Subsequent trisomy 13 pregnancies of parents with normal karyotype

Uludağ S, Erenel H, Uludağ S, Özel A, Fatih Karslı M, Korkmaz O, Madazlı R
İSTANBUL UNIVERSITY CERRAHPASA MEDİCAL FACULTY, Istanbul, Turkey

Objective

To present a case of three subsequent pregnancies affected by Trisomy 13 with normal parental karyotypes. Trisomy 13, also known as Patau syndrome is the third most common chromosomal disorder after trisomy 21 (Down syndrome) and 18 (Edwards syndrome). This syndrome with three copies of chromosome 13 occurs in one in 12000 births. Although trisomy 13 is classified under category of viable human aneuploidies, life expectancy is very low with a survival rate of 3% at 1 year. The presence of extra chromosome (47,+13), Robertsonian translocation or other rearrangements play a significant role in etiopathogenesis. Although prior history of a trisomy 13 pregnancy increases the risk of the same pathology in the subsequent pregnancies, the risk is negligible in most of the cases. Trisomy 13 was first described by Patau and Smith in 1960 as a multiple congenital anomaly caused by an extra chromosome. Trisomy 13 is a distinct syndrome that associates complex cranial, skeletal and cardiac anomalies. Intrauterine death is inevitable for majority of prenatally diagnosed cases of trisomy 13 and only 13% of the cases have a chance of having a livebirth. Three copies of chromosome 13 in each cell (47,+13) is a known mechanism for trisomy 13 which is related to advanced maternal age. Unbalanced Robertsonian translocation of acrocentric chromosomes is another possible patomechanism in the genetic formation of the syndrome and it accounts for 20% of all trisomy 13 cases. Most common robertsonian translocation causing trisomy 13 involve chromosomes 13 and 14, der(13;14)(q10;q10) (9). Robertsonian translocations are the most common structural chromosomal abnormalities with an incidence of 1.23/1000 live births. Pregnancy outcome in carriers of Robertsonian translocations showed 6-10% unbalanced translocations among female carriers and 3.6% among male carriers. In our case, we could not identify parental translocation and the only explanation is parental gonadal mosaicism. Genetic counseling was made and preimplantation genetic diagnosis was offered.

Methods

This is a case report.

Results

A 39-year-old patient (gravida 3, para 0) was referred to our department at 12 weeks of gestation due to a high risk trisomy 13 cell-free DNA (cfDNA) screening. Ultrasound examination revealed a viable intrauterine pregnancy. A diagnosis of alobar holoprosencephaly was made. Frontal bossing was prominent. After genetic counseling and obtaining informed consent, chorion villus sampling was performed and FISH analysis confirmed the diagnosis of trisomy 13. The patient's obstetrical history revealed previous two previous pregnancies terminated for the same condition. Chromosome analysis and autopsy reports of the previous pregnancies were also reviewed. Further investigations confirmed a normal karyotype of both parents.

Conclusion

Although recurrent cases of trisomy 21 were described in the literature, a case of three subsequent pregnancies affected by trisomy 13 in parents with normal karyotype was not reported previously.