A STATISTICAL COMPARISON BETWEEN DIFFERENT TESTS FOR THE DIAGNOSIS OF LATENT DIABETES AND THEIR CLINICAL RELEVANCE

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The early diagnosis of a diabetic disturbance of carbohydrate metabolism is clinically important. It is well known that a latent state of diabetic metabolism can promote organic changes such as retinopathy, nephropathy, polyneuropathy or arteriosclerosis, long before a diabetes mellitus with its elevated fasting blood glucose level and glucosuria becomes evident. If the latent diabetes mellitus is diagnosed in time, it is possible to avoid or at least delay the diabetic complications through dietary treatment.

It is still debatable which of the known tolerance tests of carbohydrate metabolism should be given preference. We therefore performed 4 of these tests on selected patients at our outpatient department in order to determine their glucose tolerance. The results of the tests were evaluated and compared statistically with each other using the various criteria which were to be found in the literature on the subject.

MATERIAL AND METHODS

Glucose tolerance tests, both oral (OGTT, 50 and 100 g) and i.v. (IVGTT, 25 g) as well as a tolbutamide test (TT), were carried out in 89 patients who, on the basis of clinical indications such as adiposity, hyperlipidemia or fatty liver, showed signs of a possible latent diabetes mellitus. Patients with already diagnosed diabetes were not included in our study. These tests were performed at intervals of 3 days. They were carried out and calculated as follows (see tab. 1).

Oral glucose tolerance tests (OGTTs), 50 and 100 g respectively - After a high carbohydrate diet (~ 250 g/die) lasting 3 days and a 14-h period of fasting the selected patients were given 50 g or 100 g glucose to drink. Capillary blood samples were taken in the fasting state and 30, 60, 120 and 180 min after receiving the test drink.

The results of the OGTTs with 50 and 100 g respectively were considered pathological if the blood glucose level was either above 180 mg/100 ml after 1 h or above 140 mg/100 ml after 2 hrs or above 110 mg/100 ml after 3 hrs. Levels of less than 160 mg/100 ml after 1 h, less than 120 mg/100 ml after 2 hrs or less than 100 mg/100 ml

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Table 1 - Criteria for the calculation of the various carbohydrate metabolism tests. 

after 3 hrs were considered normal. OGTTs were also evaluated using the method of Kößering and Creutzfeldt\(^1\) according to which all values above 300 mg/100 ml, resulting from the addition of the 1-h and 2-h readings, are regarded as diabetic, all values below 300 mg/100 ml as normal. A border range of values was not given by these authors.

**I.v. tolbutamide test (TT)** - After the appropriate dietary preparation (3 days of carbohydrate-rich diet and a 14-h fast) 1 g tolbutamide (Rastimon \(^2\) or Artosin \(^2\)) was injected i.v. Preprandial glucose levels in capillary blood as well as postprandial values after 20, 40 and 60 min were measured. The tests were evaluated using the method of Lange et al.\(^6\): \(T_3\) values of \(-1.51\) and less were considered normal, \(T_3\) values of more than \(-1.50\) abnormal\(^6,7\). Within the \(T_3\) scale of values Schütz\(^8\) distinguished a border range of \(-1.51\) to \(-1.80\). According to the third method of evaluation, the border range lies between \(-1.01\) and \(-1.50\).