LIVING WITH MYASTHENIA GRAVIS FOR 18 YEARS IN A RESOURCE LIMITED COUNTRY: CASE REPORT

Oluwayemi IO\textsuperscript{1}, Oduwole AO\textsuperscript{1}, Oyenusi E\textsuperscript{1}, Fakeye-Udeogu OB\textsuperscript{1}, Onyiriuka AN\textsuperscript{1}, Abdullahi M\textsuperscript{1}, Achonwa CJ\textsuperscript{1}, Kouyate M\textsuperscript{1}

1. Paediatric Endocrinology Training Centre for West Africa, Lagos University Teaching Hospital, Iddaraba, Lagos, Nigeria

Correspondence
Dr. Isaac Oludare Oluwayemi. Paediatric Endocrinology Training Centre for West Africa, Lagos University Teaching Hospital, Iddaraba, Lagos, Nigeria
Email: dareoluwayemi@yahoo.co.uk


ABSTRACT

Myasthenia gravis (MG) is an autoimmune neuromuscular disorder resulting in fluctuating muscle weakness and fatigability. We report a case of myasthenia gravis diagnosed at the age of 5 years in a 20 year old young adult. He presented with 3 years history of drooping of both upper eye lids which worsens as the day progresses and has been successfully managed for fifteen years despite challenges of getting needed medication on regular basis. Tensilon test was positive; Computerized tomography (CT) of the chest showed a normal study; Patient is doing very well as an undergraduate in one of the leading Nigerian University. He is clinically stable on daily Pyridostigmine and low dose Prednisolone. Myasthenia gravis in children can be readily diagnosed and managed effectively despite limited resources, if parents and doctors are willing and committed enough.

Key words: Myasthenia gravis, resource-poor setting

INTRODUCTION

Myasthenia gravis (MG) is an autoimmune neuromuscular disorder resulting in fluctuating muscle weakness and fatigability\textsuperscript{1}. The weakness is caused by circulating antibodies that block acetylcholine receptors at the postsynaptic neuromuscular junction inhibiting the excitatory effects of the neurotransmitter acetylcholine on nicotinic receptors in neuromuscular junctions\textsuperscript{2}. The incidence of myasthenia gravis is 3-30 cases per million per year\textsuperscript{3}. Myasthenia gravis occurs in both genders and affects all races. All age groups can be affected but most commonly people from 50 to 70 years. In females incidence of MG peaks in the third decade of life, whereas it peaks in the 6\textsuperscript{th} and 7\textsuperscript{th} decades in males\textsuperscript{4}.
CASE REPORT

JH was 5 years old when he first presented with a 3 years history of drooping of both upper eye lids. Eyes were usually widely opened on waking up from sleep but weakness and difficulty in keeping the eyes opened set in and worsened as the day progresses. There was no family history of myasthenia gravis. However, child also had asthma. Examination revealed a boy who was well nourished, not pale, afebrile, anicteric. Significant findings were on ocular examination. He had bilateral ptosis, other systems were essentially normal.

A diagnosis of myasthenia gravis was made. Investigations: Tensilon test was supportive of the diagnosis of myasthenia gravis; PCV 35%, total WBC 6,800; Hemoglobin electrophoresis AS, Erythrocyte sedimentation rate 10mm/hr; Electrolyte and urea within normal limit; Computerized tomography of the chest revealed a normal study.

Child was initially commenced on oral Neostigmine 7.5mg 8 hourly and later increased to 15mg 12 hourly. He was very stable on this dosage for 4 years when parents could no longer get Neostigmine to buy and because of this Pyridostigmine was given at a dose of 7mg/ kg/ day (30mg 4hourly). This was later increased to 60mg 8hourly and he was stable on this for 5 years when parents again could not find Pyridostigmine to buy! Patient had to be returned to Neostigmine which has then become available. However, while on Neostigmine he was noticed to be getting weaker despite adequate dose of Neostigmine; prednisolone was added with no remarkable improvement and child had to be returned to Pyridostigmine with prednisolone and he subsequently became stable clinically. Patient had sustained clinical improvement and Pyridostigmine was maintained at 10mg once daily and prednisolone at 10 mg 8 hourly. Since the time of diagnosis 15 years earlier he has been growing steadily and performing well in school. He is a third year undergraduate in a Nigerian University at the time of this report. He never had severe myasthenia crisis necessitating intensive care during these 15 years of follow up.

