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[*Note.*—Some time ago the standards of ice-cream in Calcutta were investigated by the army authorities and were, it is believed, found highly unsatisfactory. Steps were made to improve things, and the findings above reported were made after these steps had been taken. It is hoped that the manufacturers will attempt to maintain and improve the present standards and not relapse into the condition which was found previously.—EDITOR, *I. M. G.*]

A Mirror of Hospital Practice

A CASE OF MYASTHENIA GRAVIS

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MYASTHENIA GRAVIS has been defined as a syndrome in which there is undue fatigue of the muscles. It may later on be followed by a permanent weakness which may simulate paralysis of the muscles. Erb gave the name of myasthenia gravis in 1879. Wills described it in 1887.

The usual age incidence is between 15 and 50 years. More commonly it occurs between 15 and 30 years. Females are affected more than the males. It has a familial tendency. More than one member of a family has been known to suffer from this disease.

The onset is usually insidious. The patient begins to notice fatigue of the muscles coming on towards the end of the day, after the day's work, while he is comfortable in the morning after resting at night. The disease is precipitated by any infectious condition, *e.g.*, influenza, pneumonia and encephalitis lethargica, etc., or even by pregnancy or labour.

Any muscle of the body may be affected. In some cases all the muscles may suffer. The disease usually starts in the muscles supplied by the cranial nerves, though other muscles of the body may be the first to be picked out. The involvement of the ocular muscles gives rise to ptosis on one side or both. This is due to the affection of the levator muscles of the upper eyelids. Diplopia may also result from fatigue of the external ocular muscles, and this may be marked towards the evening, whereas it disappears next morning after resting at night. Pupillary reflexes may be normal or sluggish. Difficulty in chewing may arise from weakness of the muscles of mastication, and this may be more pronounced towards the later part of the meal, while the initial act of chewing might have been quite normal. Swallowing may be affected when the muscles of deglutition are involved; even regurgitation through the nose may occur. Articulation may be affected due to the involvement of the soft palate, laryngeal muscles, etc., or hoarseness of voice may result. When the facial muscles are affected, weakness of the orbicularis oculi may prevent the patient from closing his eyes properly, and weakness of the orbicularis oris may prevent him from laughing and whistling. The involvement of the muscles of the arms causes difficulty in raising the upper limbs, or difficulty in working may arise. Involvement of the lower limb muscles makes the patient's walking difficult. When the neck muscles are affected, they cannot support the head for long. The involvement of the diaphragm and the intercostal muscles interferes with proper respiration, and in some cases may give rise to severe dyspnœa. Disturbances of micturition and defæcation have also been reported.

On clinical examination of the muscles, the tone is found to be lost. There is no wasting in the beginning, but when the disease has lasted for a long time, atrophy may occur. Reaction of degeneration is never found. Fibrillary twitchings are not usually seen, though they may occur. Sensory changes are not found, and reflexes are normal. Blood examination shows some leucocytosis. The blood chemistry has not been worked out, but calcium metabolism shows some impairment. It is usually diminished. There is also diminished sugar tolerance, the glucose content of the muscle is increased, and the urine may contain creatinine.

In 1891, the electrical reaction which occurs in the muscles and is rather characteristic of the disease was described by Jolly—the myasthenic reaction. When the muscle is subjected to faradic stimuli, it gradually loses the power to respond to it, but it retains its contraction to galvanism. Some time after the response to faradic stimuli has been lost, a retest shows that the faradic stimuli cause contractions again. This may also happen after an injection of prostigmine.

The course of the disease is rather slow, but some cases may progress rapidly and may end fatally in one to three years. Remissions in the disease have been noticed in repeated pregnancies.

Regarding the pathology of the condition, the observations have not been constant. Some have found degenerative changes in the spinal cord, and small hæmorrhages in the nuclei of the ocular, facial and the hypoglossal nerves. The muscles which are involved are œdematous and swollen, infiltrated with lymphoid cells (lymphorrhages). There are collections of cells lying between the muscles, and sometimes within the muscle fibres. There may be some muscular atrophy. The thymus has been found to be en-

larged in 50 per cent of the cases. Lymphorrhages are also found in them and also in the thyroid, liver, suprarenals, kidneys, lungs, heart and pancreas.

The modern conception of the disease is that there is defect in the conduction of the impulses from the nerve endings to the muscle fibres, that is, a defect at the myoneural junctions. Acetylcholine is necessary for such conduction at the myoneural junctions. In myasthenia gravis this is destroyed, or its production is inhibited by an enzyme called cholinesterase. This conception regards its causation as a chemical one. No structural lesion has been reported in this disease. One thing worthy of note is that blood examinations have never shown any increase of the cholinesterase in patients suffering from myasthenia gravis.

