fingers. The skiagram showed a dense mass filling the whole of the right upper lobe. Exploratory thoracotomy was performed by Mr. Romanis, when a large inoperable "growth" was encountered. Unfortunately no piece was taken for section. It was assumed to be a carcinoma, and the operation was abandoned. He was then transferred to St. Bartholomew's Hospital, where he was given twenty applications of x rays. The mass almost entirely disappeared, leaving considerable fibrosis. The patient is still alive and well, but the nature of the mass remains in doubt.

The fourth case was that of a lady aged 55, seen privately (F. G. C.) first in July, 1932. There was pain in the back and shortness of breath and loss of weight. She had been fairly well until a year previously, when the symptoms commenced. When first seen the patient was extremely ill, with dyspnoea, stridor, and slight clubbing of the fingers. There was intense dullness over most of the left side, almost down to the base, where she was resonant, and where breath sounds were present. Over the dull area breath sounds were absent and vocal resonance diminished. There was a loud surging murmur to be heard in the second intercostal space. She was explored deeply on two or three occasions, when pure blood was obtained with great ease, the syringe rapidly filling. The heart was displaced away from the mass. She was so ill that an exploratory thoracotomy was considered to be unjustified by Mr. J. E. H. Roberts. The diagnosis was a large innocent tumour or a lymphosarcoma: Wassermann reaction negative. On going further into the history it was found that three years previously she had had severe pain in the left chest, which made her faint.

A full course of deep x -ray therapy was given, after which she made a most striking improvement, although the shadow remained unchanged. This improvement continued to December, 1933. The patient was able to take long walks and drive a car, and felt comfortable and almost free from symptoms. In December, however, she began to have choking attacks, and a further course of x -ray treatment was given. She was very ill both during and after this course, but is improving again, and able to lead an active life. The improvement in symptoms was most striking and dramatic, but again there was no change in the shadow. The nature of the tumour remains in doubt.

The fifth patient was a man aged 54, seen at Victoria Park Chest Hospital; he complained of pain in the right chest and axilla, much dyspnoea, loss of weight, and some cough. There was a large homogeneous shadow in the skiagram, occupying the middle zone of the right chest, and extending from the periphery inwards, almost touching, but not apparently involving, the hilum of the lung. The shadow looked like a localized pleural effusion. Several exploratory punctures were made, however, and no fluid was found. The Wassermann reaction was negative. It was regarded, therefore, as a malignant tumour, and twenty applications of deep x rays were given, from February to April, 1933. The tumour practically disappeared, and the patient is still alive and in reasonably good health. Within the last few weeks he has developed headache with papilloedema, almost certainly due to an intracranial metastasis.

Conclusion

There can be little doubt that since the publication mentioned at the beginning of this paper the results of x -ray treatment have improved very greatly. We have been able to quote many cases of great relief or complete disappearance of symptoms, and some where the undoubted malignant mass in the chest has entirely disappeared. While we cannot yet claim to have arrived at a cure, we have been able to quote two, and possibly three, cases in which this has apparently been obtained. In two instances, where the diagnosis has been proved beyond all manner of doubt, there has been a complete and lasting cure, but neither of these tumours was of bronchial origin.

In view of these conclusions we shall often be exercised, in making the decision, whether to advise this treatment to an individual patient or not. Relief from pressure symptoms can be expected in a certain proportion of cases, and if these are severe and distressing we can hardly

deny the treatment if it is available. In other cases, in view of the unavoidable expense of the treatment or the inconvenience caused by moving the patient to an institution, and the impossibility of guaranteeing a result and the severe reaction that may be suffered during or shortly after the cessation of the treatment, we may find it very difficult to make up our minds. A decision may have to be left to the patient or to the relatives. This attitude will not hinder the progress and development of the treatment of carcinoma or other malignant tumours of the lung by radiation therapy, because there will always be a large number of patients who will demand active measures, and who, particularly in the early stages, will demand this or some other form of active treatment.

In conclusion, we must not forget the dramatic improvement in the individual case in surveying the final result of the treatment critically and dispassionately.

