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A multifactorial approach to prevent adiposity and improve fitness in predominantly migrant preschool children: cluster-randomized controlled trial (the Ballabeina Study)

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Universities of [1]Lausanne and [2]Basel, Switzerland

Background/Introduction:

To assess the effectiveness of a multifactorial lifestyle intervention program on adiposity and fitness in preschool children.

Methods:

Forty preschool classes from areas with a high migrant population were randomly selected and randomized into an intervention (n=20) and a control (n=20) arm by the use of opaque enveloppes after stratification for language region (French vs German part of Switzerland). The intervention lasted from from August 2008 to June 2009 and included increased physical activity, promotion of healthy nutritional behavior and sleep and reduction in media use through lessons, infrastructural changes and involvement of parents and teachers. Primary outcomes included BMI and aerobic fitness (20 m shuttle run test). Secondary outcomes included body fat (sum of 4 skinfolds), % body fat (bioelectrical impedance), waist circumference, agility(obstacle course), physical activity (accelerometry), nutritional behavior, media use, sleep, quality of life (questionnaires), cognitive abilities (concentration and memory tests). Persons performing outcomes measurements, but not participants were blinded to group assignment.

Results:

655 preschool children (73% migrants, mean age 5.1 ±0.7 yrs) participated. Compared with controls, children in the intervention group had no difference in BMI, but a more favorable improved performance in aerobic fitness and agility (adjusted differences (95% CI): 0.32 stages (0.07 to 0.57), p=0.01 and -0.53 sec (-0.93 to -0.13), p=0.009) and significant relative decreases in body fat, % body fat and waist circumference (adjusted differences: -2.8 mm (-4.4 to -1.2), p=0.001; -1.1 % (-2.0 to -0.3), p=0.009 and -0.8 cm (-1.3 to -0.3), p=0.003). There were significant differences in reported, but not in measured physical activity, in media use and nutritional behavior, but not in sleep duration. Quality of life increased only in the German part of Switzerland and there were no significant changes in cognitive abilities.

Conclusion:

Our multifactorial approach reduced body fat and improved fitness in preschoolers.

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Heart failure as presenting sign of panhypopituitarism in a child with a microdeletion including the LHX-4 Gene

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Background/Introduction:

The presentation of combined pituitary hormone deficiency (CPHD) may be non-specific in the neonatal period with hypoglycemia, seizures, or hyperbilirubinemia. Heart failure due to CPHD is rare. The LHX-4 gene has been shown to play an important role in pituitary development. So far, 6 mutations have been identified in patients with variable CPHD.

Methods:

Case report of a newborn with severe cardiac insufficency in the context of CPHD and a micro-deletion including the LHX-4 gene.

Results:

We report of a newborn term girl who developed severe cardiac insufficiency within the first day of life. Extended vasoactive medication under cardio-pulmonary assistance could only partially stabilize blood pressure. Endocrine investigations revealed CPHD with low TSH, immeasurably low fT4, T3 and ACTH and a cortisol of 3.6 nmol/L. FSH, LH, prolactin, GH, IGF-1 and IGF-BP3 were low. Substitution therapy with hydrocortisone at stress dose level and increasing doses of intravenous L-T4 completely normalized the patient's cardiac function within a few days. MRI revealed a missing anterior pituitary gland and infundibulum, an ectopic posterior pituitary and a poorly formed sella. Due to facial features indicating a midline defect chromosome analysis including array comparative genomic hybridization (CGH) analysis were initiated. Conventional chromosome count was normal, array CGH analysis showed an approximatively 1.5 Mb deletion in chromosomal region 1q25.2q25.3 including the LHX-4 gene. Analysis of the parents is ongoing.

Conclusion:

Although rare, unexplained heart failure should raise suspicion of CPHD. The heterozygous loss of the LHX-4 gene within a microdeletion syndrome may well explain CPHD and the pituitary phenotype of our patient.

