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Adipocytokines and inflammatory biomarkers are independent predictors of type 2 diabetes. The CoLaus study.

Author/Address of institution

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Background/Introduction

To assess the prognostic importance of adipocytokine levels (interleukin-1beta - IL-1β; interleukin-6 – IL-6; tumor necrosis factor-α – TNF-α; leptin and adiponectin), acute phase reactants (C-reactive protein - CRP) and gamma-glutamyl transpeptidase (γGT) on the incidence of type 2 diabetes (T2DM).

Methods

Prospective study conducted in 3,060 non-diabetic participants (44.6 % men, mean age 52.6±10.6 years), followed for 5 years (2003-2008).

Results

169 patients (5.5%) developed T2DM during follow-up. On univariate analysis, participants who developed T2DM had higher baseline levels of IL-6: median and (interquartile range) 1.51 (0.68–3.27) vs. 1.15 (0.48–2.77) ng/l, p<0.007; CRP: 2.2 (1.2–4.1) vs. 1.1 (0.5–2.4) mg/l, p<0.001; leptin: 11.2 (6.5–21.3) vs. 9.8 (5.3–17.5) µg/l , p<0.02 and γGT: 35 (23–53) vs. 20 (14–30) units/l, p<0.001, and lower levels of adiponectin: 6.21 (4.25–8.44) vs. 8.43 (5.31–13.0) mg/l, p<0.001, than participants who remained free of T2DM. Participants in the highest quartile for IL-6, CRP, leptin and γGT had a higher likelihood of developing T2DM, while the inverse association was found for IL-1β and adiponectin. After adjusting for age, gender and body mass index (BMI), or for known T2DM risk scores, only the associations with γGT and adiponectin remained significant. Finally, including γGT or adiponectin into known T2DM risk scores only modestly increased the area under the curve (0.899 to 0.903 for γGT and 0.897 to 0.901 for adiponectin).

Conclusion

Increased adipocytokine and γGT levels are associated with increased risk for T2DM, while adiponectin is inversely associated. It remains to explore whether γGT and adiponectin are only associated or are actually causal factors to the development of diabetes.

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Different prevalence of childhood abdominal obesity in preschoolers according to the criteria applied

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Background/Introduction
Several definitions of pediatric abdominal obesity have been proposed but their respective comparability with body fat has seldom been assessed. Thus, we compared the prevalence of abdominal obesity in an ethnically diverse sample of preschoolers among different waist circumference (WC)-based criteria and assessed their agreement with body fat.

Methods
Cross-sectional study of 302 girls and 293 boys aged 4 to 6 years (Ballabeina study). Body fat was assessed by bioimpedance. Children were categorized into those with or without abdominal obesity according to the respective cut-off definitions and into those with or without overall obesity according to McCarthy body fat reference curves of 2006. Three WC-based criteria (Fernandez, Fredriks and Schwandt) were applied in all children, and a further two (McCarthy and Katzmarzyk) in children aged 5 and over.

Results
Prevalence of abdominal obesity according to Fredriks, Fernandez and Schwandt criteria was 4.0%, 5.3% and 7.6% in girls and 4.1%, 6.1% and 7.2% in boys, respectively. Restricting the analysis to children aged 5 and over (191 girls, 162 boys), the prevalence of abdominal obesity in girls was 4.2%, 4.7%, 5.8%, 19.9% and 55.5% according to Fredriks, Fernandez, Schwandt, McCarthy and Katzmarzyk criteria, respectively (3.1%, 4.3%, 6.2%, 23.5% and 49.4% in boys). Using body fat percentage as a reference, the sensitivities [95% confidence interval] were 56.3 [29.9–80.2] (Fernandez); 61.5 [31.6–86.1] (Fredriks); 57.1 [34.0–78.2] (Schwandt); 65.8 [54.0–76.3] (McCarthy) and 73.7 [66.7–79.8] (Katzmarzyk). Specificities were 97.9 [95.8–99.2], 98.5 [96.6–99.5], 97.3 [94.9–98.8], 90.6 [86.5–93.8] and 70.7 [63.1–77.4], respectively.

