TREATMENT IN GENERAL PRACTICE

This article is one of a series on the management of some of the metabolic diseases met with in general practice. The first group of articles on Treatment in General Practice, thirty-five in number, was republished in book form last March by H. K. Lewis & Co., and a second volume will appear in the autumn.

TREATMENT OF SOME COMPLICATIONS OF DIABETES MELLITUS

BY

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PART II

Neuritis

Sciatica, often bilateral, is a fairly common early symptom of diabetes mellitus. Other sensory nerves may be affected, giving rise to altered cutaneous sensation and pain over the various areas they supply. Motor fibres are less often involved, but may cause, according to the nerve affected, diplopia, weakness or paralysis of the legs, etc.; and in severe cases the knee-jerks and the Achilles tendon reflexes may be lost.

The curative treatment consists in controlling the sugar content of the blood. Palliative treatment should relieve pain and prevent deformity or contractures. Lithium acetyl-salicylate, 15 grains three times a day, relieves the pain in most cases; if it fails 0.002 gram dilaudid should be given subcutaneously at night to allow the patient to sleep. The application of heat is most soothing, and can conveniently be applied by an electric pad bound to the thigh. Splints will prevent contractures if any paralysis persists for more than a week or two. Massage may be tried, but in the early stage it may aggravate the pain.

Xanthoma and Oedema

Xanthoma diabeticorum is usually confined to cases of severe diabetes receiving diets containing a high proportion of fat. The cholesterol content of the blood is greatly increased, and occasionally the fat is in sufficient quantity to make the plasma appear creamy. Treatment consists in removing eggs and most of the fat from the diet and giving adequate doses of insulin. It is of some interest that a high carbohydrate diet along with moderate doses of insulin will cure xanthoma when it appears in non-diabetic patients.

Oedema of the legs used to occur in 30 per cent. of diabetics before the introduction of insulin. Now it is rare, and will usually disappear soon after the blood sugar has been reduced to normal.

True Diabetic Cataract

Fortunately true diabetic cataract is a rare complication, for the speed with which the white flakes multiply in the lens is so great that it may become quite opaque within a few weeks. No effective local treatment is known, but the progress of the condition may be arrested by vigorous treatment of the patient for diabetes mellitus. Speed in making the metabolism of the patient approach the normal is all-important if his sight is to be saved. One method is to allow no food other than half a pint of orange juice four times daily and to inject insulin in rapidly increasing doses four times a day half an hour before each drink, until the blood sugar has fallen below 0.15 mg. per 100 c.cm. of blood. Then the orange juice may be replaced by 5 oz. of bread and protein added up to 1 gram per kilogram of body weight a day.

The diet is gradually increased to about 240 grams of carbohydrate; the protein remains unaltered and fat is added until the patient is receiving about 50 grams. This will necessitate a gradual increase in the doses of insulin, the number of which may be reduced to two daily. In a few cases restoration of sight has been recorded, but this must be so rare that it is perhaps best to inform the patient that the treatment is designed to save what sight is left, rather than raise hopes which may prove false. Senile cataract in a diabetic subject indicates that the patient should be treated for diabetes, but there is little prospect of the condition being arrested.

Retinal Haemorrhages and Exudates

Retinal haemorrhages are a manifestation of arterial degeneration, although in many cases there is no evidence of generalized arteriosclerosis, since the blood pressure is not raised; such localized degeneration is not peculiar to the retinal vessels. Since the introduction of insulin the incidence of retinal haemorrhage has not decreased to any great extent, but only a small number of patients have as yet been treated with high carbohydrate diets and adequate insulin from the onset of the disease. Prophylaxis is the only treatment known. Retinal exudates in diabetes mellitus, like more generalized forms of oedema, are due in all probability to some toxin arising from the faulty metabolism. They are seen commonly in untreated diabetics, and will usually resolve when the metabolism is made to approach normal.

Amblyopia and Iritis

Toxic blindness is usually due to the combined effects of tobacco, alcohol, and diabetes, although it may develop on occasion in the teetotal, non-smoking diabetic. The treatment consists in stopping all smoking or chewing of tobacco, reducing the quantity of alcohol to a minimum, and adopting the usual diet, with adequate insulin. Recovery is, as a rule, rapid.

