CASE REPORT

Transient neonatal myasthenia gravis: a case report

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ABSTRACT

Transient neonatal myasthenia gravis (TNMG) is an acquired autoimmune disease that occurs in 10 % to 20 % of neonates born to mothers with myasthenia gravis. Symptoms appear within the first 24-72 hours and resolve after weeks or months, with 90 % of patients achieving complete recovery by two months of age. The typical presentation begins with respiratory distress, generalized hypotonia, and feeding difficulties, requiring clinical surveillance from birth due to the possibility of early hospitalization.

We present the case of a neonate born to a mother with myasthenia gravis, who was admitted at seven days of age to the Intermediate Care Unit of Hospital Nacional Arzobispo Loayza due to hypoactivity, poor sucking, and hypotonia. Given the suspicion of TNMG due to the maternal history and the patient's symptoms, an anticholinesterase test was performed, showing immediate improvement in spontaneous activity and muscle tone, thereby confirming the diagnosis. The patient received treatment with subcutaneous neostigmine for six days, after which the regimen was changed to oral pyridostigmine to reduce the adverse effects caused by the previous drug. Finally, the patient was discharged at 26 days of age with a favorable outcome and complete remission. TNMG is rare in newborns; the diagnosis is clinical, with the maternal history being of utmost importance. Likewise, it requires strict monitoring from birth to recognize signs and symptoms of the disease, enabling timely initiation of anticholinesterase therapy in moderate to severe cases, thus preventing long-term sequelae.

Keywords: Myasthenia Gravis, Neonatal; Neostigmine; Muscle Hypotonia (Source: MeSH NLM).

INTRODUCTION

Transient neonatal myasthenia gravis (TNMG) is a rare acquired autoimmune disease that occurs in 10 %-20 % of neonates born to mothers with myasthenia gravis [1]. It results from the transfer of maternal antibodies that impair synaptic transmission at the motor endplate [2]. Early recognition of this clinical condition enables the timely initiation of treatment in cases with moderate to severe symptoms [1,3].

We describe the case of a neonate with TNMG who developed symptoms after 72 hours of life. Maternal history and clinical course guided the initiation of anticholinesterase therapy, resulting in a favorable response and complete remission of the disease.

CLINICAL CASE

A male neonate born to a 37-year-old mother with myasthenia gravis, who had been hospitalized in the third trimester of pregnancy and received regular anticholinergic therapy. He was born by cesarean section at 39 weeks, weighing 3,055 g and with an Apgar score of 9 at 1 minute and 9 at 5 minutes. The initial examination showed spontaneous activity, adequate sucking, and hypotonia without respiratory distress. He remained in rooming-in under supervision, with no neurological or respiratory deterioration observed. On the third day, he presented with a blood glucose level of 47 mg/dL, associated with a 10.4 % weight loss, and was discharged on the third day with mixed feeding. At seven days of age, he was taken to the emergency department due to hypoactivity, poor sucking, hypoglycemia, and poor weight gain, and was admitted to the intermediate care unit with suspected neonatal myasthenia gravis. On admission, he presented with weak crying, lethargy, generalized hypotonia, and poor sucking (Figure 1), without signs of respiratory distress. Because of hypotonia and feeding difficulties due to poor sucking, breast milk was administered via an orogastric tube. During hospitalization, an acetylcholine receptor (AChR) antibody test was performed, which yielded an indeterminate result of 0.44 nmol/L (positive 0.5 nmol/L). A therapeutic trial with subcutaneous neostigmine (0.04 mg/kg per dose) was performed, considered positive given the immediate improvement in spontaneous activity and muscle tone. Subcutaneous neostigmine therapy was

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initiated, and after three days the patient was able to feed directly on breast milk with progressive improvement in sucking. After six days, therapy was switched to oral pyridostigmine to reduce the adverse effects of neostigmine. The patient was discharged at 26 days of age with favorable progress. Treatment was discontinued 14 days after hospital discharge, with remission of symptoms and no subsequent clinical deterioration.

