FOUR DIFFERENT TYPES OF BLOOD SUGAR CURVE IN ONE PATIENT WITHIN SEVENTEEN MONTHS.

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THE following details appear to be of some pathological interest, and may also be of importance in connexion with life insurance of glycosuric subjects.

An obese butcher, aged 50, came under treatment in January, 1929, for osteo-arthritis of the knee- and ankle-joints; owing to the discovery of glycosuria on routine examination, a blood sugar examination was made (A). The curve was found to be normal, but indicated a low renal threshold of 0.123 per cent. sugar.

CURVE A.—January 28th, 1929.

CURVE B.—May 16th, 1930.

CURVE C.—May 26th, 1930.

CURVE D.—June 5th, 1930.

CURVE A.—Fasting blood sugar (not estimated). Glucose 40 grams by mouth. Blood sugar: 1/2 hour after, 0.108 per cent.; 1 hour after, 0.128 per cent.; 1 1/2 hours after, 0.095 per cent.; 2 hours after, 0.077 per cent. Urine: fasting, 0; 1/2 hour after glucose, 0; 1 hour after glucose, ++; 1 1/2 hours after glucose, +; 2 hours after glucose, +.

CURVE B.—Fasting blood sugar, 0.188 per cent. Glucose, 40 grams by mouth. Blood sugar: 1/2 hour after, 0.266 per cent.; 1 hour after, 0.304 per cent.; 1 1/2 hours after, 0.304 per cent.; 2 hours after, 0.272 per cent. Urine: fasting, ++; 1/2 hour after glucose, ++; 1 hour after glucose, ++; 1 1/2 hours after glucose, ++; 2 hours after glucose, ++.

CURVE C.—Fasting blood sugar, 0.096 per cent. Glucose, 50 grams by mouth. Blood sugar: 3/4 hour after, 0.14 per cent.; 1 1/2 hours after, 0.26 per cent.; 2 hours after, 0.17 per cent.; 2 1/2 hours after, 0.16 per cent. Urine: fasting, sugar 0, acetone +; 3/4 hour after, sugar 0, acetone +; 1 1/2 hours after, sugar +, acetone trace; 2 1/2 hours after, sugar trace, acetone 0.

CURVE D.—Fasting blood sugar, 0.124 per cent. Glucose, 50 grams by mouth. Blood sugar: 1/2 hour after, 0.132 per cent.; 1 hour after, 0.24 per cent.; 1 1/2 hours after, 0.172 per cent.; 2 hours after, 0.12 per cent. Urine sugar: fasting, 0; 1/2 hour after, 0; 1 hour after, 0; 1 1/2 hours after, ++; 2 hours after, +.

(The figures at the base of the charts represent the time in hours after administration of glucose.)

The patient's teeth were extracted, and he was treated by radiant heat baths, and also by thyroid gland (dried) 1 gram daily till April, 1930. During eleven months of this period he lost weight slowly, presumably owing to the action of the thyroid; he then rapidly lost 3 st. in the course of four months, concurrently with the development of symptoms of thirst and polyuria, and the presence of increased quantities of sugar, together with ketone

bodies and albumin in the urine. This was so suggestive of diabetes mellitus that a second curve (B) was prepared after re-admission to hospital, the patient having been kept on a light diet, with restricted carbohydrate only, and without thyroid, for four days. This curve was typical of diabetes mellitus, but sugar was passed in the urine throughout.

The patient was put on a strict diabetic diet of approximately 1,000 calories containing 25 grams of carbohydrate, 58 grams of protein, and 75 grams of fat; the symptoms of thirst and polyuria then disappeared, and he became completely free from sugar in two days. Owing to the cessation of the glycosuria, suggesting that the renal threshold might now be higher, a third curve (C) was prepared to determine the threshold. This, while still being of the diabetic type, and not returning to normal within two hours, was suggestive of the "lag" type of curve; sugar was not passed until one and a half hours after the administration of the glucose, the blood sugar then being 0.21 per cent. The diet was increased to 1,500 calories (carbohydrate, 45 grams; protein, 78 grams; fat, 112 grams); the patient remained without symptoms, and the urine continued to be sugar-free, with only traces of albumin and ketone bodies. After another ten days' interval a final curve was made; this was definitely of the "lag" type. The patient had had no thyroid for twenty-seven days previously, was never given insulin, and was not of Jewish extraction. He had no complications of diabetes mellitus.

I am indebted to Dr. Batty Shaw for permission to publish this case, and to Dr. G. W. Goodhart and Dr. B. W. S. Mackenzie for the blood sugar estimations.

SUBSEQUENT HISTORY OF PATIENTS TREATED WITH A RESIDUAL ANTIGEN OF B. TUBERCULOSIS.

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It is probable that in no disease is the value of a remedy more dependent upon remote results than in pulmonary tuberculosis. A preliminary paper in which I described the preparation of the antigen and the immediate results obtained was published in 1928 in the July issue of the *British Journal of Tuberculosis*, and the present note deals with the after-history of the cases then described. At that time no patient was refused treatment because of the state of the disease; consequently, the records were not improved by the fate of these hopeless cases. It was desired to test the antigen thoroughly, and the only requirement was that there should be no doubt about the certainty of the diagnosis. The sputum was positive in 79 per cent.; the remaining patients had had positive sputa in the past, or had spent one or more periods in sanatoriums, and presented clinical signs and symptoms that were unquestionable.

Of 67 consecutive cases reported, 10 patients died during or shortly after the treatment, 12 were not improved and were classified as failures, and 45 were said to show definite clinical improvement after a course of treatment lasting three months. The assessment was made immediately the course finished, in every case by the clinician in charge of the patient, usually the private doctor. Care was taken that the present writer offered no opinion on a case. All these cases have now been traced after an interval of two to three years has elapsed, and the results are here set forth.

The original deaths and the original failures are added together, since such deaths are obviously part of the original failures; they form a group of patients numbering 22, of whom 2 had improved, 4 had not improved, 15 had died, and one was untraced. Thus the percentage of those improved was 9, and of those now alive 29.

The patients who were originally improved numbered 45; of these, 32 were found to be still improved after two or three years, 6 had not improved, 5 had died, and 2 could not be traced. The percentage of those improved was 74, and of those now alive 88.

These results support the original observation that the conditions requisite for success with antigenic treatment in pulmonary tuberculosis are the same as for antigenic treatment of any other disease. It is essential for success that the patient shall possess some reserve of resistance, although that factor may need the antigen to call it into operation.