtained by molecular biology which identifies the mutation of the FGFR3 gene (fibroblast growth factor receptor 3) located on the short arm of chromosome 4. We present the case of a 32-year-old woman, second gestational age, poorly followed, with gestational diabetes, whose third trimester ultrasound revealed fetal malformations suggestive of DT. It was a facial dysmorphia with micrognathia associated with an extremely shortened aspect of the limbs. The delivery was performed by caesarean section allowing the extraction of a dwarf baby of 34 cm in length and 1700 g in weight, who died 30 minutes after birth.

KEYWORDS: Thanatophoric dysplasia - osteo chondrodysplasia - lethal malformations.

INTRODUCTION

Thanatophoric dysplasia (TD) is a lethal neonatal disease, initially named thanatophoric dwarfism discovered by Maroteaux in 1967,[1] its incidence is estimated between 1/50,000 and 1/20,000 birth per year.[2] Two types are distinguished according to different radiological criteria.[3,4] Death is often secondary to pulmonary hypoplasia caused by a reduced thoracic cavity or by stenosis of the foramen magnum and the subsequent failure of respiratory control.[5] Screening is based on prenatal ultrasound, hence the importance of regular monitoring of the pregnancy and especially of morphological ultrasound performed in the second trimester. The diagnosis of certainty is based on molecular biology.[6] Medical imaging should be performed as a first line of investigation for early prenatal detection of this lethal malformation in order to propose a medical termination of pregnancy to avoid psychological and obstetrical trauma to the pregnant woman.[7]

We report the case of a parturient admitted in our structure for medical termination of pregnancy following an ultrasound suspicion of thanatophoric dwarfism diagnosed late, we will insist on the prenatal diagnosis and the pregnancy follow-up which will allow an early and adequate therapeutic management.

OBSERVATION

The reported case is that of a 32-years-old female patient, IIGIIP, with no notion of consanguinity, nor any particular pathological history, pregnant at 31 SA, unattended, on unicatricial uterus, in whom the obstetrical ultrasound performed in the third trimester objectified several morphological abnormalities (figure1,2,3): facial dysmorphism with retrognathism, achondrandysplastic aspect of the 4 limbs (hands bent at the shoulder, feet connected to the hips by a short fragmentary bone segment), the limb bones (humerus, forearm bones, femur and leg bones) were not found, no encephalic morphological abnormalities were noted, with normal cephalic biometry. Overall, the appearance was suggestive of achondrodysplasia of the 4 limbs associated with facial dysmorphism with significant hydramnios. A medical termination of the pregnancy was indicated, performed by cesarean section, allowing extraction of a dwarf baby, female, 34 cm in length and weighing 1700g, with a narrow thorax (Figure 4). The baby died 30 minutes after birth from respiratory distress. Molecular biology as well as autopsy and radiography of the fetus were not performed due to the family's refusal.

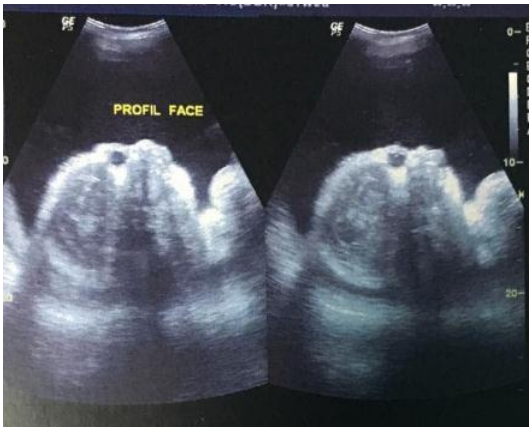

Figure 1: Retrognathism on ultrasound.

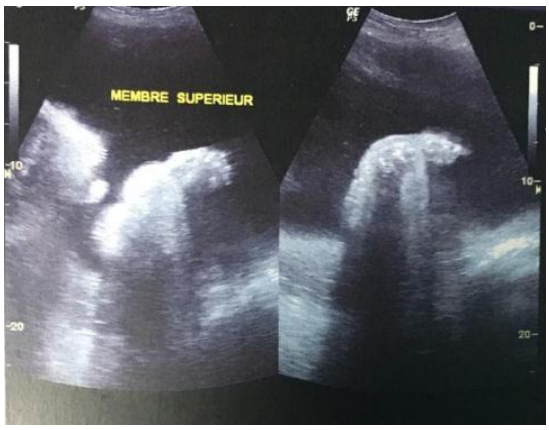

Figure 2: Sonographic appearance of a shortened upper limb.

