SKINFOLD THICKNESS MEASUREMENTS DISTINGUISH TRANSIENT AND PERISTANT GLUCOSE INTOLEANCE.

M. Mroslieck, KJ M. Kjekshus, W. W. Saris, TWA de Bouul" and J. Blaak (Dept of Human Nutrition and Dietetics, Maastricht University, PO Box 616 6200 MD Maastricht, The Netherlands; 2) RIVM, Bilthoven, The Netherlands. Background and Aims: Impaired glucose tolerance is an unstable state. With repeated testing many revert to normal, others remain IGT. Subjects with persistent IGT have a higher risk of developing type 2 diabetes mellitus. The aim of the present study was to evaluate whether adding anthropometric measurements to glucose tolerance testing could improve the prediction of persistent IGT.

Materials and methods: 175 subjects with glucose intolerance (IGT and newly diagnosed type 2 DM) were invited for a second OGTT. When revert to normal subjects were classified as having transient glucose intolerance (GGI), in all other cases as having persistent glucose intolerance (pGI). Anthropometric measurements were performed during the second test. Body fat% was calculated from the sum of skinfolds according to the method of Durnin and Womersley.

Results: GGI was diagnosed in 82 subjects (47%); pGI in 93 (53%). pGI was associated with lower fasting and 2-hour glucose levels at the initial test. Furthermore pGI was associated with higher BMI (29.9 ± 0.4 vs. 23.0 ± 0.4 kg/m²; P < 0.001), elevated waist (103.3 ± 1.0 cm vs. 83.5 ± 1.1 cm; P < 0.001) elevated WHR (0.98 vs 0.91 - 0.01; P < 0.001; 0.05) and increased percentage body fat (men: 33.9 ± 0.5 vs. 31.1 ± 0.84%; P < 0.01; women; 43.5 ± 0.4 vs. 42.0 ± 0.5% P < 0.05). Skinfolds were higher in pGI compared to GGI. After correction for age, sex and family history of DM logistic regression indicated that glucose levels during the initial test most strongly predict persistent GGI (P < 0.001), followed by BMI, body fat%, skinfolds and waist. WHR did not distinguish between GGI and pGI and (P > 0.07). When also adjusted for glucose levels during the initial test only body fat and subscapular skinfold thickness distinguished between transient and persistent glucose intolerance (P < 0.01).

Conclusions: Percentage body fat and subscapular skinfold thickness, distinguish between transient and persistent glucose intolerance, suggesting that subcutaneous adipose tissue, especially centrally located, may have an additional predictive value of determining persistent glucose intolerance.  

Dietary Patterns and Risk of Type 2 Diabetes Mellitus in U.S. Men.

R.M. van Dam (1,4), W.C. Willett (1,2), E.B. Rimm (1,2,3), M.J. Stampfer (1,2,3) and F.B. Hu (1), (1) Dept. of (1) Nutrition and (2) Epidemiology, Harvard School of Public Health; (2) Channing Laboratory, Dept. of Medicine, Brigham and Women’s Hospital, and Harvard Medical School, Boston MA; (3) Concord for Chronic Diseases Epidemiology, National Institute of Public Health and the Environment, The Netherlands. Background and Aims: The role of diet in the development of type 2 diabetes remains uncertain. Therefore, we examined the association between major dietary patterns and risk of type 2 diabetes mellitus. Materials and methods: We prospectively followed 42,626 U.S. male health professionals aged 40-75 years and free of diagnosed diabetes, cardiovascular disease and cancer in 1986. Using factor analysis based on data from food frequency questionnaires, we identified and validated two major dietary patterns that we labeled 'traditional' (characterized by higher consumption of vegetables, fruit, fish, poultry and whole grains) and 'Western' (characterized by higher consumption of red meat, processed meat, French fries, high fat dairy, refined grains, and sweets and desserts). During 12 years of follow-up, we ascertained 1327 incident cases of type 2 diabetes. Relative risks and 95% CIs were adjusted for potential confounders, including BMI, physical activity and cigarette smoking. Results: The traditional dietary pattern score was associated with a modestly lower risk of type 2 diabetes (relative risk for extreme quintiles, 0.85 [CI 0.71-1.01]). In contrast, the western dietary pattern score was associated with an increased risk of type 2 diabetes (relative risk, 1.54; CI 1.27-1.85; P trend < 0.0001). The combination of a high Western dietary pattern score (highest quintile) and obesity (BMI > 30 kg/m²) was associated with a particularly high risk of type 2 diabetes (relative risk 10.0; CI 7.34-15.2; relative to lowest quintile and BMI ≤ 25 kg/m²). Conclusion: Our findings suggest that a Western dietary pattern is associated with a substantial increase in risk of type 2 diabetes.

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Beta Cell Growth and Differentiation

INCREASED BETA-CELL PROLIFERATION AFTER 70% PANCREATECTOMY IN MICE OVEREXPRESSION SHB AND GTH IN BETA-CELLS.

Cecilia Annen and Michael Welsh. Department of Medical Cell Biology, Uppsala University, Box 571, Biomedical Center, 751 23 Uppsala, SWEDEN. Background and Aims: GTH (ISKfK/YK), a tyrosine kinase of the SRC-family, regulates cellular processes such as growth, differentiation and survival. A tyrosine residue in the C-terminus of YSK/ISKfK is a negative regulator of GTH kinase activity. SHB, a SHO domain adapter protein, is phosphorylated in response to GTH overexpression in PC12 cells and RINm5F cells. SHB and GTH transgenic mice have a larger beta-cell mass and exhibit an increased cytokine-induced beta-cell death. The aim of the present study was to assess beta-cell growth in response to partial pancreatectomy and glucose tolerance in transgenic mice expressing YSK/ISKfK or SHB under the control of the murine insulin promoter. Methods: A 70% pancreatectomy (Pa) or sham pancreatectomy was performed on GTH transgenic, SHB transgenic or control mice (4-5 month of age). On day 5 after the operation the mice were injected with (1) thymidine and the beta-cell labelling index was assessed, 3-month-old GTH transgenic and control mice were fed over-night before an intravenous glucose injection (250 mg/kg of a 30% solution) and blood glucose was determined at 0, 10, 30, 60 and 120 min. Tumorigenesis was assessed from blood samples collected at 10, 10 and 30 min (Mucosa Ultrafastive Rat Insulin ELISA).

Results: There were no significant differences in beta-cell proliferation between the sham-operated mice (5.7±8.25%, GTH: 7.9±4.8%, SHB: 1.5±0.6%). 70%Pa stimulated beta-cell regeneration in all groups but there was a significantly increased beta-cell thymidine incorporation after Pa in the SHB-transgenic (3.14% vs 1.6%) and GTH transgenic (0.34±26%) mice compared to the control mice (1.76±0.4%). There was no difference in the glucose tolerance between control and transgenic mice that had been housed in cages with two or more animals. However, three-month-old mice transgenic mice that had been separated from each other from three weeks of age exhibited a slower glucose disappearance rate compared to single-caged control mice. Moreover the transgenic mice showed decreased basal levels of insulin but failed to further increase the insulin secretion in response to the glucose injection. Conclusion: The results suggest that GTH and SHB have beneficial effects on beta-cell proliferation when administered with partial pancreatectomy, thus partially explaining the increased beta-cell area previously observed in these mice. However, GTH transgenic mice also seem to affect insulin secretion, resulting in impaired glucose tolerance under certain conditions.

STIMULATION OF ISLET GROWTH AND AMELIORATION OF DIABETES BY COMBINATION THERAPY WITH TGF-ALPHA AND GASTRIN.

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