Iritis in a diabetic subject is believed to be due to the altered metabolism when the subjective symptoms are insignificant; both eyes are affected and the uvea is involved. The treatment includes the instillation of mydriatics, dieting, and the administration of adequate insulin.

Eczema and Pruritus

Eczema of the genitalia is a common complication said to be due to the promotion of a growth of torulae and other organisms by the sugar in the urine. This explanation is not very satisfying when one remembers how rarely eczema occurs in orthoglycaemic glycosuria, even when the urine contains over 3 per cent. of sugar. The treatment consists in scrupulous cleanliness. The patient carries in a waterproof bag a small sponge wrung out in a saturated solution of boric acid and wipes the urethra immediately, and without exception, after passing urine. Eczema of the genitalia usually subsides within a week of the urine's ceasing to contain sugar; during this interval any irritation may be allayed by the application of lotio plumbi acetatis.

Occasionally pruritus vulvae is present in the absence of dermatitis. This may prove refractory to lotio plumbi acetatis, in which case a 3 per cent. menthol ointment may be tried. If this, too, fails, a 5 per cent. solution of cocaine hydrochloride may be applied sparingly to the irritated area; this alleviates in the majority of cases, but unfortunately for only a limited time. Cocaine in aqueous solution is not absorbed in appreciable quantity, but it must be remembered that cocaine is readily absorbed when applied as an ointment, and poisoning may result if it be used over a considerable area when mixed with fat.

Furunculosis

Furunculosis is not confined to diabetic patients, but when it does occur in them it is not only difficult to treat but it also adversely affects their metabolism. If the furuncles be large and numerous the patient should be confined to bed, washed all over twice daily with soap and water, and dusted all over with finely powdered boric acid. He should put on clean pyjamas after each washing, and be supplied with clean sheets daily. The pyjamas and sheets should be boiled to prevent reinfection. When he leaves his bed he should wear linen underclothing, which should be clean daily. The concentration of sugar in the blood will be found to vary greatly, depending upon the absorption of toxins from the furuncles. The doses of insulin should be altered from day to day as found necessary. For some unknown reason the resistance to infection may suddenly rise and the furuncles cease to develop, as if some magician had waved his wand over them. If this happens while tin or manganese is being administered the metals may undeservedly be given the credit for it.

Perforating Ulcer

A perforating ulcer of the sole of the foot may develop in cases of long-standing diabetes mellitus, especially in the presence of neuritis, which may be demonstrated by the absence of the Achilles tendon reflex. The treatment is constitutional and local; metabolism must be made to approach the normal, and locally the hard skin around the ulcer should be softened by fomenting and removed. A radiograph should be taken to decide whether any bone is necrosed. A few years ago I thought a perforated ulcer with necrosed bone would never heal without surgical assistance. Now, having seen the bone come away and healing ensue in several cases after many weeks of fomenting and soaking in hypertonic baths, I recommend operation only when there is a good pulse at the ankle, and then simply with the object of saving time.

Carbuncle

That carbuncles are due to a want of cleanliness may be the general rule, but there are very many exceptions to it, as would be expected when it is remembered how often the necrosis of tissues begins subcutaneously. Carbuncles are said to account for 20 per cent. of deaths from diabetes, but those physicians who will countenance neither manipulation, such as squeezing or syringing with hydrogen peroxide, nor surgical incision, rarely see a case end fatally. Manipulation in any form and incision assist septic material to pass into the blood stream. The neck, which is being rubbed with the collar for many hours a day, is the site of 80 per cent. of carbuncles. As a preventive measure, therefore, it should be kept clean and dusted with boric powder. Treatment with vaccines is reported to have proved satisfactory when large doses, up to 500 millions of the *Staphylococcus aureus*, have been injected into the carbuncle itself.

Small carbuncles arising where there is plenty of loose skin may be excised completely, but this should be attempted only when the surgeon is quite satisfied that

he can remove all the infected tissue. If this is done satisfactorily the wound heals by first intention and much anxiety is saved. The view of the majority at the present day is that if the carbuncle cannot be removed completely it should be left alone; statistics show that the mortality is increased by incision, however skilful. No one advocates simple incision, but a minority favour a wide crucial incision. This may establish satisfactory drainage, but how far it increases the possibility of septic embolism remains a problem which statistics may solve.

