

EARLY MATURITY ONSET DIABETES MELLITUS PRESENTING AS EPISODES OF HYPOGLYCAEMIA

Pages with reference to book, From 129 To 130

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Introduction

Diabetes mellitus is a genetically determined disorder of metabolism which in it's fully developed clinial expression is characterized by fasting hyperglycaemia. In early maturity onset diabetes the most common abnormality is delayed secretion of insulin following a glycaemic stimulus which may then be followed by an exaggerated response (Seltzer et al., 1967). This disturbance of insulin in early diabetes can lead to hypogly-caemia which in many patients is not severe to be symptomatic. However, in an occasional patient symptoms related to hypoglycaemia are predominant, which cause diagnostic confusion and delay in appropriate treatment.

In this case report we describe a patient with early maturity onset diabetes who presented with episodic symptoms of palpitation, sweating, weakness, visual blurring, tachycardia and lack of concentration which were from time to time ascribed to anxiety state and neurasthenia. The diagnosis of hypoglycaemia of early maturity onset diabetes was finally established by doing a five hour glucose tolerance test supported by insulin studies.

Case Report

A 40 years old obese male presented with a history of episodes of restlessness, palpitation, tremulousness, sweating, tachycardia and visual blurring which he had been experiencing frequently over the past one year. He was well until 1976 when he had an attack of viral hepatitis. During this episode he received steroid preparations prescribed by a general practitioner for 2-3 weeks alongwith glucose infusions. During this treatment hyperglycaemia was detected transiently which subsided after the attack of viral hepatitis was over. His follow up of liver function showed complete recovery over the next 6 months. He remained well for 2-1/2 years until in 1979 he began to have frequent episodes of palpitations, weakness, lack of concentration, tachycardia visual blurring and sweating during the day which usually improved after taking sweets and soft drinks.

Physical examination showed an obese man with a weight excess of 12% above the standard weight. There was mild odema of the legs. B.P. was 110/70 mm of Hg. The rest of physical examination was normal. The laboratory investigation showed a normal Hb, total leucocyte count and urinalysis.

The biochemical investigations were as follows:-

Blood urea 36 mg/100 ml, uric acid 4.6 mg%, phosphorus 3.5 mg%, calcium 9 mg/ 100 ml, cholesterol 166 mg/100 ml, and triglycerides 96 mg%. Random blood glucose was 130 mg%. Liver function profile was normal. A 24 hours urinary excretion of 17 ketosteroid and 17 hydroxycorticoids was within normal limits. A barium meal follow through study and liver scan were normal. Because of his anxious nature he had been taking treatment from various doctors and developed a strong anxiety state. During the history patient revealed that his attack of palpitation and sweating which improved after taking sweets and drinks came on nearly 3 hours after having a meal and particularly if he had to do physical exertion.

Because of strong family history of diabetes the possibility of reactive hypoglycaemia of early diabetes was considered. The patient was subjected to a 5 hours glucose tolerance test (GTT) which was supported by simultaneous insulin studies. The results of five hours GTT and insulin study are shown

in Fig. 1 and 2 respectively.

FIG : Nö.1

**5 HOURS GLUCOSE TOLERANCE TEST IN
NORMAL PERSON & PATIENT WITH EARLY
MATURITY DIABETES PRESENTING SYMPTOMS
OF HYPOGLYCEMIA.**