Treatment

The patients should have absolute rest, which has to be prolonged. There is a tendency for these patients to feel much depression and discouragement, and therefore it should be the duty of the physician to give them encouragement in order to relieve their mental distress.

The diet should be easily assimilable and rich in vitamins. When mastication cannot be performed satisfactorily, semisolid diets—fruits and vegetables should be given thoroughly grated, or liquid diet may be prescribed. In some cases when swallowing is troublesome, resort may be had to artificial feeding.

The drug treatment of the disease has not been satisfactory. Those which have been used are: ephedrine tablets gr. ½, glycine 10 gm. daily, acetylcholine, physostigmine salicylate gr. 1/100, strychnine, atropine gr. 1/150 and prostigmine. No clinical improvement has resulted after the use of glycine, acetylcholine, parathormone, strychnine and atropine. Ephedrine helps the patient to a certain extent and so also does physostigmine salicylate. Prostigmine is a drug of choice. It is closely related to physostigmine in its chemical structure and action. The dose is 0.5 to 2 mgm. in tablets, daily. More than this may be given if needed. Larger doses when given are better administered along with atropine gr. 1/200 to counteract the excessive peristalsis. It may also be given by injection hypodermically or intramuscularly 1 c.cm. containing 0.5 mgm. or concentrated solution 1 c.cm. containing 2.5 mgm.

Alcohol makes the condition of the patient worse, and should therefore be avoided. Quinine also worsens their condition, and myasthenic patients may become worse when it is administered if they happen to contract malarial infection. This should be borne in mine in the management of these cases. Massage of the body is best avoided because it increases the fatigue. In cases in which the Wassermann reaction of the blood is positive, it might be worth while trying antisyphilitic treatment along with prostigmine.

A case report

A Hindu male, aged 50 years, a farmer by profession, was admitted into the Thomason Hospital, Agra, on 11th February, 1943, with the following history :—

Four months before, he noticed gradual weakness of the whole body which used to become marked about midday (being a farmer by profession he had to work hard in the morning). On rising in the morning, he felt well, but the weakness increased till it was at its worse in the afternoon. This weakness he first noticed in both the upper extremities while he was taking a bath. Then he noticed weakness in the lower extremities. He felt difficulty in getting up from the sitting position. When he squatted for micturition or defæcation, he felt difficulty in getting up in the beginning; later he could not get up immediately after the act. But after resting for a while, he got up easily and the weakness was also not so marked. Later he felt weakness in the fingers and could not hold things tightly.

At the same time he noticed weakness in both the upper eyelids, first in the left and then in the right eye. The weakness increased and for the past six weeks he had been unable to open the eyes properly.

About two months before admission he felt some difficulty in mastication, and a few days later he could not masticate at all, and had to remain on liquids only. When he was in the hospital, he felt difficulty in swallowing, and sometimes this difficulty was so great that regurgitation of fluids occurred through the nose and nasal feeds were used. He could not laugh properly and could not whistle. When asked to take a deep breath, he could not do so, though when screen examination was done he did not show any impairment of diaphragmatic movements. He could not lift the arms more than 45° in the sitting position, but while lying flat in bed he could raise both the arms up to 90°. When his legs were extended, he could not flex them. He used to flex them with the help of his hands. He became easily tired while sitting up for a long time. He could not keep his neck erect in this position for long and had to exert himself to keep his neck erect.

When he talked for some time, he felt difficulty in speaking. There was drooping of the eyelids and while walking he had to tilt his head a little forwards. The pupillary reaction was a little sluggish but the vision was unimpaired. The jerks were also sluggish and the muscles were somewhat wasted. No abnormality was detected in the respiratory, circulatory, gastro-intestinal, nervous and genito-urinary systems. Pathological and biochemical investigations of blood revealed no appreciable abnormality.

While he was in the hospital he had been always constipated, and aperients and enemas had to be given freely. Sometimes these measures did not succeed, and at one time he remained constipated for seven days. The ptosis of the eyes was very pronounced. The ophthalmologist was consulted and he reported 'External ophthalmoplegia with myasthenia gravis: ptosis. Fundus normal'.

The drugs used were physostigmine salicylate, gr. 1/100 by injection and ephedrine gr. ½. They relieved the patient of the muscular fatigue only temporarily for 6 to 8 hours. Prostigmine was not used, being not available. He left the hospital on 11th April.

I wish to thank Major-General H. C. Buckley, I.M.S., Superintendent of the Hospital, for allowing me to publish the case.

SPECIAL TUBERCULOSIS NUMBER

FOR several years the October issue has taken the form of a special tuberculosis number. This year owing to the late receipt of manuscripts from the Tuberculosis Association of India this has not been possible. It is hoped to publish a special tuberculosis number at a later date. This will be announced at least a month beforehand.