Case Report
The Considerable Distance Between Pain in the Feet and Hypoglycemia

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Abstract

A case report is presented in order to alert professionals to the nutritional factors that underlie many human dysfunctions as diverse as hypoglycemia and pain in the feet.

The individual presented was a severe hypoglycemic with a history of severe mental disorder, past alcoholism, and pain in the feet. He was able to return, symptom-free, to his job as a truck driver when appropriate nutritional therapy was rendered.

A plea is made for physicians to consider the nutritional aspects of all human function rather than merely those disorders that have been catalogued as nutritional deficiency diseases.

The practice of medicine has traditionally been more involved with external origins of disease (for example; infectious agents) than with alterations in the host that predispose to disease. Nutrition is a major variable in determining susceptibility or resistance of the host to disease.

Medicine has recognized the nutritional origin of some diseases (scurvy, beri beri, pellagra, etc.) but preoccupation with disease itself has apparently impeded recognition or acceptance of nutrition as a basic core factor in everyday human function and dysfunction.

The following case report is presented to illustrate the impact of optimal nutritional balance on mental and bodily functions that may not be classically associated with nutritive deficiencies.

A 34 year-old Caucasian truck driver, K.T., developed severe chronic pain in the arch of the right foot. Later, pain in the ball of the left foot also appeared. Many physicians were consulted. Various treatments including injections, medications, physical therapy, and plastic shoe inserts were not helpful in relieving the pain.

Although truck driving was this patient's desired occupation, he gave it up because of the painful feet. Two years later, the chronic pain in the feet had gone away but was replaced with a diffuse burning of the soles of the feet that came on irregularly. He also experienced stiffness and pain in his

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muscles and joints and was less limber than in previous years.

Ten to fifteen years previously, the patient had sustained two "nervous breakdowns". He was hospitalized on both occasions. The diagnosis was acute psychosis, paranoid schizophrenia. Because of this history, some of his physicians considered his foot symptoms to be psychogenic. He had been treated by several psychiatrists without improvement.

For many years, K.T. had been an alcoholic. He regularly consumed large quantities of "hard liquor". He also smoked about two packs of cigarettes per day and drank a great deal of coffee. He had also been a marijuana addict. There was a lifelong history of constipation, requiring laxatives and enemas.

K.T.'s mother and father were divorced. His father was an alcoholic.

This man consulted me because of his burning feet and increasing muscular stiffness. He had not driven a truck in two years. He had not consumed alcohol, coffee, marijuana, or cigarettes in two years. In place of alcohol, he had become addicted to eating fruits and drinking fruit juice. He acquired an interest in yoga and nutrition. He wished to be rid of his burning feet symptoms and to acquire guidance in nutrition. Despite a college degree in accounting, he wished to be able to return to his occupation as a truck driver.

Physical Examination

K.T. was found to be prematurely aged. At thirty-four years, his skin resembled that of a much older person. Wrinkles were prominent around the mouth. He was quite thin. The tongue was swollen, red, and corrugated giving the appearance of chronic vitamin B deficiency. There were cracks at the corners of the mouth and flaky scaling in the eyebrows, nasolabial creases, and behind the ears. The nasal turbinates were bluish white in appearance, suggesting the presence of a chronic allergic condition. Para-nasal puffiness was evident. The deep tendon reflexes in the lower extremities were absent. Peripheral pulses were normal but sensation to pinprick in the lower extremities was dulled. The liver was not enlarged.

Laboratory Investigation

A large battery of laboratory tests revealed the following significant features:

1. A white blood cell count of 4,900 (repeated, 4,700).
2. A peripheral blood eosinophilia of 8 percent (repeated, 10 percent).
3. A moderate degree of undigested starch and fat in two specimens of stool.
4. Excess magnesium and calcium in hair analysis with deficits of potassium, manganese and chromium.
5. Blood uric acid of 7mg/dl with a blood cholesterol of 130mg/dl
6. A normal battery of liver function tests.
7. A six hour glucose tolerance test showing severe hypoglycemia (Figure 1). Several fasting blood sugars ranged between 50 and 60mg/percent.
8. Two blood amylase values below the normal value.

Course

K.T. was treated with vitamin and mineral supplements (guided by hair analysis), digestive aids in the form of pancreatic secretions, and with personalized dietary improvement. A high protein diet was given. Within six months of treatment, the nutrient deficiencies evident on the skin and tongue disappeared. There were no symptoms referable to the feet despite returning to his job as a truck driver. The deep tendon reflexes reappeared. His muscular stiffness vanished. The white blood cell count climbed to the normal range and the fat and starch disappeared from the stool. The glucose tolerance test has not yet been repeated but the fasting blood sugar values are now between 80 and 90mg/percent whereas they initially ranged between 50 and 60mg/percent.

Discussion

The physiological and social factors associated with an alcoholic father and a divorced

family were important background variables. The history of chronic constipation indicated chronic bowel disorder, improper diet, nutrient deficiency, disturbed autonomic nervous system function, chronic allergy, or some mixture thereof. (Constipation is one of the most characteristic symptoms of chronic allergy, often food allergy. Diarrhea, of course, may also be an allergic symptom.) Hypoglycemia may well have been present from early life.

