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Case Report

A Rare Occurrence of Ambiguous Genitalia in Meckel-Gruber Syndrome (MGS): A Case Report

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ABSTRACT

Background: Meckel-Gruber Syndrome (MGS) is a rare autosomal recessive congenital syndrome with triad of encephalocele, polydactyly, and polycystic kidneys. The worldwide incidence of the MGS is 1 in 1.3-1 in 140,000 live births. The highest incidence of 1 per 1,300 live births (carrier rate of 1 in 18) was reported in Gujarati Indians. MGS is caused by mutation in the meckelin transmembrane receptor (MKS3) located in the interior of the cells in the ciliary transition zone. Therefore, MGS as a fatal congenital syndrome belongs to a group of diseases known as ciliopathies. Most of the fetuses affected by this syndrome die before birth or soon after birth due to oligohydramnios, respiratory failure, and renal failure. There are few case reports of this syndrome associated with cleft lip and palate, inguinal hernia, congenital heart disease, micrognathia, microcephaly, and other abnormalities.
Case report: We report a case of unusual and interesting occurrence of ambiguous genitalia in the MGS syndrome.
Conclusion: The MGS is a rare fatal syndrome and can be diagnosed prenatally. In the current case, we observed that ambiguous genitalia should be taken into consideration, in addition to the cardinal features. Parents should be counselled about the outcomes of a child, as well as the chance of recurrence (25%) in the subsequent pregnancies.

Keywords: Ambiguous genitalia, Encephalocele, Polycystic kidneys

Introduction

Meckel-Gruber syndrome (MGS) is a rare congenital lethal condition with autosomal recessive inheritance pattern. The syndrome is considered as a triad of occipital encephalocele, large polycystic kidneys, and postaxial polydactyly (1). The first report of MGS was by J R Meckel in 1822. The incidence of MGS varies from 1 case per 1.300-140.000 live births and is caused by failure in mesodermal induction (2).

MGS can be diagnosed prenatally using ultrasonography. Oligohydramnios and polycystic kidneys may be evaluated as soon as 14 weeks of pregnancy. A high risk (almost 25%) of recurrence in the subsequent pregnancies is an important point (3). Few reports have reported association of this syndrome with congenital heart disease, Dandy-Walker malformation, bilateral inguinal hernia, and some other complications (4). In this case report, we report a case of unusual occurrence of ambiguous genitalia in the MGS syndrome. This variety of signs is difficult to find in the medical literature.

Case report

A 24-year old female with non-consanguineous marriage and second gravid came to the Department of Obstetrics for routine antenatal check-up around the 32th week of gestation. Ultrasonography was performed at Gangori Hospital related to the SMS Medical College, Jaipur. The evaluation revealed a fetus with occipital encephelocele, bilateral multicystic dysplastic kidneys, polydactyly, and severe oligohydramnios. Mother delivered at 36 weeks of gestational age by caesarian section and the infant survived only for 40 min. Birth weight of the newborn was 2.8 kg with Apgar score of 1 at both one and five minute after birth.

On external examination, head showed to be large (i.e., head circumference of 45 cm) with

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Figure 1. Occipital encephalocoele

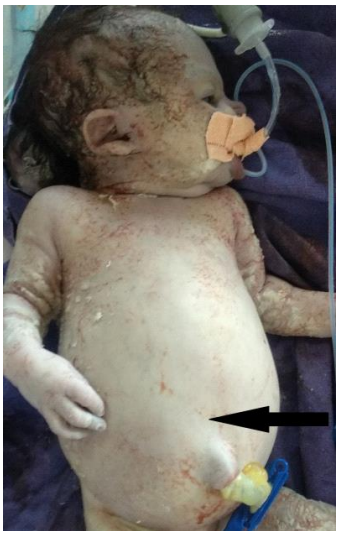

Figure 2. Abdominal distension

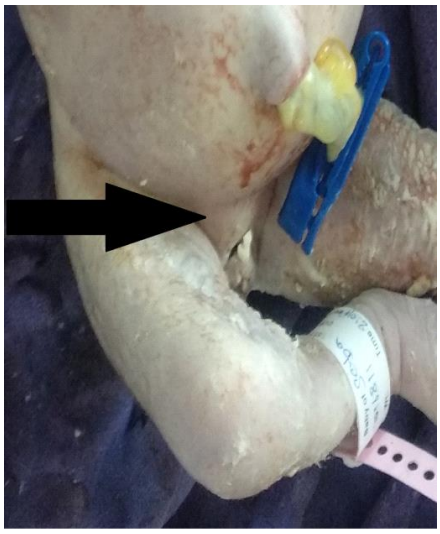

Figure 3. Ambiguous genitals

cystic swelling in the occipital region suggestive of encephelocele (Figure 1). The abdomen was distended due to renal enlargement (Figure 2) and polydactyly was observed in all limbs, as well as ambiguous genitalia (Figure 3).

Discussion

The MGS is a congenital lethal rare disorder inherited as autosomal recessive, also known as "dysencephalia splanchnocystica" (5). This syndrome is characterized by the triad of renal cystic dysplasia with multiple renal cysts (present mostly), encephalocele (approximately 70%), and polydactyly (approximately 65%) (6). In addition to encephalocele, the other central nervous system abnormalities include microcephaly, Dandy–Walker malformation, holoprosencephaly, anencephaly, and hydrocephaly.

Moreover, the syndrome might be associated with cardiovascular malformations, such as ventricular septal defect, aortic hypoplasia, and aortic valve stenosis (4, 7). The musculoskeletal abnormalities observed in the MGS include webbed neck, club foot, syndactyly, and clinodactyly (6). The MGS can be misdiagnosed with trisomy 13, trisomy 18, Joubert syndrome, Bardet–Biedl syndrome, and Smith–Lemli–Opitz syndrome (8).

In the present case, we found ambiguous genitalia along with other cardinal features of the MGS. The syndrome is best diagnosed prenatally by early ultrasonography in the second trimester. The mean gestation age at diagnosis is 19 weeks (9), whereas in our case it was diagnosed late as the patient came at 32 weeks of gestation. Recurrence in the subsequent pregnancies is possible as the result of autosomal recessive inheritance (10). It is considered as a fatal syndrome, due to which the infant dies in utero or shortly after birth.

Conclusion

The MGS is a rare fatal syndrome and can be diagnosed prenatally. In the current case we observed that ambiguous genitalia should also be taken into consideration in addition to the cardinal features. Parents should be counselled about the outcomes of a child, as well as the chance of recurrence (25%) in the subsequent pregnancies.

Acknowledgments

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Conflicts of interest

The authors declare that there is no conflict of interest.

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