Conclusion
Prevalence of abdominal obesity in young children is heavily dependent on the criteria applied. Efforts should be undertaken to standardize the criteria to define pediatric abdominal obesity.

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Effect of Ibandronate for the Treatment of Osteonecrosis of the Knee: A Randomized, Double-Blind, Placebo-Controlled Trial

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Background/Introduction

Observational studies suggest beneficial effects of bisphosphonates in spontaneous osteonecrosis (ON) of the knee. We investigated whether ibandronate would improve clinical and radiological outcome in newly diagnosed ON.

Methods

In this randomized, double-blind, placebo-controlled trial 30 patients (mean age, 57.3±10.7 yrs) with ON were assigned to receive either 12 mg of ibandronate or placebo intravenously (divided into four doses within first 2 weeks). All subjects received additional treatment with oral diclofenac (70 mg) and supplementation with calcium carbonate (500 mg) and vitamin D (400 IU) to be taken daily for 12 weeks. Patients were followed for 48 weeks. The primary outcome was the change in pain score (visual analog scale, VAS) after 12 weeks. Secondary endpoints included changes in VAS, mobility (WOMAC and IKDC questionnaires), biochemical markers of bone turnover, and radiological outcome (MRI) after 24 and 48 weeks.

Results

At baseline, both treatment groups (IBN, n=14; placebo, n=16) were comparable in relation to age, BMI, comorbidities, pain score, bone markers, and radiological grading (bone marrow edema, ON). Mean pain score was reduced in both ibandronate (mean change, -3.4; 95%CI, -4.7 to -2.2) and placebo (-3.2; 95%CI, -4.7 to -1.18) treated subjects after 12 weeks (between group comparison, p=ns). Except for significant decrease in bone resorption markers in ibandronate treated subjects (p<0.01), mean changes in all other outcome measures were comparable between treatment groups (after 24 and 48 weeks).

Conclusion

We conclude that in patients with spontaneous osteonecrosis of the knee bisphosphonate treatment (i.e. IV ibandronate) has no beneficial effect.

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Frequency of blood glucose testing in well-educated patients with diabetes mellitus type 1: how often is enough?

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Background/Introduction
In people with type 1 diabetes frequent self-monitored blood glucose (SMBG) and patients' knowledge of individual insulin requirements are pivotal for good metabolic control. How many SMBGs/day are needed for optimal glycaemic control in well-educated patients is not well known.

Methods
Retrospective evaluation of HbA1c-values and corresponding frequency of SMBG during a 12 months period in 150 patients with diabetes mellitus type 1 treated with flexible intensified insulin therapy.

Results
Median HbA1c was 7.2% (IQR 6.7-7.8%), 63% of the patients reached values ≤7.5%. Median frequency of SMBG was 3.9/day (3.0-4.5). More than 4 SMBGs were associated with best HbA1c-values, without further improvement by >5 SMBGs. Frequency of SMBG and HbA1c was not different in patients experiencing episodes with severe hypoglycaemia in the last 5 years (30.4%) and in those without (69.6%). Median HbA1c was higher in patients with psychological problems than in those without (8.0% vs. 7.1%, p<0.001) with identical SMBG-frequency (3.9/day). Women had higher HbA1c as men (7.4% vs. 7.1%, p=0.045), although SMBG-frequency in women was higher (median 3.6 vs. 4.0 times per day, p<0.001).

Conclusion
Good diabetes control comparable to CGMS augmented insulin pump therapy is achievable in routine diabetes care in a setting with continuous education based flexible intensified insulin therapy and with >4 SMBGs/day. Other factors such as education, knowledge of insulin requirements and emotional and psychological stability seem to have more impact on glycaemic control than frequency of blood glucose self-monitoring.

