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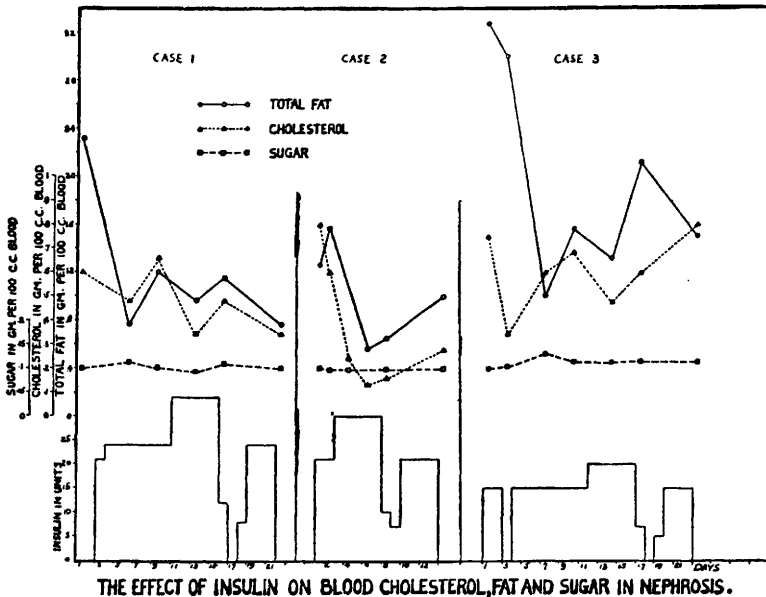
The Effect of Insulin on Blood Cholesterol, Fat and Sugar in Nephrosis.

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It is well known that in severe diabetes, blood fat and cholesterol are often increased, and the lipemia in such cases disappear promptly with insulin treatment. In nephrosis, there is also marked hypercholesterolemia and lipemia, but normal blood sugar. Observations on the effect of insulin on the blood fat and cholesterol in such condition, however, have not been recorded as far as we can ascertain. It is the purpose of the present communication to report 3 cases of nephrosis in which frequent observations were made of the blood fat, cholesterol and sugar after the administration of insulin, in varying doses, three times daily before meals, for certain periods of time. The results obtained are summarized in the chart.

In each of the 3 cases, injection of insulin was followed by a decrease of both cholesterol and fat in the blood. The decrease of cholesterol was immediate, as shown in cases 2 and 3, in which blood was taken on the 1st or 2nd day after the injection, while



the decrease of fat, though more extensive (cases 1 and 3), lagged behind. On continuing the insulin administration with the same dosage, the initial fall of cholesterol and fat was followed by a tendency to rise in both of these elements, though not to the original level. In cases 1 and 3, when the insulin was increased on the 11th and 12th day respectively, a second decrease of both cholesterol and fat took place, but they again tended to increase upon the continuance of even larger dosage of insulin. After insulin was withheld for a day or two (cases 1 and 3), resumption of the drug could again lower the cholesterol and fat content of the blood (though the last determination of cholesterol in case 3 was unaccountably high).

The blood sugar, on the other hand, showed practically no change in spite of the continued insulin administration. This raises the question in our minds whether the presence of excessive cholesterol and fat inhibits the action of insulin on carbohydrate metabolism.

With the insulin therapy, all the three patients felt better subjectively, with increased appetite and brightening of mentality. There was, however, no increased diuresis or decreased albuminuria noticed in these cases.

During the course of this investigation, Mahler's work¹ appeared. He demonstrated a slight increase of blood cholesterol, along with the increase of blood sugar during ether anesthesia. This cholesterol elevation could be prevented by previous insulin injection, thus substantiating our conclusions concerning the depressant effect of insulin on blood cholesterol.

From our work no conclusion can be drawn in regard to the fate of cholesterol and fat after they are made to disappear from the blood by insulin. Nitzescu and Cadariu² found that insulin increases cholesterol and fat deposition in the liver and lungs of dogs, and depancreatized animals are unable to store up cholesterol and fat in these tissues. The insulin action in nephrosis may well be a matter of increased storage, but the possibilities of increased output and increased utilization are not excluded. We are continuing our work on that line.

¹ Mahler, A., *J. Biol. Chem.*, 1926, lxi, 653.

² Nitzescu and Cadariu, *Compt. rend. Soc. de Biol.*, 1925, xcii, 1503.