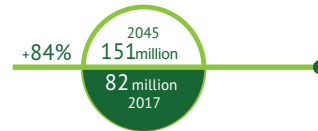


GAD-65 ANTIBODY TEST AND HOMA INDEX



A DIFFERENTIAL DIAGNOSIS OF DIABETES

- **Type 1.5 diabetes** is a non-official term that is sometimes used to refer to a form of type 1 diabetes known as **Latent Autoimmune Diabetes in Adults (LADA)**.
- The term type 1.5 refers to the fact that the condition is a form of type 1 diabetes that can share some features that are more commonly associated with type 2 diabetes.
- Type 1.5 diabetes is mostly misdiagnosed during adulthood as type 2 diabetes and is diagnosed by the help of **GAD-65 test**.
- Type 1.5 diabetes also has a slow onset, similar to type 2 diabetes. However, type 1.5 diabetes is an autoimmune disease like type 1 diabetes and will almost certainly require insulin therapy at some point in the future.
- Insulin resistance test detects **hyperinsulinemia** (increased insulin levels in blood). It is detected by **HOMA Index** (Homeostasis Model Assessment).
- **HOMA** is calculated from blood glucose and insulin levels.



SOUTH-EAST ASIA

1 in 5 adults with diabetes lives in this region

1 in 4 live births is affected by hyperglycaemia in pregnancy

Top 5 countries for number of people with diabetes (18-99 years)

1. India	74,047,266
2. Bangladesh	7,349,526
3. Sri Lanka	1,248,310
4. Nepal	679,207
5. Mauritius	236,795

Source : American Diabetes Association

Know the right type, right away

Make accurate, differential diabetes diagnosis sooner

Glutamic Acid Decarboxylase (GAD-65) Antibody Test

Glutamic acid decarboxylase (GAD-65) antibody is useful to diagnose insulin dependent diabetes mellitus Type 1 diabetes or autoimmune-mediated diabetes or **Latent Autoimmune Diabetes of Adulthood (LADA)**

Before clinical onset, Type 1 diabetes is characterized by lymphocytic infiltration of the islet cells, and by circulating autoantibodies against a variety of islet cell antigens, including **GAD-65**, IA-2 (a tyrosine phosphatase-like protein), and insulin (IAA).

WHAT YOU SHOULD KNOW ABOUT

Type 1.5 Diabetes

aka: Latent Autoimmune Diabetes in Adults (LADA)

Fact #1

Type 1.5 Diabetes looks like Type 2.

10% - 25% of Type 2 diagnoses may in fact be Type 1.5



Fact #2

Symptoms are similar to Type 2 Diabetes:



Weight loss



Excessive thirst



Frequent urination



Blurred vision

Type 1.5 is typically diagnosed in people over 30 years old



Fact #3

Type 1.5 Diabetes destroys the cells that produce insulin (like Type 1).

Type 2 treatment is ineffective in the long-term



Source : American Diabetes Association

GAD65 autoantibodies and its role as biomarker of Type 1 diabetes and Latent Autoimmune Diabetes in Adults (LADA)

