

TITLE

The percentage increment of 2h glucose with respect to baseline can help to discover normal glucose tolerant subjects at high risk for glucose derangement

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The recognition of high risk subjects for Type 2 diabetes (T2DM) represents a crucial objective for preventive medicine. The OGTT is the gold standard to diagnose and, simultaneously, correctly classify the pre-diabetes categories. Nevertheless not all pre-diabetics progress to T2DM and the major source of future diabetics is masked in the normal glucose tolerance (NGT) range. So, the OGTT interpretation can be insufficient for effective preventive strategies.

According to the physiological concept that faster the postload glucose declines towards fasting plasma glucose (FPG), more efficient is β -cell function, we recently introduced a new dynamic appraisal of OGTT: the percentage increment of 2h plasma glucose (2hPG) with respect to FPG (PG%), by using the formula $PG\% = [(2hPG - PG) / FPG] \times 100$.

In a series of 340 subjects with unknown T2DM, we executed OGTT at baseline (t_0) and after a follow-up of from 12 to 123 months (t_1). When considering the impact of $t_0PG\%$ on the progression to a derangement of glucose homeostasis (DGH) at t_1 , 29.3% of 174 t_0NGT subjects (NGTs) progressed to a DGH: 48 had pre-diabetes and 3 diabetes. We evidenced a significant increase of NGTs with DGH in the superior PG% tertile (43.1%) compared to 23.6% and 21.3% of intermediate and inferior tertile respectively ($\chi^2=8.1$, $p<0.01$; OR 2.62, CI 95% 1.33-5.17).

This significant increase of DGH was confirmed considering only t_0NGTs after a follow-up of more than 48 months ($\chi^2=7.9$, $p<0.01$).

The PG%, derived by a simple formula, can expand the interpretation and utility of OGTT in order to recognize, in NGT range, a metabolic phenotype prone to an impairment in glucose homeostasis.

Biography

Gian Paolo Fra, M.D., graduated from the University of Turin's Medical School (1996). He has a postgraduate degree in Internal Medicine from the University of East Piedmont (2001) and currently works in the Internal Medicine Ward at the University Hospital of Novara, where he is employed in the Hypertension and Metabolic Diseases Center. His research interest is focused on insulin resistance, in particular pre-diabetic and obese subjects and the development of type 2 diabetes prevention strategies. He has published papers in reputed journals and given several presentations at national and international conferences. He has been invited to author a chapter for the book "Type 2 Diabetes/Book 1", published by InTech-Open Access, in press.