

## Case Report

**Myasthenia Gravis with Pregnancy**

Ghreassa D Anan<sup>1</sup>, Jesuraj Lionel<sup>2</sup>, Mohammad H Alkandari<sup>3</sup>  
 Departments of <sup>1</sup>Maternity, <sup>2</sup>Pediatrics, <sup>3</sup>Medicine, Farwania Hospital, Kuwait

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**ABSTRACT**

*Myasthenia Gravis* in pregnancy is a challenging situation for an obstetrician. We report the presentation and outcome of pregnancies in a lady with acquired *myasthenia gravis*.

She had differing outcomes of her two pregnancies confirming the unpredictable nature of *myasthenia gravis* in pregnancy.

**KEY WORDS:** *myasthenia gravis*, neonatal *myasthenia gravis*, pregnancy

**INTRODUCTION**

*Myasthenia Gravis* (MG) is a chronic disorder of neuromuscular transmission characterized by muscle weakness and fatigability, following repetitive activity. The hallmark of this disease is the unpredictable remissions and exacerbations during its natural course. This disorder is caused by autoantibodies to acetyl choline receptors in skeletal muscles<sup>[1]</sup>.

The prevalence of the disease is one in 10,000 to one in 50,000, with 65-70% of the affected individuals being women<sup>[2]</sup>, and is frequently seen during the reproductive period of life.

These IgG autoantibodies may cross the placenta and cause transient neonatal *Myasthenia Gravis* (TNMG).

We share our experience with pregnancies in a 37-year old lady who had acquired MG.

**CASE REPORT**

A 37-year-old woman was admitted for threatened abortion in the first trimester of her fifth pregnancy. She was diagnosed to have acquired MG at the age of five years. Her symptoms were controlled by regular oral pyridostigmine. She had undergone a thymectomy at seventeen years of age. She had a past history of three abortions at 8, 16 and 20 weeks of gestation respectively.

Her 4<sup>th</sup> pregnancy was complicated by acute polyhydramnios, premature rupture membranes, decreased fetal movements and fetal distress. A single live appropriate for date preterm male baby was delivered by Caesarean section at 32 weeks of gestation.

The baby was delivered flaccid with no spontaneous respirations. The Apgar score was 3, 6 and 8 at 1, 5, 10 minutes respectively. Immediate endotracheal intubation was done as part of the resuscitation procedure and the baby was admitted

to the neonatal intensive care unit for assisted ventilation. The baby had TNMG and needed assisted ventilation for about forty days. He was given pyridostigmine and discharged at about four months of age. He is being followed in the follow-up clinic and his development is within normal limits.

During the current pregnancy, the patient was registered in the Antenatal Clinic at 18 weeks of gestation. The uterine size, the placental location and other parameters were appropriate for the gestational age. She was admitted at 31 weeks of gestation because of acute polyhydramnios, confirmed by an ultrasound. She had gestational diabetes that was controlled by diet.

Two weeks after admission, she developed premature labor pains. Two doses of dexamethasone injection were given. She was readmitted to the labor ward as she was in active labor. A pelvic examination revealed the transverse lie of the fetus, polyhydramnios and a cervical dilatation of four centimeters. An emergency lower segment Caesarean section was done under spinal anesthesia.

The second baby was a single, live, preterm, appropriate for date male child born by lower segment Caesarean section (Indications: transverse lie, severe polyhydramnios complicating maternal *myasthenia gravis*) at 33 + 4 weeks of gestation. The baby was floppy and needed immediate endotracheal intubation and assisted ventilation. The Apgar score was 4, 7 and 8 at 1, 5 and 10 minutes respectively.

The baby had generalized hypotonia but was moving the limbs. The cry was weak and there was facial diparesis with paucity of facial movement. The respiratory effort was very poor and the baby needed continued mechanical ventilation. As the previous pregnancy resulted in a severely affected

Address correspondence to:

Dr. Ghreassa D. Anan, P.O. BOX 18373 Farwania 81004, Maternity Department, Farwania hospital, Kuwait. Tel: +965- 4893374 Mobile: +965-646668

baby with transient *Myasthenia Gravis*, an immediate exchange transfusion was done for this baby. The baby's respiratory condition deteriorated and the baby needed very high ventilatory parameters. The X-ray chest showed a bell shaped thorax and lung hypoplasia. The acetylcholine receptor antibodies in the mother and the child were 122.7 nmol/L and 103.2 nmol/L respectively.

Intravenous Neostigmine was started. In spite of ventilation with high parameters and other supportive intensive care, the baby died at the age of 20 hours.

The final diagnosis was severe lung hypoplasia causing intractable respiratory failure in a preterm baby with severe TNMG, born at 33 + 4 weeks of gestation to a mother who has MG. The mother had atonic post-partum hemorrhage which was controlled by injections of syntocinon and methergin. The mother was transferred to the postnatal ward. On her 2<sup>nd</sup> post operative day she got an exacerbation of her condition, precipitated by the news of the death of her baby. The attack was manifested by shortness of breath and generalized fatigue. She was examined by a physician and a neurologist and the dose of pyridostigmine was increased appropriately. The patient was discharged at her request on the fifth postoperative day.

## DISCUSSION

MG is common among women, especially in the reproductive age<sup>[2]</sup>. Thus, it becomes mandatory for an obstetrician to manage pregnant women with MG efficiently in a multidisciplinary team effort along with the physician, neurologist, anesthetist, perinatologist and the neonatologist.