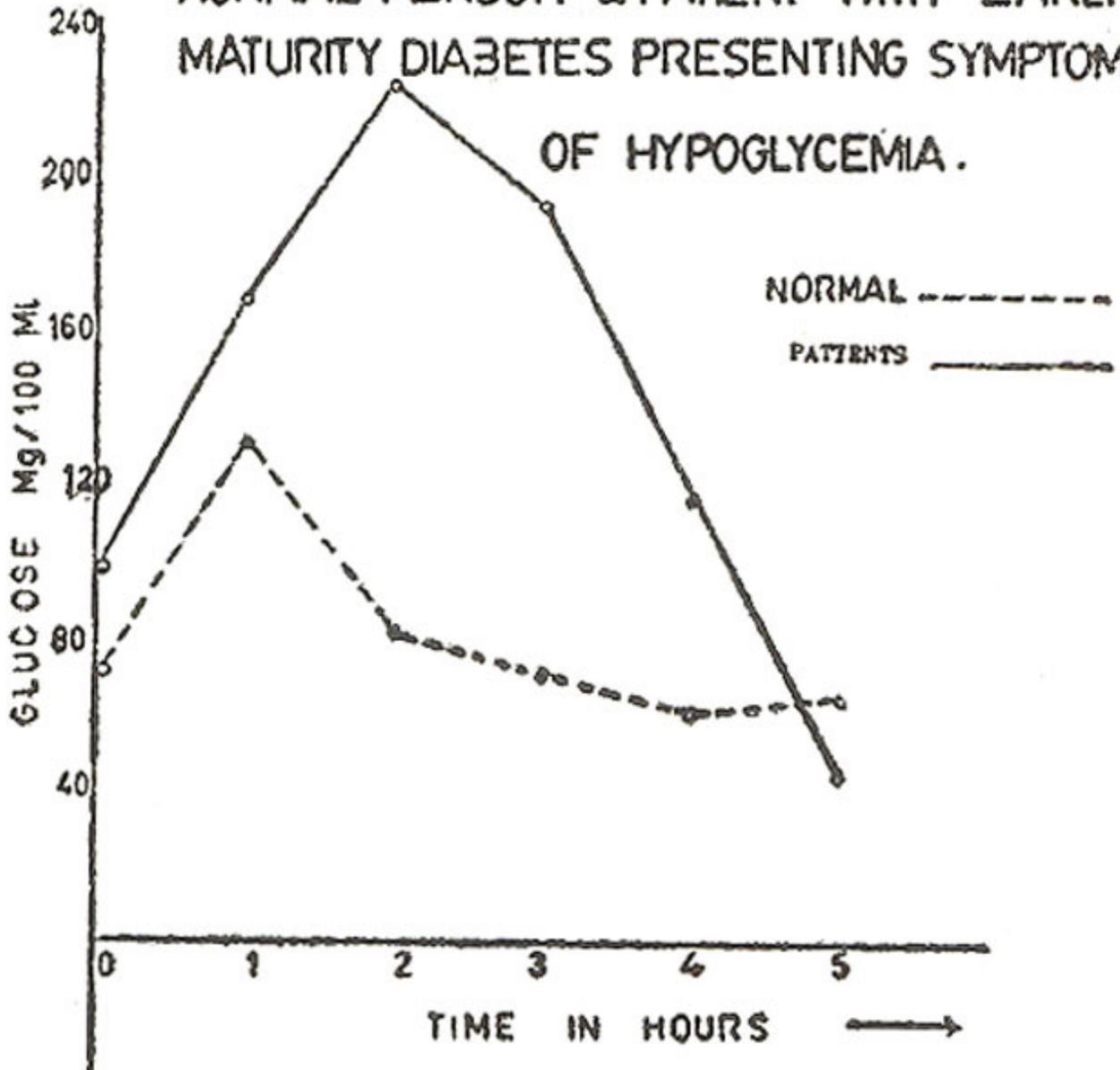
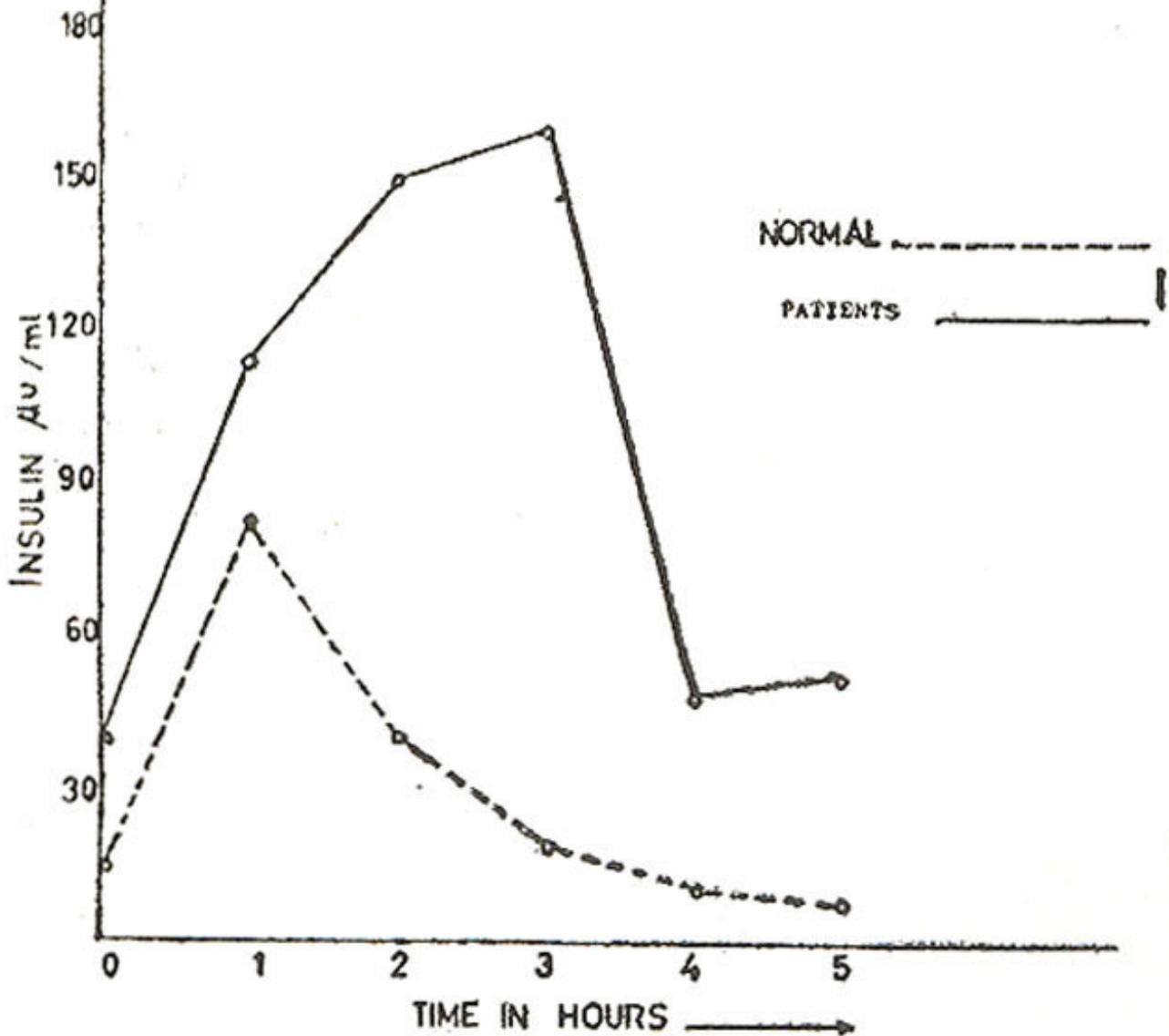