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SPECIAL CLINICS FOR DIABETICS (ORGANIZATION AND EXPERIENCES)

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The organization required for prolonged treatment of diabetics has become of special interest, since, through the discovery of insulin, even severe cases of diabetes may be kept in a good condition permanently. Yet in actual practice, although the average duration of life among diabetics has increased (Joslin¹), periodic examinations have often demonstrated the results to be disappointing. According to Loewenberg and Noah,² one year and a half after discharge from the hospital only 10 per cent. of the patients were without glycosuria, and a large number showed increased fasting blood sugar or even acidosis. On extending his investigations over a period of six years, Reinwein³ stated that about 40 per cent. of the patients had died; of the remainder, 42 per cent. did not carry out the insulin treatment properly, and 28 per cent. admitted that they had not strictly adhered to the diet which had been prescribed for them. As a consequence, the largest Berlin panel organization (Allgemeine Ortskranken-kasse) found that the incapacity present among diabetics in most age groups was on the average twice as great as was the case among patients suffering from other diseases (Pryll⁴).

Some Causes of Unsuccessful Treatment

There are different reasons for the fact that the ultimate results in ambulatory practice are so unsatisfactory as compared with the success obtained through hospital treatment. The patients may find a certain diet which, although suitable while at rest in hospital, is insufficient while they are at work. By taking inadequate food they lower their tolerance, and the condition becomes worse, though very often exercises have a favourable influence on carbohydrate metabolism.

This has been proved by experimental as well as by clinical observations. After partial extirpation of the pancreas in the dog physical work diminishes glycosuria, but has no influence on it when the gland has been removed completely (Seo,⁵ Allen⁶). Correspondingly, clinical workers have found that in suitable cases exercises could improve the carbohydrate tolerance of diabetics (Trousseau,⁷ v. Noorden,⁸ Buerger,⁹ Allen, Stillmann, and Fitz,¹⁰ Hetzl,¹¹ Lawrence,¹² Joslin¹³).

Further, the condition of a patient may deteriorate if he is prevented by his profession or for any other reason from having his meals at regular hours. Disappointing results over a long period may often be due to the financial difficulties of the patient, causing him to neglect the treatment. Statistics have shown that disablement among diabetics depends to a great extent on their financial condition, the average duration of disablement being inversely proportional to the income (Pryll¹⁴). Patients are as a rule prepared to adjust themselves to a diet and to the demands of insulin administration, but lack of money leads to neglect of the treatment, then to a decrease in the carbohydrate tolerance, and to complications which may even endanger life.

Such relapses compel diabetics to undergo repeatedly a strict regime in hospital, because at home only a small number of intelligent and self-controlled patients will allow the physician to carry out the measures necessary in severe acidosis or in the complicating infections. Diabetics therefore become in-patients, not only for short control examinations, but also for longer treatment in order to regain a bearable degree of carbohydrate tolerance.

According to Pryll's statistics, the average stay in hospital for these patients is a rather long one. Likewise, Loewenberg and Noah state that 37 per cent. of their cases were in-patients for from one to three months and 9.5 per cent. for over three months.

Apart from the high expenditure incurred by the long stays in hospitals, the costs for the insulin became very high. For instance, in 1931, 155,000 prescriptions, covering 57 million units of insulin, were issued by British insurance practitioners.¹⁴ Therefore, *for all organizations having a large number of diabetics under their care, the problem was to find a way to keep these patients in a good condition and, at the same time, to diminish the costs of treatment.*

Several proposals have been made in an attempt to find a solution for the problems raised above. Lyon,¹⁵ Earl,¹⁶ Lawrence,¹⁷ Taterka,¹⁸ Rostocki,¹⁹ Gottschalk,²⁰ and others have written on the subject of clinics for diabetics. Joslin²¹ suggested the foundation of diabetic centres and the education of nurses, each nurse having eventually to take care of a large number of patients. v. Noorden²² considered periodical in-patient treatment to be useful for purposes of control. In order to combine dietetic treatment with individually adapted muscular work, Katsch²³ established a home for diabetics.