The carbuncle should be fomented with boric acid lint over an area of at least a square foot; an electric heating pad applied over the fomentation will obviate the necessity of frequent renewal. When the carbuncle discharges, a paste of glycerin and magnesium sulphate is applied on lint with the object of drawing fluid from the tissue into the dressing. Once the tissue breaks down nothing is gained and danger is incurred by pressing out the pus or dragging away sloughs. Pus should be allowed to run out, and only if the opening tends to close should it be stretched with dressing forceps and a tube inserted. The healing power of a novel method of treatment is usually exaggerated for a short time after its introduction, and this is true for short-wave diathermy, but evidence is accumulating that it exerts a beneficial action upon carbuncles and hastens healing. Although still in the experimental stage it may be used on patients not confined to bed.

There are but few cases recorded of patients dying from the direct extension of a carbuncle into a vital tissue. On the other hand, a carbuncle may grow to an enormous size and then for no apparent reason begin to heal, and finally leave only a small scar. The application of a spray of 2 per cent. brilliant green, or some other coloured antiseptic, in water cannot do harm, and has the advantage of camouflaging the lesion and thus preventing the patient becoming alarmed should he insist on making an inspection. Sometimes a probe may be passed half a dozen inches or more in every direction, showing that the skin has separated over a square foot; in these cases some believe that recovery is accelerated by inserting a tube at the most dependent point, but whether this procedure is worth the risk involved is debatable.

While toxins are being absorbed from the carbuncle large and frequent doses of insulin may be required to control the sugar content of the blood, but unless these are reduced as the quantity of toxin diminishes there is a risk of severe attacks of hypoglycaemia. It is wise to determine the blood sugar of a patient suffering from a carbuncle at least twice daily—one hour after the meal containing the greatest quantity of carbohydrate and four hours after the biggest dose of insulin. The former estimation should not rise above 0.15; the latter should not fall below 0.08 mg. per 100 c.cm.

Tuberculosis

Tuberculosis fairly commonly complicates diabetes mellitus, and may become quite advanced before it is diagnosed. Two factors are responsible: first, pyrexia does not develop; and secondly, want of energy is attributed to diabetes and the body may not be investigated for tuberculosis. It should be recognized that the resistance of any individual placed upon a diet calculated to keep him a little below average weight may be reduced, and he may thus become vulnerable to Koch's bacillus. In addition, the alteration in metabolism associated with insufficient insulin appears to lead to the formation of substances which favour the multiplication of the tubercle bacillus.

So long as the infection in the lung is confined to the tubercle bacillus insulin acts satisfactorily. The tuber-

culous diabetic is given a very generous diet, practically as much as he can eat and usually over 40 calories per kilogram of body weight a day, and part of this is in the form of fat—that is, the food chosen is of high energy and of small bulk. For a time three or even four injections of insulin are needed in order to allow the patient to take carbohydrate at every meal and to keep the sugar content of the blood below 0.15 mg. per c.cm. Some authorities believe that so long as sugar is not excreted in the urine it will be used, and therefore there is but little object in examining the blood and estimating the sugar in it. The argument, however, is not along these lines. Glycerol favours the growth of the tubercle bacillus, and though very little circulates freely in the human body there is reason to believe that the amount is greater in untreated or inadequately treated diabetics. It is important, therefore, for the treatment to be really adequate, and this can only be gauged by the sugar content of the blood. When secondary infection is implanted upon tuberculosis the activity of insulin is sadly impaired, but cases in which 50 units of insulin injected twice daily may produce but slight effect may respond to 25 units four times a day.

A generous diet of four good meals a day and four or more doses of insulin should be tried, and if, in spite of huge doses of insulin, the sugar excretion remains considerable, then synthalin should be given in the biggest doses which the patient can stand, remembering always that it has a cumulative action, and that therefore none should be given on two days a week and every third fortnight. The action of synthalin is not affected by bacterial toxin.

