LONGITUDINAL STUDY OF THE INCIDENCES OF DIABETES AT SEVEN YEARS IN A RISK SAMPLE OF PERUVIAN SUBJECTS WITH ELEVATED 1-HOUR OGTT

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BACKGROUND

Several studies have recommended the evaluation of the first hour during the OGTT (1hr-OGTT) as a criterion for prediabetes, as it is an earlier biomarker of dysglycemia and is associated with a worse cardiometabolic profile.

A cut-off points greater than or equal to 155mg/dl (8.6mmol/L) in the 1hr-OGTT has been suggested useful to identify a group of subjects at risk of developing DM2.

The aim of the study was to evaluate the diagnostic of type 2 Diabetes at seven years control among subjects with previous diagnosis of 1-hrOGTT ≥ 155 mg/dl and Normal OGTT.

115 consecutive subjects with past-history of IFG (Impaired fasting glucose), assessed at the previous study of our group "A Cross-sectional Study Of The Association Between The 1-hour Oral Glucose Tolerance Test And The Metabolic Syndrome In A High-risk Sample With Impaired Fasting Glucose " were evaluated. (**Figure 1**).

Previous study (Figure 1)

A CROSS-SECTIONAL STUDY OF THE ASSOCIATION BETWEEN THE 1-HR ORAL GLUCOSE TOLERANCE TEST AND THE METABOLIC SYNDROME IN A HIGH-RISK SAMPLE WITH IMPAIRED FASTING GLUCOSE

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ABSTRACT

Objective: The aim of this study was to evaluate the association between the 1-hour oral glucose tolerance test (OGTT) (≥155 mg/dL) and metabolic syndrome (MS) in a sample with previous impaired fasting glucose (IFG).

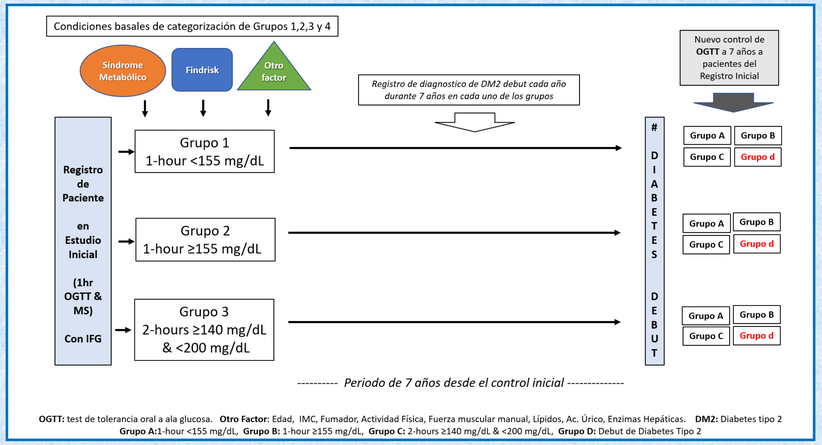
Methods: Three hundred and twenty four Peruvian subjects with a history of IFG ≥100 mg/dL were selected for a cross-sectional study. They underwent a 75 g OGTT and were assigned to different groups according to the result. We evaluated the association between 1-hour OGTT and MS.

Results: The mean age was 56.5 ± 12.6 years and 191 (61.5%) were female. During the OGTT, we found 28 (8.6%) subjects with diabetes, 74 (22.8%) with IGT, and 222 (68.5%) with a normal glucose tolerance test with a 2-hour glucose <140 mg/dL (NGT). In the NGT group, 124 (38.3%) had 1-hour glucose levels <155 mg/dL, while 98 (30.2%) had 1-hour glucose levels ≥155 mg/dL. Evaluating the association between the 1-hour value in the OGTT and MS, we found that subjects with a 1-hour glucose ≥155 mg/dL were more than twice as likely to have MS as those with a 1-hour glucose <155 mg/dL (odds ratio = 2.64, 95% confidence interval: 1.52 to 4.57). In addition, body mass index, fasting glycemia, triglycerides, and waist circumferences were significantly higher in subjects with 1-hour glucose levels ≥155 mg/dL compared to those with 1-hour glucose levels <155 mg/dL (*P*<.05).

Conclusion: Among subjects with IFG, performing an OGTT was helpful to identify subjects with 1-hour glucose levels ≥155 mg/dL and NGT who were significantly more likely to have MS and a worse cardiometabolic risk profile. (**Endocr Pract. 2020;26:xxx-xxx**)

Abbreviations:
AST = aspartate aminotransferase; **BMI** = body mass index; **CI** = confidence interval; **IFG** = impaired fasting glucose; **IGT** = impaired glucose tolerance; **LDL** = low-density lipoprotein; **MS** = metabolic syndrome; **NGT** = normal glucose tolerance; **OGTT** = oral glucose tolerance test; **OR** = odds ratio; **T2DM** = type 2 diabetes; **TG** = triglycerides

Complete Project program at seven years (Figure 2)



OGTT: test de tolerancia oral a ala glucosa. **Otro Factor:** Edad, IMC, Fumador, Actividad Física, Fuerza muscular manual, Lípidos, Ac. Úrico, Enzimas Hepáticas. **DM2:** Diabetes tipo 2
Grupo A:1-hour <155 mg/dL, **Grupo B:** 1-hour ≥155 mg/dL, **Grupo C:** 2-hours ≥140 mg/dL & <200 mg/dL, **Grupo D:** Debut de Diabetes Tipo 2

MATERIALS AND METHODS

Preliminary sample :

A preliminary sample of 115 consecutive subjects with past-history of IFG (Impaired fasting glucose), assessed at the previous study of our group (**Figure 1**), were evaluated at the outpatient-clinic of the Air-Force Central Hospital in Lima-Perú.

New cases of T2DM were registered during 7yrs period. Patients who were not diagnostic of T2DM, were performance a new OGTT at 7yrs of the initial control.

Variables:

1-hrOGTT ≥ 155 mg/d, Impaired Glucose Tolerances (IFG)

Age, gender, diagnostic of hypertension, first-degree relative with diabetes, Total Cholesterol, HDL, LDL, Triglycerides, AST, ALT and uric acid at the Central Laboratory of the AFCH.

75-g OGTT : Baseline and at 60 and 120 min, (standard test).

"Harmonizing the Metabolic Syndrome" to evaluated Metabolic Syndrome (MS), with the Latin-American Diabetes Association (ALAD) criteria of the abdominal perimeter.

RESULTS

The mean age of the sample was 56.88 ± 9.74 years and 79 (68.7%) were females.

We found 22 new cases of T2DM (19%) in the sample.

There were 16 subjects in the group with 1-hrOGTT ≥ 155 mg/dl (n= 53) (P<0.05) (**Table 1**), and 10 subjects in the group with impaired glucose tolerances (IGT) (n= 39) (P<0.05).

Table 1. New cases of diabetes in the group of subjects with 1-hrOGTT ≥ 155 mg/d at seven years of the basal control

	DM (+)	DM (-)	TOTAL
1-hrOGTT ≥ 155	16 (30%)	37 (79%)	53
1-hrOGTT < 155	6 (9.7%)	56 (90.3%)	62
TOTAL	22	93	115

CONCLUSSION

In this preliminary analysis, subjects with past-history of IFG who had 1-hour glucose levels ≥155 mg/dL after performing an OGTT, had significantly more risk to develop T2DM at 7yrs than those with 1-hour<155 mg/dL. These preliminary results may be helpful to use 1-hrOGTT, as a criterion to identify high-risk subjects to develop T2DM and suggest an early intervention in the same way as it is done for patients with IGT