The Honeymoon Period in Non–Insulin-Dependent Diabetes Mellitus

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Dietary management is the cornerstone of care in non–insulin-dependent diabetes mellitus (NIDDM). In adults, partial or complete remissions of hyperglycemia are usually attributed to loss of weight during diet therapy in a previously obese patient.[1] In insulin-dependent diabetes (IDDM), transient remissions are commonly known as the "honeymoon period," and generally continue for weeks to months. The current hypothesis is that early aggressive control of blood glucose levels temporarily remediates the relative beta cell exhaustion and allows for short-term glucose homeostasis without exogenous insulin.[2] Control of blood glucose without significant weight loss in a nonobese patient may precipitate a remission phase in NIDDM, but such reports are rare.[3] The case presented here demonstrates such a remission phase in a lean patient.

CASE REPORT

A 58-year-old man presented for his first visit with a three-week history of weakness, polyuria, polydipsia, polyphagia, and a 12-lb weight loss. He had no history of diabetes mellitus in himself or his family. He smoked one pack of cigarettes a day, did not drink alcohol, and took no regular medications.

Physical examination showed a well-nourished, well-developed man. His height was 6′1″, weight 202 lb, blood pressure 116/90 mmHg, heart rate 88 beats per minute, and ear, nose and throat, lung, cardiac, and abdominal examination revealed no abnormalities. A random blood glucose determination was 17.5 mmol/L (316 mg/dL), he had glucosuria (4+), and his urine was negative for ketones.

His ideal body weight was calculated to be 190 to 200 lb, and he was begun on a 2,000-calorie American Diabetes Association diet. At two visits over the next two weeks, he showed a further 4-lb weight loss and complete resolution of all symptoms. His fasting blood glucose levels were 15.5 to 15.7 mmol/L (279 to 282 mg/dL), and two-hour postprandial levels were 19.6 to 20.8 mmol/L (353 to 375 mg/dL). Six weeks after initial presentation his weight was 196 lb, and his fasting blood glucose was 5.5 mmol/L (99 mg/dL) with postprandial level of 7.3 mmol/L (132 mg/dL) (Figure 1). Three months into his illness his weight was 198 lb, and his fasting blood glucose measured 5.4 mmol/L (98 mg/dL) and postprandial 5.6 mmol/L, (100 mg/dL). Ten months after presentation, his postprandial blood glucose level was 5.6 mmol/L (100 mg/dL), and he began a more liberal approach to his diet. He did not return again until 23 months after presentation, when he again had a three-week history of polyuria and polydipsia. At this time, his postprandial blood glucose level was 15.3 mmol/L (275 mg/dL), weight was unchanged, and he was again placed on a 2,000-calorie diet. His blood glucose levels continued in the range of 15.3 to 16.7 mmol/L (275 to 300 mg/dL) despite the calorie restriction, and at his request, an oral hypoglycemic was begun with subsequent good control of blood glucose levels.

DISCUSSION

This nonobese patient demonstrated a prolonged remission of hyperglycemia after calorie restriction. In IDDM factors predicting remission include advanced age, male sex, and mild initial metabolic derangement.[2] This remission is thought to be dependent on a functional recovery of the beta cell,[4] which has been shown to coincide with return of insulin release in response to a glucose load.[5] The duration of the remission phase is inversely correlated with hemoglobin A_{1C} at the time of diagnosis,[6] supporting the concept that decreasing islet cell demand may result in a longer remission.