Jahresversammlung
Assemblée annuelle

2011

1. und 2. Dezember 2011
le 1er et 2 décembre 2011

Inselspital Bern

Schweizerische Gesellschaft für
Endokrinologie und Diabetologie - SGED

Société Suisse d'Endocrinologie
et de Diabétologie - SSED

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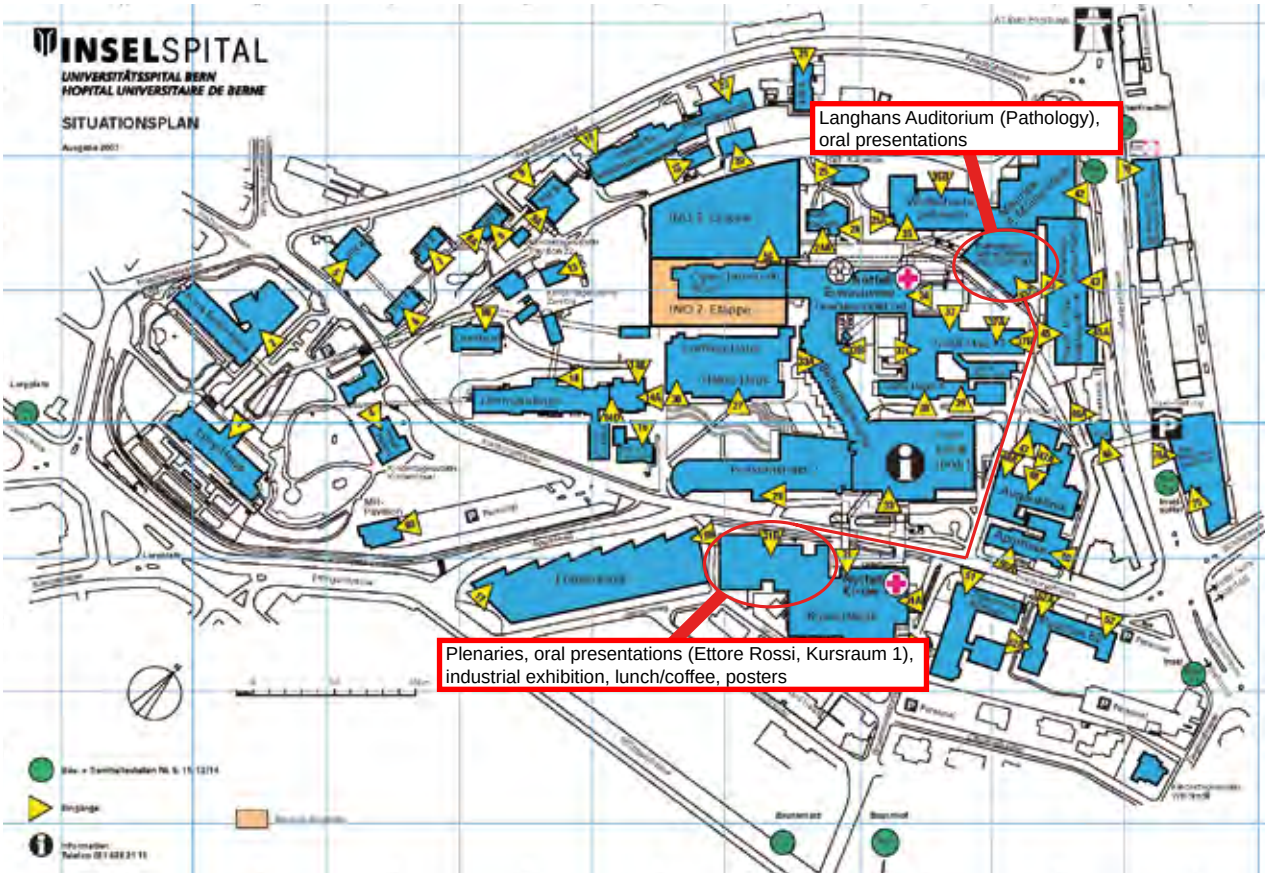

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