Certain essential conditions must be fulfilled in order to achieve a permanent success that is to establish in the diabetics a balanced metabolic condition. It is necessary to have *regular* medical advice, the diet must be adapted to changing circumstances, and it must be impressed upon the patient that his co-operation and self-control alone can lead to lasting good health.

With these ends in view, and in order to diminish, if possible, the expenditure for the treatment of the unemployed diabetics, I, together with Dr. Liebenow, stellvertretender Stadtarzt (municipal officer of health), organized a consulting clinic for a Berlin district of about 360,000 inhabitants, about one-third of them receiving unemployment benefit. The organization and the experiences dealt with in this report are concerned with these 120,000 unemployed people.

Organization of a Consulting Clinic

About 500 diabetics regularly attended the clinic held by the writer and his collaborators in a hospital of the district during three mornings in the week. All analyses were made in the clinic itself. Qualitative and quantitative urinary examinations were carried out at once, but

when the blood sugar was examined patients either waited for the results or attended the following session of the clinic. Two to three technicians were occupied in performing the chemical examinations, in dispensing insulin, and in secretarial services. A registration card was kept for each patient which gave clinical dates, the results of the analyses, and the prescriptions issued. A rapid survey of the condition of the patients could thus be obtained.

Dangerous cases—for example, gangrene—were taken to the hospital to which the clinic was attached. Patients attended at least once a month, but if minor cases were continually in a good condition they only came about every two months; on neglecting to come for control examinations they were communicated with by post. The practitioners of the district were instructed to send their unemployed diabetics to the clinic, and they received written reports on the findings of the clinic and concerning the prescriptions and instructions given. The work of the clinic was strictly limited to the investigation and the treatment of the metabolic conditions of diabetics. The practitioners were in continual contact with the clinic, and attended the patients in connexion with all other aspects of their disease, and with any other complaints from which they might be suffering.

Consultations

Every patient had to bring a sample of urine which had been collected during the previous twenty-four hours; some of them were asked to come while fasting for blood sugar examination, or, if necessary, for a sugar tolerance test. The basis upon which diets for diabetics are prescribed will vary according to the outlook of the physician conducting the clinic. He may prefer a diet rich in carbohydrates, eventually to be combined with large doses of insulin (Adlersberg and Porges, cf. Joslin), or a diet containing much fat and a minimum of protein and carbohydrates (Naunyn, Petren). He may believe that a restricted diet is a chief principle in diabetes treatment (Allen). All these forms of treatment can be carried out among out-patients.

As the patients of the clinic were of the poorer classes, the economic side of dietary prescriptions had to be considered. It must be borne in mind that the victual prices in different seasons vary to a great degree, some types of food being cheap in summer and expensive in winter, and conversely. We had therefore to change the proposed dishes according to the fluctuation in the actual prices. The patients received *detailed dietetic instructions* through leaflets drafted for this purpose, and each patient obtained also a diet sheet suitably prepared according to the needs of that particular case. Forms were given them which contained equivalents of the different carbohydrate foods, as well as combinations suitable for single meals and for a whole day's menu. Moreover, the costs for these dishes were calculated according to the market rates.

It soon became evident that the expensive diabetic diet could only be made available for necessitous people through some financial aid. The municipality not only assisted them by giving free treatment and medicaments, but also by contributing towards the cost of suitable foodstuffs. The scale of assistance given was based on thorough statistical calculation of prices of the foods necessary, and on the degree of severity of the disease and the requirements of the case. Patients requiring insulin were taught how to disinfect and to use their syringes. They received simple printed instructions as to the time relation between insulin administration and carbohydrate intake, as well as information concerning the signs of hypoglycaemia and how this can be avoided. When patients were unable to inject insulin themselves

they were treated at home by nurses. Visiting nurses also attended them when confined to bed, reported to the clinic, and delivered those samples necessary for examination.

The consultations were supplemented by a series of popular lectures explaining in full the subjects which could only be briefly mentioned during the consultation hours—for instance, the character of the disease, the general treatment and hygienic measures, the different types of diet, hypoglycaemia, and the various complications. In the hospital kitchen patients had the opportunity of learning how to prepare their diet.