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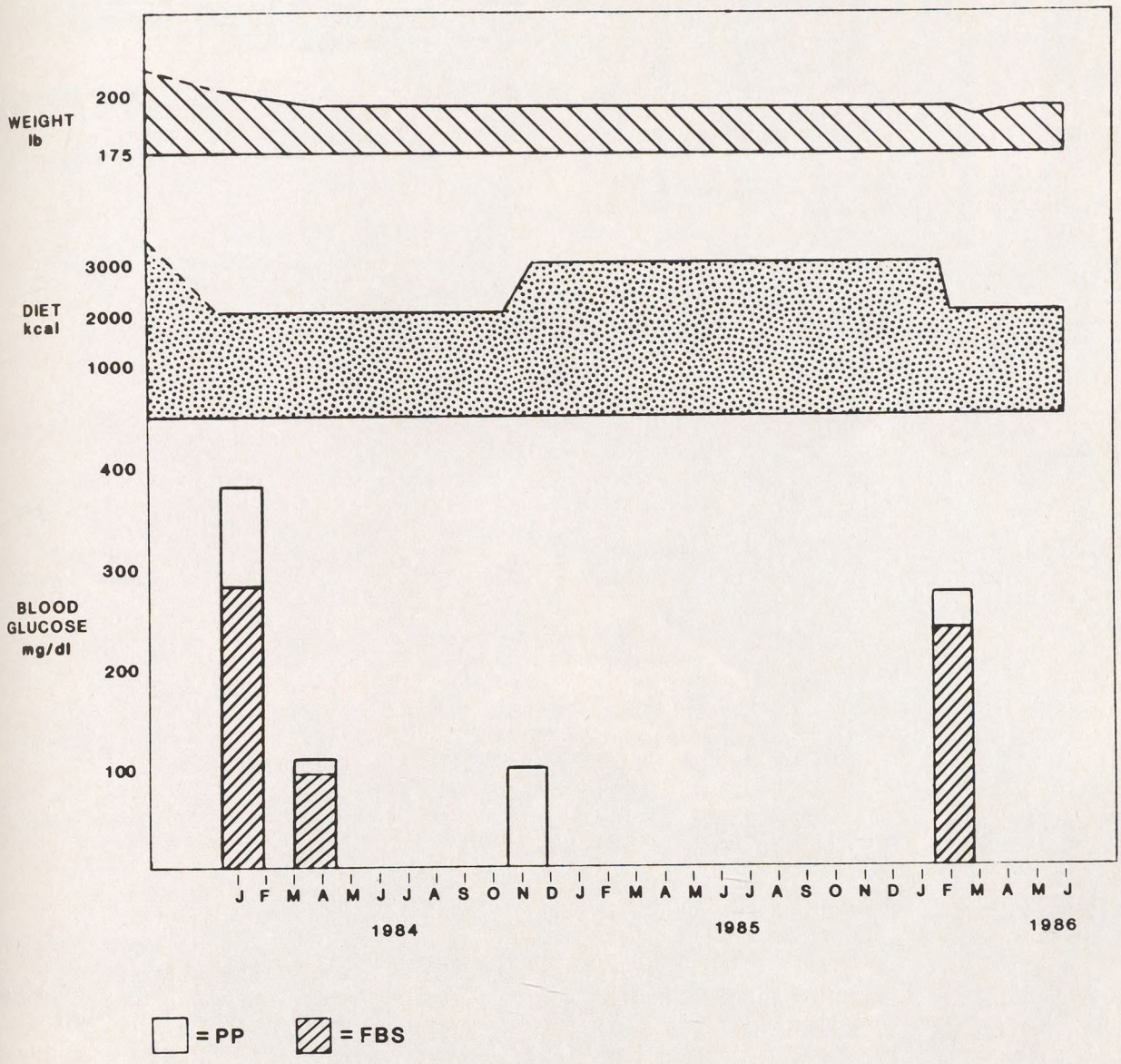

Figure 1. Patient's clinical data. PP, postprandial blood glucose levels; FBS, fasting blood glucose levels

Pirart and Lauvaux[7] reported a large series of remissions in 1971. Of the 280 cases summarized, 76 showed no weight change and 7 actually gained weight. Presence of ketonuria was not found to be predictive of a remission in these patients. Wall et al[8] reported in 1973 that 80 percent of obese diabetics in their series of 200 had their blood glucose levels controlled by carbohydrate restriction and 80 percent of these achieved control without weight loss. Another group of 118 NIDDM patients managed with diet only showed an increase in stimulated insulin levels that correlated with the degree of weight loss during treatment, but the mean weight loss was only 5.1 kg (11.2 lb).[9] These authors suggested an analogy of remission with Starling's law of the heart. As weight or glucose load increases the load on the pancreas, the organ enters a failure curve, which can be partially reversed by reducing the load with weight loss or dietary management. In the patient discussed here, only a heavy caloric load can be identified as a precipitant for beta cell insufficiency, which abated temporarily with calorie restriction. Secondary causes of hyperglycemia including epidermoid neoplasms,[10] thyroid disease, pheochromocytoma, and ad-

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renal cortical tumor,[11] are occasionally associated with apparent remissions, none of which were present in this patient.

In summary, a temporary return of blood glucose control with caloric restriction is relatively common in obese patients with NIDDM, even in the absence of weight reduction. This "honeymoon phase" is unusual in lean patients with NIDDM. The case reported here supports the concept of a heavy caloric load as a precipitant in beta cell insufficiency in the nonobese patient.

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