FIG: No. 2

5 HOURS INSULIN PROFILE IN NORMAL PERSON & PATIENT WITH EARLY MATURITY DIABETES PRESENTING SYMPTOMS OF HYPOGLYCEMIA.



The glucose was estimated by colorimetric method described by King and Wooten (1964). Plasma immuno-reactive insulin (IRI) was determined by radio-immunoassay method of Hales and Randle (1963). The insulin assay kit were obtained from the radio-chemical centre, Amers-ham England. As seen in Fig. 1 the patient has a diabetic GTT curve, the glucose peak reached at 2 hours sampling time

and the level declined in subsequent samples and at five hours it had reached hypoglycaemic level i.e. 40 mg/100 ml. The earlier symptoms of palpitation and weakness were reproduced between 4 and 5 hours of the start of GTT which confirmed the diagnosis of hypoglycaemia of early maturity onset diabetes.

The insulin studies show that there is a delay in insulin response following the glucose stimulus and the peak is reached in 3 hours at a time when the glucose level is continuously falling.

On the basis of a diagnosis of reactive hypoglycaemia of early diabetes the patient was advised to have small frequent high protein feeds and avoid concentrated carbohydrates. The patient has been observed over the past 4 months and is asymptomatic.

Discussion

Symptomatic hypoglycaemia occurring 4 to 5 hours after meal may be the earliest clinical manifestation of diabetic state. This phenomenon, originally attributed to dys-insulinism, has been shown to result from an abnormality in the release of insulin by the pancreas. Within minutes after the absorption of oral glucose the normal pancreas secretes insulin, which facilitate the uptake of glucose by muscle and adipose tissue, and the formation of glycogen by the liver.

In many newly diagnosed diabetics insulin secretion is inadequate or delayed and the rise in blood glucose proceeds unchecked. The slug-beta cells of the early diabetic respond in a delayed but exaggerated fashion to the extra glucose drive (Seltzer et al., 1956). The insulin reaches a peak at a time when supply of glucose from intestinal tract is no longer able to buffer its effect. Plasma glucose, subsequently falls to hypoglycaemic levels and some patients experience typical symptoms of hypoglycaemia. The symptoms which occur between the fourth and fifth hour after a glucose load are related directly to delayed but exaggerated response of insulin secretion. The frequency of hypoglycaemia in early diabetes mellitus may be more common than often apparent. An exact measure of phenomenon is difficult since glucose tolerance tests are infrequently carried out beyond 3 hours and in addition hypoglycaemia is less likely to occur in the resting condition under which glucose tolerance tests are performed. The necessity of early diagnosis of this condition is obvious as the results of dietary treatments are rewarding.

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