

The 13th European Nutrition Conference, FENS 2019, was held at the Dublin Convention Centre, 15–18 October 2019

A new way to diagnose and treat type 2 diabetics studied in a primary care setting

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Abstract

Type 2 Diabetes (T2D) is a chronic disease diagnosed based on fasting plasma glucose (FPG). A FPG > 6.9 mmol/L may result in the diagnosis of T2D by the general physician (GP) and result in general lifestyle advice to eat less and be more physically active. Because T2D can have different causes by the failure of one or multiple organs (especially pancreas, liver and muscle), it is of importance to determine this for a patient. Each specific organ failure will result in another lifestyle advice (diet, exercise or the combination). The aim of the present study was to examine whether this T2D subtyping resulted in a higher efficacy of the assigned lifestyle interventions as compared to general lifestyle advice.

118 newly diagnosed T2D subjects of multiple primary care practices in Hillegom, The Netherlands, participated. 60 subjects underwent a lifestyle treatment, coached by a dietitian and physiotherapist, based on the outcome of an Oral Glucose Tolerance Test (OGTT) at baseline. Based on 2-hr, 5-time points plasma glucose and insulin, organ specific insulin resistance indices were calculated for liver, muscle and pancreas. The resulting T2D subtypes differed in intervention: energy restriction, exercise training, or a combination of both for 13 weeks. Data of 58 control subjects who were provided general lifestyle advice were gathered retrospectively. The OGTT was repeated after 13 weeks of lifestyle treatment to examine changes in phenotype. Effectiveness of the intervention was compared with controls based on FPG, HbA1c and body weight (BW).

The six T2D subtypes at baseline were unevenly distributed. The main category were subjects with a poor β -cell function in combination with hepatic insulin resistance (45%). Due to the intervention, 19 subjects showed a healthy, normalized phenotype afterwards (32%). The interventions were effective and resulted in a significantly higher reduction of FPG (Δ -0.4 \pm 0.1 mmol/L), reduced HbA1c (Δ -3.0 \pm 0.6 mmol/mol) and BW loss (Δ -8.1 \pm 0.7 kg) as compared to control subjects. The reduced BW, FPG and HbA1c were still present at one year follow-up, although some drop-out of subjects (n = 11) started to appear and still 49 subjects were in-study.

T2D subtyping resulted in personalization of treatment, thereby effectively improving glycemic parameters and body weight as compared to general care. T2D subtyping is therefore not only effective for a more detailed diagnosis, it also enables personalization of T2D lifestyle treatment.

Conflict of Interest

There is no conflict of interest