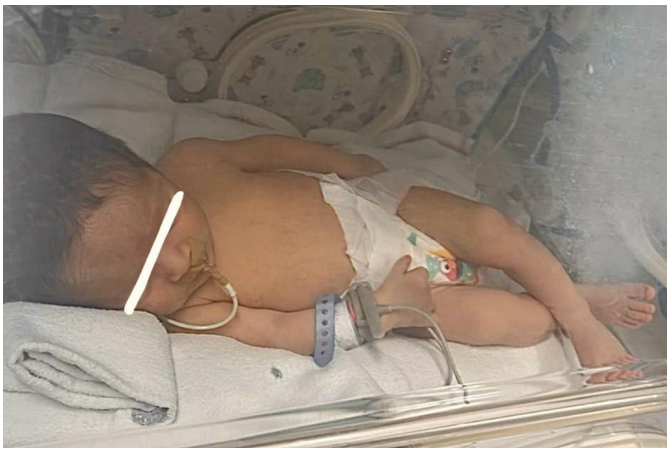

Figure 1. Full-term neonate with generalized hypotonia and orogastric tube placement due to poor sucking

DISCUSSION

Myasthenia gravis is an autoimmune disorder in which antibodies are produced against postsynaptic acetylcholine receptors at the skeletal muscle neuromuscular junction, leading to progressive muscle weakness [1,2]. In neonates, the types of involvement include congenital myasthenia gravis (a genetic defect) and TNMG, which occurs in neonates of mothers with this condition [2].

TNMG is a self-limiting disorder resulting from the passive transplacental transfer of AChR antibodies or muscle-specific kinase (MuSK) [3], which impairs fetal synaptic transmission at the motor endplate [1,4]. Its incidence is low, occurring in 10 %–20 % of neonates born to mothers with myasthenia gravis [4,5]. The disease is caused by accelerated degradation of receptors, blockade of acetylcholine binding to its receptor, and breakdown of the postsynaptic membrane [2]. Between 75 % and 80 % of pregnant women with myasthenia gravis have AChR antibodies; however, no correlation has been demonstrated between maternal antibody titers and the occurrence of TNMG [5,6]. This indicates that there is no predictor of the onset of clinical presentation in neonates [6].

The mode of delivery should be discussed, as spontaneous vaginal delivery is not contraindicated but requires close monitoring due to the possible need for instrumentation and intravenous anticholinesterase agents [7,8]. In the case described, delivery was performed by cesarean section because of the high risk of myasthenic crisis in the mother.

Most patients develop symptoms within the first 24–72 hours, which resolve in 90 % of cases by two months of age and in the remaining 10 % by four months of age [5,9]. There are two clinical forms: the typical presentation, with an incidence of 71 % and which begins with respiratory distress, generalized hypotonia, and feeding difficulties, and the atypical presentation, with an incidence of 29 %, associated with arthrogryposis and pulmonary hypoplasia [10,11]. Therefore, all neonates of mothers with myasthenia gravis require careful monitoring. There is no consensus in the literature on the optimal observation time, which ranges from two to seven postnatal days [2,5,6,8]. The patient developed typical symptoms after 72 hours, a delay that may be attributed to the mother's regular anticholinesterase therapy during late pregnancy, as has been reported in the literature [9].

The diagnosis of TNMG is mainly clinical [10]. Maternal history and an abnormal physical examination are usually sufficient to establish it [3,10,11]. However, in some cases the presentation is atypical and the mother is asymptomatic, requiring confirmation of the diagnosis with additional tests such as AChR antibody testing, a therapeutic trial with neostigmine, or demonstration of decreased nerve conduction on electromyography [11,12]. During hospitalization, in view of persistent symptoms and the suspicion of TNMG, AChR antibody testing was carried out, and the result was indeterminate. Nevertheless, a therapeutic trial with subcutaneous neostigmine (0.04 mg/kg) was performed, resulting in a favorable response with improved spontaneous activity and muscle tone. Thus, the neonatal diagnosis was confirmed.

Treatment in neonates is conservative with feeding tubes or oxygen therapy, although neostigmine or pyridostigmine may be required in certain cases [14,15]. Neostigmine is a reversible cholinesterase inhibitor that prevents the breakdown of acetylcholine, thereby increasing its concentration in the receptor [13]. The dose is 0.05–0.1 mg/kg administered intramuscularly or subcutaneously, with gradual decrease as the patient improves [14]. Treatment should be monitored for adverse effects such as bradycardia, cardiac arrhythmia, and excessive tracheobronchial secretions [8,15]. In this case, the patient developed episodes of bradycardia and increased oropharyngeal secretions after feeding. Consequently, pyridostigmine 1 mg/kg per dose was started, with a favorable therapeutic response. Treatment duration is usually short, given the rapid clearance of circulating antibodies [13,15]. Initiation of other therapies indicated for myasthenia gravis in older children or adults is not required [12,14]. The prognosis is favorable, with complete remission occurring within two weeks to four months [15]. In this patient, oral anticholinesterase therapy was discontinued at 40 days of life, with no subsequent signs of clinical deterioration.

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