Local Insulin Reactions

One cause of local reactions at the site of the injection of insulin is the injection of traces of surgical spirit. Surgical spirit, which contains castor oil and boric acid, should be replaced by industrial spirit or rectified spirit in the syringe case; if local inflammation persists then the syringe should be rinsed thoroughly with recently boiled water before use. The different preparations of insulin should be tried until one is found which gives satisfaction. Urticaria may follow the injection of insulin, and occasionally is of such intensity as to make the patient believe that he is not a suitable subject for treatment with that particular preparation. Some cases react less after injection of the most highly purified insulin and some to solutions of insulin without preservative. In the most susceptible, immunity has to be developed by beginning with minute doses of a few cubic millimetres and by increasing them slowly until the adequate dose is being administered.

Occasionally, but fortunately rarely, fat is absorbed in the region of the injection of insulin, and also at a short distance from the actual site. Since the same reaction may follow injections of pituitary extract, morphine, and other substances there is little hope of modifying the effect by altering the make of insulin or using an insulin without preservative. The loss of fat from the thighs embarrasses only those who spend much time upon the beach, and in these cases the upper gluteal region may be injected where loss of fat is not mourned.

S. T. Heidema (*Nederl. Tijdschr. v. Geneesk.*, June 27th, p. 3026) reviews the literature describing death following the administration of thallium, and records the case of a woman aged 63, who on two occasions was treated for favus with thallium acetate in doses of 75 mg. per kilo of body weight. There was an interval of two and a half months between each treatment, and fifteen days after the second administration she died with symptoms of polyneuritis. There was no necropsy.

ONE HUNDRED AND FOURTH ANNUAL MEETING

of the

British Medical Association

HELD IN OXFORD, JULY, 1936

THE SECTIONS

SUMMARY OF PROCEEDINGS

During the next few months there will be published in the BRITISH MEDICAL JOURNAL the opening papers communicated to the Scientific Sections of the Annual Meeting. The reports of discussions, continued from last week (page 252), are intended to give members who were not present a general idea of the proceedings.

SECTION OF MEDICINE

Thursday, July 23rd

Flatulence and Epigastric Discomfort

With Dr. JOHN PARKINSON in the chair, the discussion on flatulence and epigastric discomfort was opened by Professor J. A. RYLE (Cambridge).

Professor Ryle suggested that attention should be directed to discomfort rather than pain, and the term "epigastrium" should embrace the lower sternal area and the right and left hypochondria. The patient should be allowed to tell his story, but a careful and exact analysis of his symptoms was all-important. It was remarkable how "near the mark" a study of symptomatology might lead. For example, a sensation of fullness or weight might be due to carcinoma of the liver or to nervous dyspepsia; continuity of the symptom, situation of the pain—slightly to the right—aggravation by lying or turning or by deep inspiration, and loss of weight and appetite, would all point to the more serious diagnosis. "Fullness" in the abdomen might be regarded as a "gastric globus" comparable to the variety experienced in the throat.

Professor Ryle went on to discuss the significance of "bursting sensations," epigastric throbbing, "sinking" feelings, and nausea. We needed to consider more closely what patients meant when they referred to "acidity." Gastric flatulence might be odourless or foul; the former was generally due to aerophagy with or without organic disease, while the latter might be due to pyloric obstruction or gastro-colic fistula. The aerophagy that relieved or concluded some anginal attacks, and the frequent association of anginal pain with meals, accounted for many mistaken diagnoses.

Dr. J. M. H. CAMPBELL considered that there was no true dividing line between pain and discomfort. Cardiac pain might be epigastric or situated in the retrosternal region, and no inference could be drawn from the site regarding the type or grade of coronary disease. He referred to cases of so-called acute indigestion occurring in the night, and took the view that if there was no previous dyspeptic history, and if there was no acute abdominal emergency, then a coronary syndrome was most probably present. Flatulence was the outstanding complaint in perhaps one-third of all patients with coronary thrombosis. Dr. Campbell referred to the work of Dr. Skene Keith, who had found that in a large number of sudden cardiac deaths the patients had been under treatment for indigestion previously. Heart disease was a likely cause of the new occurrence of flatulence in any man over the age of 50.

Dr. THOMAS HUNT commented on the frequency of intestinal and colonic causes of epigastric discomfort. In such cases there was usually a spread downwards of the