CASE REPORT

Congenital Myasthenia Gravis

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ABSTRACT

Congenital myasthenia gravis is caused by genetic mutations affecting neuromuscular transmission, characterized by muscle weakness usually starting in childhood. A two and a half years old male child presented with bilateral ptosis and hoarseness of voice. The symptoms progressed giving the clinical impression of congenital myasthenia gravis. A series of tests were done including Ice Pack Test, acetylcholine receptor antibody test, trial of steroids and finally neostigmine test which confirmed the diagnosis. This case illustrates the challenges in diagnosing congenital myasthenia gravis and highlights the potential benefits of neostigmine test in its diagnosis.

Key words: *Congenital myasthenia gravis. Ptosis. Neostigmine test.*

INTRODUCTION

Myasthenia gravis is an acquired autoimmune disorder characterized by variable muscle weakness which improves after rest. Congenital myasthenia gravis is caused by genetic mutations affecting neuromuscular transmission, characterized by muscle weakness usually starting in childhood.[1] The exact incidence and prevalence of congenital myasthenia gravis cannot be found in literature but Millichap *et al*.[2] estimated the prevalence to be one in 500,000 in Europe, which is very rare compared to autoimmune myasthenia.

We report the first case of congenital myasthenia gravis from Pakistan and highlight the potential significance of neostigmine test in diagnosing it.

CASE REPORT

A two and a half years old male child presented with chief complaints of bilateral drooping of lids and hoarseness of voice since one and a half years. The symptoms tended to worsen as the day progressed and there was improvement after rest and sleep. Patient was a full term baby delivered by caesarean section and experienced respiratory distress at birth, thus kept in incubator for few days. His milestones were delayed as shown in Table I. Patient was the only child to consanguineous parents with no family history of myasthenia gravis.

General physical examination revealed a child with a snarling expression and hypotonic muscles. On ocular examination, patient had bilateral ptosis, greater in the left eye. Palpebral fissure height was 6 mm in the right eye and 5 mm in the left eye. Marginal reflex distance was 3 mm in right eye and 2 mm in left eye. Levator function was 5 mm bilaterally. Cogan's twitch was positive, there was limited abduction in both eyes and pupils were normal.

Table I: Milestones of patient compared to the normal.

Activity	Normal	Patient
Sat up	5 – 6 months	8 months
Walked	10 – 12 months	One and a half years
Running	2 years	2 years
Talked	1 year	2 years
First tooth	6 months	7 months

A preliminary ice pack test was positive. To evaluate further, an acetylcholine receptor antibody test was ordered. The report of this test was available after a month. Meanwhile, a trial of steroids was done by giving the patient injection Decadran 1 cc intravenously twice a day for 3 days. The trial of steroids was doubtful and unconvincing as there was no improvement in symptoms. The patient tested negative for acetylcholine receptor antibodies.

Based on these findings, a provisional diagnosis of congenital myasthenia gravis was made. The patient was subjected to neostigmine test which was unequivocally positive (Figure 1) thus, confirming the diagnosis. The patient was started on tablet Pyridostigmine 30 mg half hour before meals thrice daily. At follow-up, one month later (Figure 2), ocular motility was full, there was no ptosis, snarling expression or muscle weakness. The child is on regular follow-up to date and reports improvement.

DISCUSSION

Childhood myasthenia gravis can be categorized into: (a) neonatal myasthenia in an infant of myasthenic mother; (b) congenital myasthenia in an infant of non-myasthenic mother; and (c) juvenile myasthenia similar

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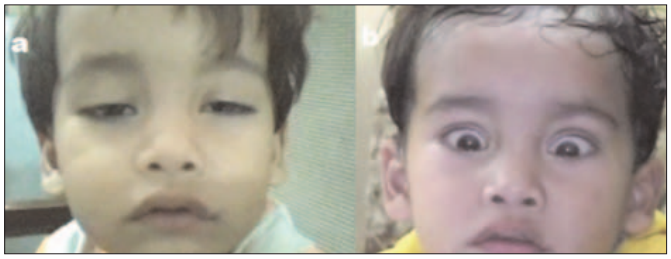

Figure 1: (a) Colour photographs of the patient before neostigmine test. **(b)** Ten minutes after neostigmine test.

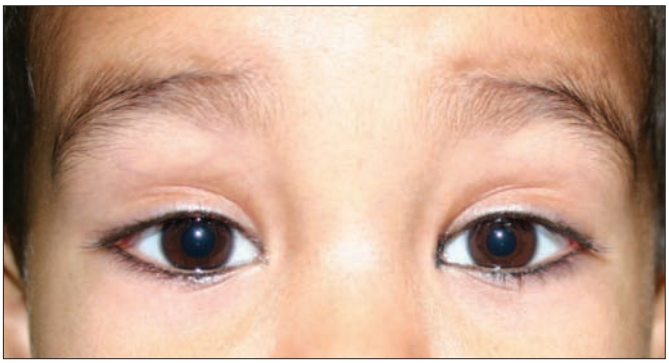

Figure 2: Colour photograph of the patient following one month treatment with oral pyridostigmine.

to adult autoimmune myasthenia.[3] In this regard, this case can be classified as congenital myasthenia gravis because the mother was not myasthenic, acetylcholine receptor antibodies were negative and there was no response to steroids.

The diagnosis is based on history, clinical examination, negative acetylcholine receptor antibodies and positive Tensilon or Neostigmine test along with no response to immunosuppressive treatment.[4] Vincent *et al*. stated that the absence of acetylcholine receptor antibodies is a pre-requisite for diagnosing congenital myasthenia gravis.[5] This is the difficult part of the diagnosis because most doctors actually exclude myasthenia once they get a negative antibodies test especially in case of a child. With negative antibodies and no response to steroids, we too started to consider other options but decided to do a neostigmine test as a final resort, which confirmed the diagnosis.

Morita *et al*. found neostigmine test to have a comparable positivity to Tensilon test.[6] A Chinese study concluded that neostigmine test has the highest sensitivity in diagnosing myasthenia gravis.[7] We found the neostigmine test to be more useful in the child because of its longer duration of action, giving more time to observe the positive findings which would have been difficult with Tensilon test. Apart from this, neostigmine is economical and easily available as compared to Tensilon. Anticholinesterase medications viz. pyridostigmine and neostigmine, are the mainstay of treatment in congenital myasthenia gravis.[8]

Although cases of acquired myasthenia gravis have been reported in Pakistan;[9] but to the best of our knowledge, we report the first ever case of congenital myasthenia gravis in Pakistan.

Congenital myasthenia gravis is a great diagnostic challenge for doctors in general and ophthalmologists in particular because they are less familiar with it. Correct diagnosis requires special tests like neostigmine test which are not done routinely. We would like to recommend that neostigmine test should be performed in all patients with suspected congenital myasthenia gravis.

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