The course of the disease is unpredictable during pregnancy. It may remain stable, undergo partial or complete remission, may progressively worsen, and the effect may vary in different pregnancies<sup>[3]</sup>. Battocchi *et al*<sup>[4]</sup> studied forty-seven pregnant women with MG. Sixty-four pregnancies resulted in 54 children and ten abortions. MG relapsed in four of 23 (17%), improved in 12 out of 31 (39%), remained unchanged in one in 13 (42%) and deteriorated in six (19%) patients. Some women even needed immunosuppressive drugs apart from the anticholinesterase medications to control their relentless symptoms<sup>[4]</sup>.

Our patient had thymectomy at the age of seventeen and she remained stable all through her pregnancies under control of pyridostigmine, and did not have any exacerbation of her symptoms.

With this patient the only problem, which affected the course of her pregnancies was the development of polyhydramnios, which caused

immense discomfort, and most probably was the precipitating factor for the preterm labor<sup>[5]</sup>. However, data concerning prematurity is scanty and there are no large series from which to draw safe conclusions about the true incidence in pregnancies complicated by MG<sup>[5]</sup>.

The uterine smooth muscle is not affected by MG. The duration of labor does not differ significantly in pregnant women with MG<sup>[7]</sup>. Most women with myasthenia tolerate labor without difficulty<sup>[6]</sup>. Obstetric interventions like vacuum extraction or Cesarean section are usually performed for obstetric reasons. However, some authors recommend forceps delivery for second stage of labor in order to reduce maternal fatigue<sup>[7]</sup>. Our patient underwent Cesarean section in two pregnancies under spinal anesthesia for premature labor pain complicated by transverse lie. Regional anesthesia is preferred because of possible precipitating respiratory complication and narcotic analgesia is best avoided<sup>[8]</sup>. Myasthenia patients are very sensitive to non-depolarizing muscle relaxants. Hence, general anesthesia is usually avoided. The post partum period may be hazardous as reports have shown that as many as 30% of pregnant women with myasthenia have exacerbation of their symptoms within three weeks of delivery; therefore, it is advisable to observe the patient under medical care for at least ten days<sup>[8]</sup>. Our patient insisted on discharge after five days because she was disturbed about the baby's demise and preferred to recuperate at home promising that she would come for readmission, if she developed symptoms.

There are two types of neonatal *Myasthenia Gravis*, permanent and transient. The permanent type is genetic in origin and occurs in infants born to mother without MG<sup>[9]</sup>. The TNMG is a postsynaptic neuromuscular transmission defect that occurs in 10-15 % of infants born to mothers with MG either with active disease or in remission<sup>[10]</sup>.

There is no direct correlation between the severity or duration of maternal disease and severity of symptoms in the newborn. In fact severe neonatal disease may occur despite maternal remission<sup>[11]</sup>.

Although passive transfer acetylcholine receptor (ACHR) antibodies are found in the majority of the newborns, their pathogenic role is questionable because only some infants are symptomatic<sup>[9,11]</sup>. Direct correlation was found between the development of maternal polyhydramnios and the increased severity of symptoms in the newborn<sup>[12]</sup>. The polyhydramnios may be part of the fetal akinesia sequence along

with decreased fetal movements including sucking and swallowing and decreased breathing movements<sup>[5]</sup>.

The first baby had classical signs of a severely affected baby with TNMG<sup>[13]</sup>. The baby needed assisted ventilation for about forty days and oral pyridostigmine for about six months. Such a persistent course and long evolution has been reported earlier<sup>[9,14]</sup>.

When the second pregnancy was diagnosed, the risk of this baby getting TNMG was anticipated to be about 75%<sup>[11]</sup>. When the severe polyhydramnios was discovered, all precautions were taken. This baby was also floppy but had some movements of the limbs and there was more axial hypotonia.

O-negative blood was prepared before the delivery after cross-matching with the mother's blood.

After the initial resuscitation and stabilization, a double volume exchange transfusion was done. There are reports stating that exchange transfusion is of no value<sup>[13]</sup> and yet there are reports that it is of immense value<sup>[15]</sup>. This baby had a bell shaped thorax and severe hypoplasia of the lungs and died of persistent, protracted, and very severe respiratory failure due to lung hypoplasia. It has been shown that the acetylcholine receptor antibodies could cross the placenta and inhibit the fetal diaphragm causing diaphragmatic weakness<sup>[5]</sup>. Diaphragmatic motion is required to stimulate normal fetal lung development and if there is inadequate diaphragmatic mobility, this can cause lung hypoplasia.

The pathogenic role of the acetylcholine receptor antibodies is not known<sup>[9]</sup>. There are babies who are asymptomatic even if there are high titers and vice versa.

Hence, there are no predictive risk factors known in the myasthenic mother to allow for prenatal or postnatal diagnosis or to predict the severity of neonatal disease<sup>[9,10,11,13]</sup>. The course of MG in pregnant women is highly unpredictable. Our patient delivered her first baby who had severe TNMG but showed normal development after a stormy neonatal period. The second baby had a lung hypoplasia which proved fatal.

## CONCLUSION

Further research and studies are needed to delineate the prediction of the severity of the disease in infants of mothers with *Myasthenia Gravis*.

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