Hypoglycemia is found almost universally in alcoholics and it is present more often in the relatives of alcoholics than in the general population. (Personal communication: Dr. Ross Cameron, M.D., retired, Public Health Service, St. Petersburg, Florida.) The Glucose Tolerance Test curve was highly abnormal at a time two years after alcohol was given up. This, along with normal liver function tests, suggests that the hypoglycemia was a chronic condition antedating the alcoholism, drug addiction, and foot symptoms.

The presence of peripheral nerve polyneuropathy was documented on physical examination some three years after the onset of feet symptoms. Signs of B vitamin deficiency were also evidenced in the patient's skin and tongue. These manifestations were present at a time when K.T. was eating well and avoiding all alcohol, caffeine, and cigarettes. This suggested that nutritional depletion was a factor in the production of his prior illnesses.

Absolute or relative B vitamin deficiency has been linked with mental illness (Hawkins and Pauling, 1973). Some individuals have needs for vitamins far in excess of those of others (Hawkins and Pauling, 1973). Alcoholics are well known for their nutritional insufficiencies, but too little attention has been paid to the nutritional needs at times when they are not drinking! Vitamin lack is a standard cause of polyneuropathy (Merrit, 1955). Hoffer and Walker have noted the frequent occurrence of polyneuropathy and psychiatric disturbance in hypoglycemia (Hoffer and Walker, 1978). Burning feet is a classical symptom of polyneuritis due to a deficiency of B vitamins.

Hypoglycemia is most commonly a nutritional disorder. It may, however, be an allergic phenomenon (Philpott, 1977). Allergy, itself, may have a nutritional origin.

The patient's eosinophilia suggests the presence of allergy. A lowered white blood cell count, as found in this patient, can be associated with nutritional deficiency but in the author's experience is more commonly an accompaniment of a chronic allergic condition. Blood amylase values that are lower than normal may indicate an insufficiency of pancreatic secretion. The presence of undigested fat and starch in the stool is the result of digestive inadequacy, perhaps due to pancreatic insufficiency. The somewhat low blood-cholesterol value in a person consuming animal food and in the face of a high normal uric acid value also suggests a digestive disorder — specifically, that fat is not being digested or absorbed.

Commonly, digestion is faulty when nutrients are imbalanced or deficient although the reverse is also true that faulty digestion may result in nutrient imbalance or deficiency.

Throughout this man's long history of constipation, mental illness, alcoholism, drug addiction, and painful burning feet he had never been treated with a nutritional regime. Multiple non-nutritional therapies in the past had failed to relieve his complaints. It is unlikely that the power of the author's personality caused him to change when so many previous therapists, including psychiatrists, were unable to do so.

The nutritional message has not been told sufficiently so that professionals appreciate the broad nutritional base of human function and dysfunction. Hoffer and Walker, in a recent book, have addressed this issue (Hoffer and Walker, 1978).

Appropriate nutritional intervention directed at the nutritional aspects of constipation, mental illness, alcoholism, drug addiction, burning feet, allergy, or hypoglycemia could have assisted K.T. in obtaining earlier therapeutic success and relief of misery. K.T. serves well as an example of the power of nutrition to influence human function.

The considerable distance between pain in the feet and hypoglycemia is only as long as one's framework of understanding. When