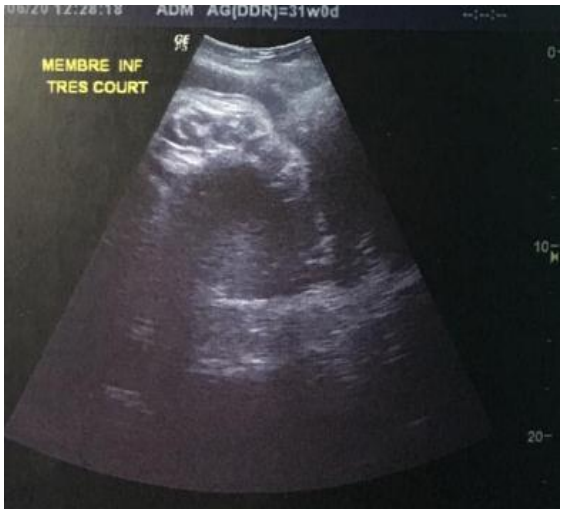

Figure 3: Ultrasound appearance of a shortened lower limb

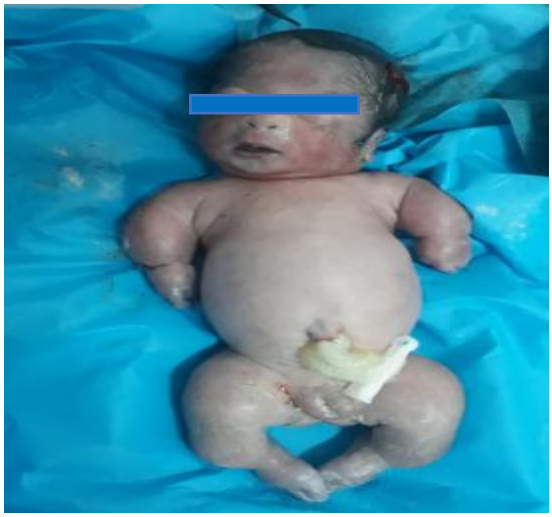

Figure 4: Newborn with thanatophoric dwarfism.

DISCUSSION

Thanatophoric dysplasia represents the most frequent osteodysplasia among skeletal malformations. It is a disease that is rare but incompatible with life, its incidence is estimated in Europe at 1 in 50,000 pregnancies.[8]

There are 2 forms of thanatophoric dysplasia TD1 and TD2 according to radiological abnormalities: TD1 is characterized by a normal skull and a curved femur, while TD2 is characterized by a generally trilobed cloverleaf skull with a straight femur.[3,4] In the present case, there were no encephalic malformations while the femur was not individualizable.

It should be noted that the diagnosis of skeletal dysplasia is usually based on a combination of clinical, radiographic, morphological and, in some cases, biochemical and molecular findings. With the development of prenatal ultrasound diagnostic technology, ultrasound has become the referential para-clinical examination for the prenatal diagnosis of skeletal malformations, with advantages such as simplicity, convenience, accuracy and repeatability.[6]

Antenatal diagnosis of fetal malformations is usually performed in the 2nd trimester of pregnancy with an accuracy of 30% to 50%.[9] However, 85% of lethal skeletal anomalies appear earlier in the 1st trimester.[10]

The types of fetal bone deformities are variable. It is difficult to diagnose all types of osteogenesis imperfecta by prenatal ultrasound examination, so the challenge is to predict the lethality of bone dysplasias.[11] Nevertheless, with careful ultrasound examination, lethal and non-lethal bone dysplasia can be distinguished with an accuracy of up to 92%-96%.[11] Phenotypically, there is marked symmetrical shortening of the limbs with redundant skin folds, shortening of the hands and feet, relative macrocephaly with frontal hump, marked nasal ensellulation, narrow thorax, large protruding abdomen.[12]

Screening is done by ultrasound, and the confirmatory diagnosis is based on molecular biology, which reveals a mutation in the FGFR3 (fibroblast growth factor receptor 3) gene located on the short arm of chromosome 4.[6] This gene codes for a fibroblast growth factor receptor expressed in the growth plate.[13]

The medical termination of the pregnancy, when the prenatal diagnosis of this lethal malformation is made early in the pregnancy, allows the pregnant woman to avoid any psychological and obstetrical trauma.[7]

CONCLUSION

Thanatophoric dwarfism is the most frequent and well-known osteochondrodysplasia. It is clinically characterized by a small size associated with very characteristic skeletal deformities, its early antenatal detection allows a therapeutic interruption of the pregnancy, with the least trauma for the patient.

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