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Juvenile Myasthenia Gravis

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MYASTHENIA GRAVIS, a still uncommon, though not a rare disorder, occurs in about 2 – 4 cases per 100,000 (Hokkanen, 1969). It affects females more than males in the ratio 3:2. The predominant age of onset in the females is the third decade, and in the males is the fifth and sixth decade (Osserman and Genkins, 1971). In children, myasthenia presents in neontatal and juvenile forms. Neonatal myasthenia gravis, manifests within three days of life, and accounts for 12.3% of babies born of myasthenic mothers (Namba, T., 1970). This transient illness disappears within six weeks, and is probably due to a neuromuscular blocking substance transmitted via the placenta. Sarah Bundey (1972) distinguishes an early-onset juvenile myasthenia gravis, which begins before the age of two years, likely to be inherited as an autosomal recessive character, and a late-onset juvenile form, which begins between two and twenty years. This resembles adult myasthenia. The onset of the disorder in infancy, is 1 – 2% of all cases, under ten years is about 4.3% of all cases, and those under twenty years is about 24% of all cases. The case reported here, is therefore one of early-onset juvenile myasthenia gravis, (Millichap and Dodge, 1960).

Case Report

A 28 month-old Pakistani girl, whose parents are first cousins, was admitted to East Ham Memorial Hospital, in August, 1974, for investigation, as it was noticed that she had bilateral ptosis, and was unable to walk properly, for eight and twelve months respectively. The onset was very gradual.

Her birth was normal. Neonatal and infantile development were normal until eight months of age, when it was noticed that she made no attempt to roll over, crawl, or reach out for objects. At eleven months, she was dysaethric. The words 'dada' and 'mama' which she had said at eight months, were never repeated, and she failed to learn new words. At one year, she appeared unduly tired, especially in the evenings. She walked occasionally, but only if led. The illness worsened in a slow and progressive way.

There was a past history of bronchitis at six months, and at 26 months with uneventful recovery on both occasions. No history suggestive of myasthenia gravis was found in the family and relatives.

On examination, she was very irritable, anaemic and listless. Weight on admission was 10 kgs. As there was bilateral ptosis, she often tilted her head backwards to look at anything. She preferred to sit around in the cot, and wished that someone would carry her. Bilateral facial weakness was present. In the central nervous system, there was diminution of power and tone in the limbs. No wasting. Reflexes, fundi and sensory systems were normal. There was delay in motor development. The cardio-vascular, respiratory and abdominal systems were normal.

The following investigations were normal: full blood and differential counts; nose and throat swabs; urine for culture, sensitivity and chromatography; serum calcium, phosphorus, magnesium; protein bound iodine; T3 resin uptake; chest and skull x-rays; tests for auto-antibodies against thyroid, gastric parietal cells, anti-nuclear factor; smooth-

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muscle immunofluorescence, mitochondrial antibodies immunofluorescence, striated and cardiac muscle, and muscle biopsy. Electromyogram (EMG) showed a full pattern of normal units. No evidence of myopathy. (This investigation was done at the London Hospital).

Edrophonium (Tensilon) test – positive response. Haemoglobin 8.8 Gms%; erythrocyte sedimentation rate 20 mms/hour. Muscle enzymes: Serum aldolase 15.8 micromoles (mmol) per minute (min) per litre (L) at 37°C, serum creatinephosphokinase (CPK) 424 mmols/min/L at 37°C, serum lactic dehydrogenase (LDH) 1120 mmols/min/L at 37°C, serum glutamic oxalacetic transaminase (SGOT) 144 mmols/min/L at 37°C, serum hydroxybutyrate dehydrogenase (HBDH) 400 mmols/min/L at 37°C. Six weeks later the muscle enzymes were repeated: serum aldolase 17.5 mmols/min/L at 37°C, CPK 1280 mmols/min/L at 37°C, LDH 600 mmols/min/L at 37°C, SGOT 78 mmols/min/L at 37°C, HBDH 210 mmols/min/L at 37°C.

Muscle enzymes were normal in the parents, but slightly abnormal in both siblings. Brother — six years old: serum aldolase 3.4 mmols/min/L, CPK 108 mmols/min/L at 37°C, LDH 520 mmols/min/L at 37°C, SGOT 5 mmols/min/L at 37°C, HBDH 190 mmols/min/L at 37°C. Sister — nine months old: serum aldolase 8.6 mmols/min/L at 25°C, CPK 140 mmols/min/L at 37°C, LDH 580 mmols/min/L at 37°C, SGOT 39 mmols/min/L at 37°C, HBDH 240 mmols/min/L at 37°C.

As the tensilon test was positive, the patient was started on neostigmine bromide 3.75 mgms., eight hourly, orally. She was discharged home 24 hours later, after three weeks stay in hospital, still weighing 10 kgs. She was advised to continue on the same medication. When reviewed one week after starting neostigmine bromide, it was interesting to note that there was a dramatic therapeutic response. She weighed 12 kgs., looked pink in colour, ptosis was less, she was walking better, and was even a little cheerful. The dose was then increased to 7.5 mgms., twice daily, orally. Three weeks later, she walked by herself, and six weeks after onset of treatment, she was running around, the ptosis was slight, and she continued to gain weight. She was now on neostigmine bromide 7.5 mgms., three times a day, with no side effects. Eleven weeks after treatment had commenced, the child developed a chest infection. During this period, she walked less and tiredness in the evenings became noticeable again. Appropriate antibiotics were given, and neostigmine bromide was increased to 7.5 mgms., six hourly. She began walking well again, was less dysarthric, and although the impression of ptosis was still present, it was remarkably less.

Discussion

This case is being reported mainly because of the unusual finding of raised muscle enzymes. It is unlikely that this was due to thyroid disease as the child is euthyroid, and no thyroid antibodies were present. The cause of this increase in muscle enzymes is unexplained, but reports of cases rarely mention these enzymes. Muscle enzymes are worthy of further study in myasthenia gravis.

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