DISCUSSION

Myasthenia gravis is idiopathic in most patients. In children, three types of myasthenic syndrome can be distinguished: 1. Neonatal: Pregnant mothers with myasthenia gravis in 12% of cases pass the antibodies to the infant through the placenta, causing neonatal myasthenia gravis. The symptoms will start in the first two days and disappear within a few weeks. 2. Congenital: this occurs very rarely in children of healthy mothers with symptoms beginning at birth. It is not caused by an autoimmune process but due to synaptic malformation, which in turn is caused by genetic mutations and the inheritance pattern is typically autosomal recessive. 3. Juvenile myasthenia gravis: it occurs in children but after the peripartum period. The hallmark of myasthenia gravis is fatigability. In most cases, the first noticeable symptom is weakness of the eye muscles; in a few others difficulty in swallowing and slurred speech may be the first presentation. The muscles become progressively weaker during periods of activity and improved after periods of rest. The muscles controlling movement of the eyeballs and eye lids, facial expressions, chewing, talking, and swallowing are particularly susceptible. Often,
Myasthenia gravis in resource-poor setting

physical examination yields normal finding. The degree of muscle involvement varies raging from localized form limited to the eye muscles (ocular myasthenia) to a generalized, severe form affecting many muscles, sometimes including respiratory muscles. Symptoms varies including: asymmetrical ptosis, diplopia (due to weakness of muscle that control movement of the eyeballs), unstable/ waddling gait, weakness in arms, hands, fingers, legs, and neck, a change in facial expression, dysphagia, shortness of breath and dysarthria. Up to 75% of myasthenia gravis patients have an abnormality of the thymus and 10% have a thymoma. In myasthenic crisis there is paralysis of the respiratory muscles necessitating assisted ventilation to sustain life. Crisis is often triggered by infection, fever, adverse drug reaction or emotional stress in patients whose respiratory muscles are already weak. Cardiac muscle is generally not affected by MG since it is regulated by autonomic nervous system. Myasthenia gravis is an autoimmune channelopathy featuring antibodies directed against the body’s own proteins. It has been proposed that sensitization to a foreign antigen which has cross reactivity with acetylcholine receptor could be a cause of MG but there is yet no known infective agent that could account for this. Various drugs may also induce or exacerbate symptoms of MG which often resolve after discontinuance of the drugs. Other findings associated with MG includes: female, and people with certain human leucocyte antigen types (HLA-BB, HLA-DRw3, and HLA-DQw2). MG is also associated with various autoimmune diseases like Hashimoto’s thyroiditis, Grave’s disease, rheumatoid arthritis, diabetic mellitus type I, Lupus and demyelinating CNS diseases. Our patient did not have any autoimmune disease.

Diagnosis of myasthenia gravis can be difficult as the symptoms can be subtle. A thorough physical examination can reveal easy fatigability, with the weakness improving after rest and worsening again on repeat exercise. In suspected cases serology can be performed to detect antibodies against the acetylcholine receptor. This test has a sensitivity of 80-95% in generalized severe cases but may be negative in up to 50% of ocular myasthenia gravis. Patients who are negative for anti-acetylcholine receptor antibodies may be seropositive for antibodies against MuSK protein. Electromyography considered to be the most sensitive test is not very specific for MG. Endrophonium test is limited to situation where other investigations do not yield a conclusive diagnosis. In this test intravenous endrophonium chloride or Neostigmine is administered; these drugs block the breakdown of acetylcholine by cholinesterase and temporarily increase the levels of acetylcholine at the neuromuscular junction thereby relieving weakness temporarily in ocular myasthenia gravis. At the time of diagnosis of our patient endrophonium test was used for diagnosis because other earlier mentioned tests were not available. A chest X-ray may identify widening of mediastinum suggestive of thymoma, but CT or MRI are more sensitive ways to identify thymomas which are closely associated with MG. MRI of the cranium and orbits is also performed to exclude compressive lesions of the cranial nerves and ocular muscles. Treatment involves use of cholinesterase inhibitors such as Neostigmine or Pyridostigmine. Corticosteroids are typically used in moderate or severe cases of MG that fail to respond adequately to acetylcholine inhibitors and thymectomy. Our patient was managed with cholinesterase inhibitors and low dose corticosteroids only. There were no identified complication of prolonged steroid use: blood glucose, blood pressure and growth were within normal range. Thymectomy is the standard treatment for all
patients with thymoma and for patients aged 10-55 years without thymoma but generalized MG. Immunoglobulin is useful during myasthenia crisis in patients with severe weakness poorly controlled with other agents. The effect is rapid but transient and the same is true for plasmapharesis.

**CONCLUSION**

In conclusion, we report this case of MG diagnosed at the age of 5 years and followed up for 15 years with good response to Pyridostigmine and prednisolone in a resource poor setting to exemplify the challenges physicians encounter in the management of similar cases and ways of getting round it for the benefit of the patients while working towards the ideal.

**COMPETING INTERESTS**

The authors declare that they have no competing interests.

**REFERENCES**