BLOOD-SUGAR CHANGES FOLLOWING CARDIAZOL TREATMENT.

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(Received December 15, 1939.)

MEDUNA and Rohny (1939) have recently commented on the rise of sugar and lactic acid in the blood of schizophrenic patients following therapeutic cardiazol fits. Insulin causes a lowering of the blood sugar, but later the resting level becomes higher than before treatment. Hence they suggest that the alteration of carbohydrate metabolism in the direction of diabetes may be the common mechanism underlying both forms of treatment, and this hypothesis is supported by Nyiro's observation (quoted by Meduna and Rohny) that diabetes is rare amongst patients with schizophrenia.

In view of these findings it was decided to treat a diabetic schizophrenic with cardiazol, and determine the alterations in his blood sugar.

Mr. M—, now aged 56, was admitted in October, 1911. There is no relevant family history. He was backward at school and then worked in several offices, finally becoming a bank clerk. In March, 1910, he had a breakdown, but recovered in two months. The following year he had another attack, from which he recovered, but soon began to behave in a peculiar manner, writing incomprehensible and indecent letters. On admission he was rambling and often incoherent in speech and restless in his movements. Since then he has been mostly quiet and unoccupied, but obeying when told to do things. He has shown periodic outbursts during which he is restless and talkative. On one occasion he tried to commit suicide by keeping his head in a basin of water, and another time he thrust his fist through a pane of glass. At present he remains in the same position all day if left alone. He often replies to simple questions in a rational manner, but then will continue by talking about some other apparently unrelated subject. Sometimes he shows simple association of ideas, as when asked why he came here he replied, " Oh yes, cent, American, British Columbia—that's it, Christopher Columbus."

In January, 1939, sugar was found in his urine on routine examination. A glucose tolerance test confirmed the diagnosis of mild diabetes. Clinically he showed excessive appetite and thirst, passed large quantities of urine and was generally obese. B.P. 180/90. No other abnormalities were noted.

https://doi.org/10.1192/bjp.86.363.688 Published online by Cambridge University Press

The diabetes was controlled by dietetic treatment and insulin, but later the insulin was omitted without the occurrence of glycosuria.

July 13, 1939: At 12.35 p.m., after having had his usual breakfast, 4 c.c. of 10 per cent. cardiazol were given intravenously. No fit occurred so 5 c.c. were given at 12.42. A normal fit followed. Blood sugar: Before fit, 135 mgm. per cent.; immediately at end of clonic phase, 132 mgm. per cent.; ¼ hour after fit, 125 mgm. per cent.; ½ hour after fit, 190 mgm. per cent.; ¾ hour after fit, 185 mgm. per cent.; 1¼ hour after fit, 190 mgm. per cent. He had no lunch

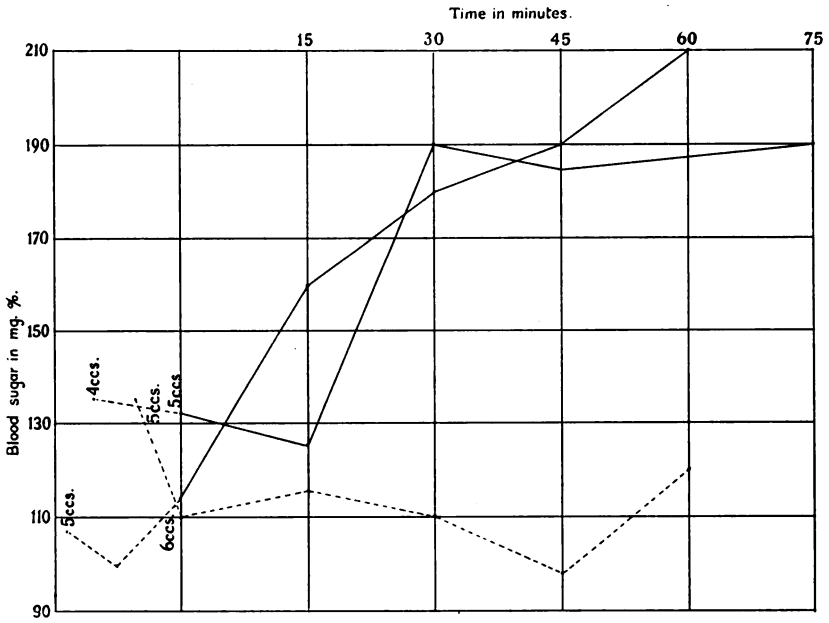


FIG. 1.—The effect of cardiazol on the blood sugar of a diabetic patient. The continuous lines indicate the changes following a convulsion. On one occasion no fit occurred.

and very little food for the rest of the day. A specimen of urine passed at 6 p.m. contained 2 per cent. of sugar.

July 16, 1939: At 10.25 a.m., following his usual breakfast, 5 c.c. of cardiazol were given. He sat up, breathed more deeply, had a few clonic spasms and then became quiet again. As he did not show any discomfort, it was decided not to give him a further injection so as to determine the effect of a sub-convulsive dose. Blood sugar: Before injection, 135 mgm. per cent.; 5 minutes after injection, 110 mgm. per cent.; 20 minutes after injection, 115 mgm. per cent.; 35 minutes after injection, 110 mgm. per cent.; 50 minutes after injection, 98 mgm. per cent.; 65 minutes after injection, 120 mgm. per cent. The 6 p.m. specimen of urine contained 1·4 per cent. of sugar.

https://doi.org/10.1192/bjp.86.363.688 Published online by Cambridge University Press

July 18, 1939: At 12·5 p.m., having had his usual breakfast, 5 c.c. of cardiazol were given. He sat up and gave a few clonic spasms. At 12.17 p.m. 6 c.c. of cardiazol were injected and a normal fit followed. Blood sugar, before first injection, 107 mgm. per cent. Immediately following first injection, 100 mgm. per cent.; immediately at end of clonic phase, 114 mgm. per cent.; ¼ hour after fit, 160 mgm. per cent.; ½ hour after fit, 180 mgm. per cent.; ¾ hour after fit, 190 mgm. per cent.; 1 hour after fit, 210 mgm. per cent. There was no sugar present in the 6 p.m. specimen of urine. The patient was unduly cyanosed during the fit and later he became restless. One hour after the fit the apical heart rate was 170/minute with an irregularity occurring every 7th to 10th beat. The patient was sweating and cold. Numerous small petechiae were seen around the base of his neck and over the upper part of the chest. Digitalin gr. 1/100 was given subcutaneously. His pulse gradually became normal during the course of the afternoon, and at 11.30 p.m. was perfectly regular and beating at 105/minute.

Comments.

It was hoped that these observations would be the preliminary to further investigations, but the occurrence of auricular fibrillation in a fat diabetic contra-indicated further treatment. No change was noted in his mental condition, and his appetite was poor for a few days after the last fit.

The effect of giving cardiazol was to produce a preliminary lowering of the blood-sugar level followed by a slow rise, which had not begun to fall by the end of an hour. Meduna and Rohny found, in non-diabetic patients, a rise which reached its peak about half an hour after the fit and was not preceded by a fall.

I wish to thank Dr. T. E. Harper, Superintendent of Holloway Sanatorium, for permission to publish this paper.

Reference.

Meduna, L., and Rohny, B. (1939), "Insulin and Cardiazol Treatment of Schizophrenia," *Lancet*, May, 1939, ii, 1139.

https://doi.org/10.1192/bjp.86.363.688 Published online by Cambridge University Press