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Summary

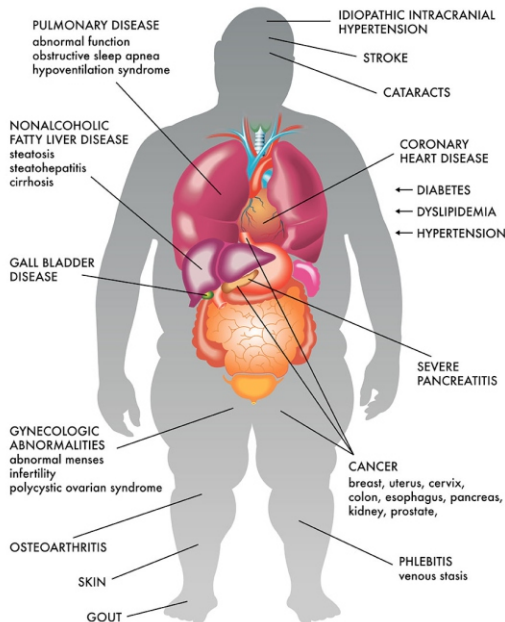
One of the hallmarks of autoimmune diabetes is the presence of adaptive responses directed to neuroendocrine proteins. One of these proteins is glutamic acid decarboxylase (GAD). While GAD is widely distributed in neuroendocrine tissues, its specific significance in diabetes has paralleled the advances in understanding humoral and cellular immunity in Type 1 diabetes (T1D) and in a subset of Type 2 diabetes (T2D), going from the seminal discoveries of islet autoantibodies to the development and standardization of bioassays as diagnostic tools, to studies on the structure of GAD and its antigenic determinants. GAD65 autoantibodies can accurately predict T1D development in combination with other surrogate humoral biomarkers and they are considered the most sensitive and specific biomarker which identifies a subset of clinically diagnosed T2D termed Latent Autoimmune Diabetes in Adults (LADA). We and others provided evidence indicating that GAD65 autoantibody detection should be part of the diagnostic assessment for clinically diagnosed T2DM mainly because it predicts the rate of progression to insulin requirement in patients affected by LADA. More recently GAD has been used as a "tolerogenic vaccine" to preserve beta cell function in autoimmune diabetes. While the results of Phase III clinical trials did not substantiate the earlier promise of Phase I and II trials, there are still many unanswered questions and approaches that need to be investigated in the applications of GAD in the therapy of T1D and LADA.

HOMA Index (Homeostasis Model Assessment)

Simple, accurate identification of insulin resistance

Insulin resistance is becoming increasingly implicated in the pathogenesis of type 2 diabetes, hypertension, hyperlipidaemia, vascular disease, obesity, polycystic ovarian syndrome (PCOS) and recurrent miscarriage.

Conditions Associated with Insulin Resistance



Assessment of insulin resistance

In each subject, the degree of insulin resistance was estimated at the baseline by HOMA according to the method described by Matthews et al. (19). In particular, an insulin resistance score (HOMA-IR) was computed with the formula fasting plasma glucose (mmol/L) times fasting serum insulin (mU/L) divided by 22.5. Low HOMA-IR values indicate high insulin sensitivity, whereas high HOMA-IR values indicate low insulin sensitivity (insulin resistance). In a previous study, we evaluated the reliability of HOMA by comparison with euglycemic hyperinsulinemic clamp. HOMA was able to explain 65% of insulin sensitivity measured by glucose clamp, and a misclassification of subjects according to insulin

"possible" when ECG showed alterations suggesting ischemia (codes 1.3, 4.3, 5.3). In patients with probable or possible myocardial ischemia, a thorough cardiologic workup was completed to confirm the diagnosis.

Statistical analyses

Statistics were performed using SPSS software and multiple logistic regression analyses. In most of these analyses, CVD was an aggregate end point inclusive of cardiovascular death (myocardial infarction, stroke, other), nonfatal myocardial infarction or stroke, angina pectoris, asymptomatic myocardial ischemia, cerebral transitory ischemic attack, intermittent claudication, gangrene of the lower extremities, and carotid or lower limb arteriosclerosis confirmed by echo-

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Homeostatic model assessment (HOMA) is a method for assessing β -cell function and insulin resistance (IR) from basal (fasting) glucose and insulin or C-peptide concentrations. It has been reported in 500 publications, 20 times more frequently for the estimation of IR than β -cell function. This article summarizes the physiological basis of HOMA, a structural model of steady-state insulin and glucose domains, constructed from physiological dose responses of glucose uptake

from a glucose tolerance test plus an additional stimulus from tolbutamide or insulin to yield a unique solution. By contrast, the HOMA model is derived from a mathematical assessment of the interaction between β -cell function and IR in an idealized model that is then used to compute steady-state insulin and glucose concentrations

Source : American Diabetes Association

HOW DR. B. LAL CLINICAL LAB IS HELPING ?

HbA1c

Blood Sugar
(Fasting, PP,
Random)

RFT/KFT
along with e-GFR

Urine
Microalbuminuria

S. Insulin

C- peptide

OGTT

Urine Glucose

Albumin-
Creatinine ratio

Lipid Profile

Autoimmune -
GAD65

HOMA Index

Turnaround Time - Same Day