Experiences at the Clinic

Some forty to seventy patients attended the clinic during a single session. Most of them came for control examination without having been reminded, and this was particularly so among the severe cases. A considerable number of those attending for the first time were in an unsatisfactory condition. Though receiving large doses of insulin, they often showed high glycosuria or acetonuria. This was caused by neglect of diet for the reasons explained above, or through faulty or erratic insulin administration, as well as through failure to observe the time relation between insulin administration and carbohydrate intake—in fact, this last point often caused the greatest difficulties. Generally the insulin consumption was high, as the patients often continued to use the amount originally prescribed although the tolerance had changed. Some patients had utilized their insulin rather carelessly through lack of supervision. Most of them, when doing muscular work, found it intolerable, both physically and mentally, to take less than four ounces of bread daily. However, when patients became aware that insulin does not cure the disease, but controls it, they usually made the required effort to adhere strictly to their dietetic prescriptions.

Experience has shown that in a great number of patients the form of diet had to be varied. For instance, we often found it necessary to include vegetable days, or, especially in cases with a tendency towards acidosis, an oatmeal day followed by a vegetable day, in order to keep patients in good metabolic condition. A great demand for explanations was apparent at the lectures, usually attended by several hundred persons. These lectures likewise gave a good opportunity for the lecturer to expose the remedies of quacks, so numerous in connexion with diabetes mellitus.

After considering the results of the regular and uniform treatment given within the relatively short time that the clinic existed, I feel justified in concluding that the initial aim of the clinic had been accomplished. Relapses in metabolic conditions occurred but seldom, and the tolerance improved continuously in many cases. This was also proved by the fact that no patient developed coma, although about one-third of all the cases were severe. Consumption of insulin decreased considerably owing to the improvement in the patients' condition as a result of the described method of medical supervision. The first 200 patients treated had previously received about 100,000 units of insulin monthly, but only about the same amount was required by the clinic for about 500 patients. A considerable monthly saving, amounting to several hundred marks, was also made by the purchase of insulin in large quantities. For instance, the price which the clinic had to pay in February, 1933, varied from 45 to 60 pfennigs for 100 units, while previous to its existence insulin was purchased at retail prices (about double the cost). Even in severe cases the adjustment of the diet and of the doses of insulin was made while the patients attended as out-

patients, and only exceptional cases were taken to the hospital for this purpose. As all unemployed diabetics of this district, when requiring in-patient treatment, had to be sent to the hospital connected with the clinic, we were able to conclude accurately that the frequency of hospital treatment decreased among these patients. Again, as most patients were able to prepare the diet at home, the food supply of the hospital kitchen was necessary only in a few cases.

Collaboration with the practitioners proved to be both practical and effective, as the clinic worked exclusively on a consulting basis. Thus they considered the clinic as a welcome help, and practitioners from other districts also sent us cases. As regards the financial side, the additional allowance for extra diet distributed monthly was 10 marks in about 25 per cent. of the patients, 15 marks in about 35 per cent., and 20 marks in about 40 per cent. A few cases which did not require an expensive diet had no extra allowance granted to them. It may be added that we had intended to issue to all our patients a booklet containing, apart from personal data (name, age, address, occupation, membership of any panel or insurance organization), the patient's medical history and any important clinical particulars.

Summary

The organization of, and experiences with, a special clinic for diabetics are described. By suitable and regular supervision metabolic relapses were avoided, and, in general, the patients remained in a good condition permanently. For organizations having a large number of diabetics under their care such consulting clinics are practicable. Also, a considerable saving may be made by lessening in-patient treatment through the constant adjustment of both the diet and the dosage of insulin, and by buying insulin in large quantities at wholesale prices. In this last way alone the consulting clinic on which this report is based saved several hundred marks monthly.

It was proposed to issue a form for diabetics which would describe briefly the condition of the patient for the use of any physician in case of emergency.

I am greatly indebted to Dr. W. Susman for his assistance in translating this paper.

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