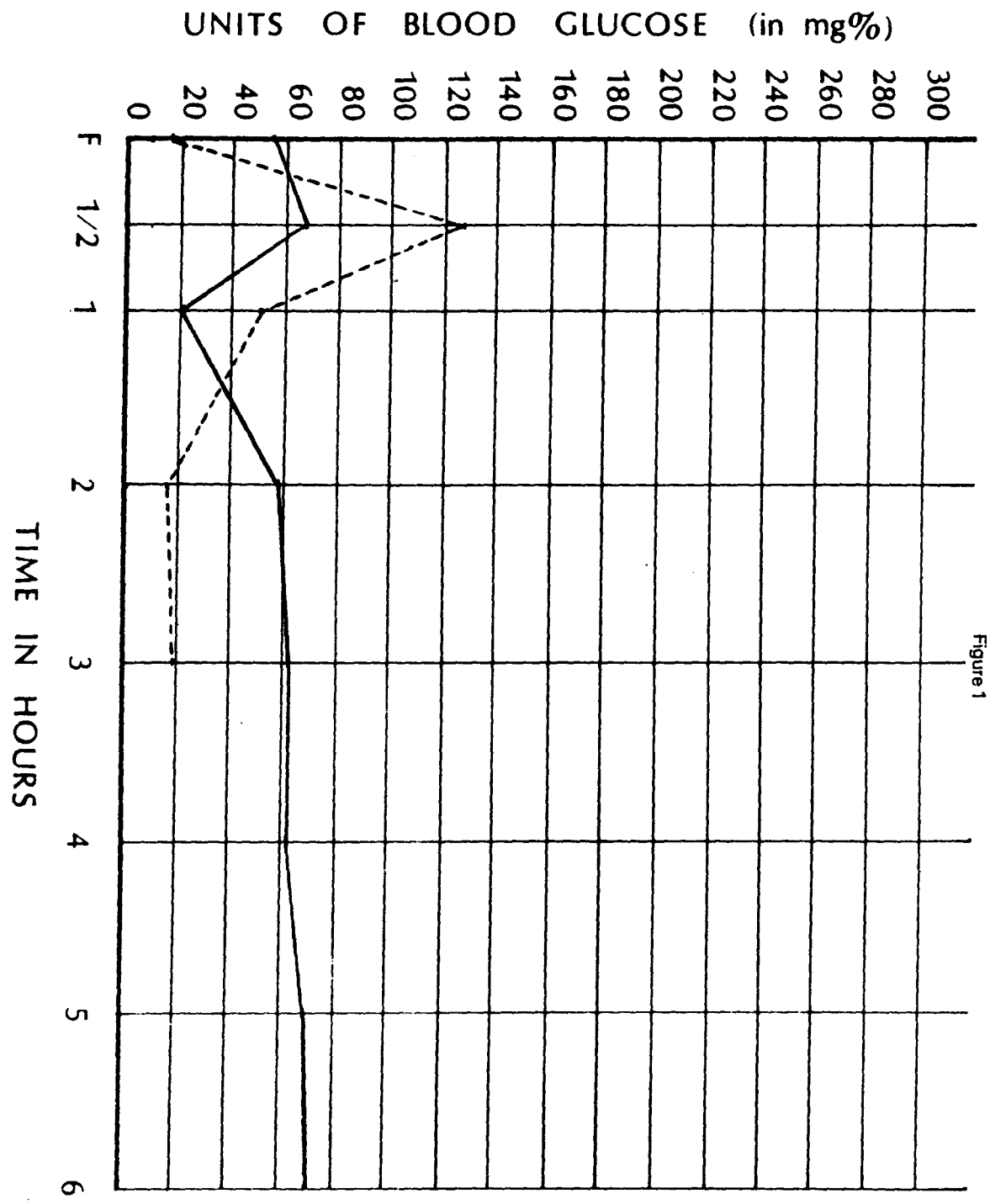
UNITS OF BLOOD GLUCOSE (in mg%)
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
F
1/2
1
2
3
4
5
6
TIME IN HOURS

Figure 1

the frame includes an appreciation of the impact of nourishment on all aspects of human function, human suffering will diminish as optimal nourishment engenders optimal cellular function.

Figure 1 - Six hour "glucose tolerance test" of patient, K.T., with burning feet and muscular stiffness.

This is actually a "natural tolerance test" because the test was taken using the patient's breakfast as the loading dose of carbohydrate. Breakfast consisted of a 16 ounce glass of orange juice, two fried eggs, and three pieces of toast with butter. All blood glucose values were determined by a true glucose method.

The blood glucose values are represented by the solid line. The blood insulin levels are shown by the dotted line. The scale on the ordinate of the graph lists the units of blood glucose. For the purposes of this graph, 20 units on the glucose scale represents 10 units of insulin in micro-units per milliliter.

The fasting blood sugar of 55mg/percent is distinctly low. A slight increase occurs at one half hour followed by a profound drop to 21 mg/percent. The level at two hours is still profoundly low at a value of 38mg/per-cent. The three hour level of 62mg/percent is still suboptimal as are the remaining values that never exceed 70mg/percent. The overall curve is that of severe hypoglycemia.

Blood insulin levels are generally normal although the peak level of 64 micro-units per milliliter is somewhat low for the American population. This level may indicate that the pancreas is not overactive in keeping with the patient's emphasis on a diet free of junk foods in the two years prior to this test.

An alternate interpretation is that his insulin-secreting capacity may presently be limited (dampened) as a sequel to many years of wrong eating, nutritional deficiency, and alcoholism. Two low blood amylase values support this contention as does the presence of undigested starch and fat in the stool specimens.

The peak insulin value at one half hour is associated with the dip in blood glucose at one and two hours. The overall low blood-sugar levels and the exaggerated effect from

levels of insulin that are not excessive suggest a deficiency of counterbalancing ad-drenocortical hormones. The rise of blood sugars in the final hours of the test indicate normal liver function, as did the battery of blood tests performed to assess liver function.

The overall pattern of the blood glucose curve is one that the author describes as glucose decline (Wunderlich, 1980). It appears most commonly in asthenic ectomorphs, like this patient, who are nutritionally deficient and who have impaired absorption of food from the gut. Undigested food was found in this man's bowel specimens. He had developed an interest in proper eating in the last two years. He, however, like many hypoglycemics had become a fruit-a-holic instead of an alcoholic. His diet was deficient in protein as well as vitamins and minerals. The hair analysis indicated mineral deficiency as well as imbalance. The hair pattern was that characteristically found in hypoglycemics.

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