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Subclinical Hypothyroidism and the Risk of Coronary Heart Disease and Mortality: An Individual Participant Data Analysis from Nine Prospective Cohort Studies

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[1] Lausanne; [2] Leiden; [3] San Francisco; [4] San Francisco; [5] Philadelphia, PA; [6] Gateshead; [7] Nedlands; [8] Crawley, [9] Trondheim; [10] Pisa; [11] Nagasaki; [12] Milano; [13] Crawley ; [14] London ; [15] Pittsburgh, PA; [16] Birmingham; [17] Leiden

Background/Introduction:

Subclinical hypothyroidism is common, particularly in older adults. There are conflicting data from prospective cohort studies regarding the association between subclinical hypothyroidism and cardiovascular outcomes. These conflicting results might reflect differences in participants' age, gender, thyrotropin (TSH) levels or preexisting cardiovascular disease.

Methods:

We performed an individual participant data analysis of 41,685 participants (2,621 with subclinical hypothyroidism) in 9 prospective cohort studies with 381,647 person-years of follow-up. We examined the risk of coronary heart disease (CHD) and total mortality in all cohorts, and the risk of CHD events in 13,355 participants from 6 cohorts with such data available. Euthyroidism was defined as a TSH 0.50-4.49 mU/L and subclinical hypothyroidism as a TSH ≥4.5-19.9 mU/L with normal thyroxine concentrations.

Results:

Over follow-up, 7,770 participants died (1,715 from CHD), and 2,791 participants had CHD events (among 6 studies). In age and gender-adjusted analyses, the risk of CHD events and CHD deaths increased with higher TSH concentrations (p for trends≤0.007). Compared with euthyroidism, the hazard ratio (HR) for CHD events was 1.07 (95% confidence interval, 0.84-1.35) for TSH 4.5-6.9 mU/L, 1.12 (0.88-1.44) for TSH 7.0-9.9 and 2.00 (1.25-3.20) for TSH≥10. Corresponding HRs for CHD mortality were 1.11 (0.91-1.34), 1.40 (0.96-2.04) and 1.64 (1.11-2.42). Total mortality was not increased among participants with subclinical hypothyroidism. Results were similar after further adjustment for traditional cardiovascular risk factors. Risks did not significantly differ by age, gender or preexisting cardiovascular disease.

Conclusion:

Pooled individual data of nine prospective cohorts suggest that subclinical hypothyroidism is associated with an increased risk of both fatal and non-fatal CHD in those with higher TSH levels. Our findings might help refine a TSH threshold at which adverse outcomes would be expected. An appropriately powered RCT is needed to examine the efficacy of screening for and treating subclinical hypothyroidism.

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A first approach towards a food monitoring system for diabetes diet management

Author/Address of institution:

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Introduction:

The preliminary results of a system for the semi-automatic, near real-time recognition of food intake and the estimation of the corresponding carbohydrates (CHO) is presented. The system can be included in a mobile device (e.g. mobile phone, PDA) and is designed to be used by individuals with diabetes mellitus.

Methods:

The system is based on i) a camera commonly used by mobile phones, and ii) an image processing module. Once the user acquires a photograph of the plate through the mobile device, the image is analyzed using the following procedures: i) pre-processing: to reduce the various artifacts, ii) validation: to check if the input image corresponds to a plate, iii) dish localization: to find where the plate is located on the table, iv) image patches extraction and visual word dictionary creation: to learn the visual description of the various foods on the plate, v) classification: to classify and localize the various foods on the plate, vii) segmentation: to find the contour of the various objects/foods in the plate, and viii) estimation of corresponding g of CHO.

The images used for design and development of the software application have been collected from the web using content based image retrieval techniques and also hand taken photographs. The dataset is composed of about 4000 images.

Results:

Preliminary results have shown that the proposed system is able to extract nutrients (pasta, rice, French fries, vegetables, fruits) held on a plate from the acquired images and to classify them.

Conclusion:

We acknowledge that the system is still under development. But, it might help to enhance diabetes self-management and quality of life. The prototype will be ready within the next months and a series of trials are scheduled in order to evaluate the system performance and to proceed with clinical pilot trials.

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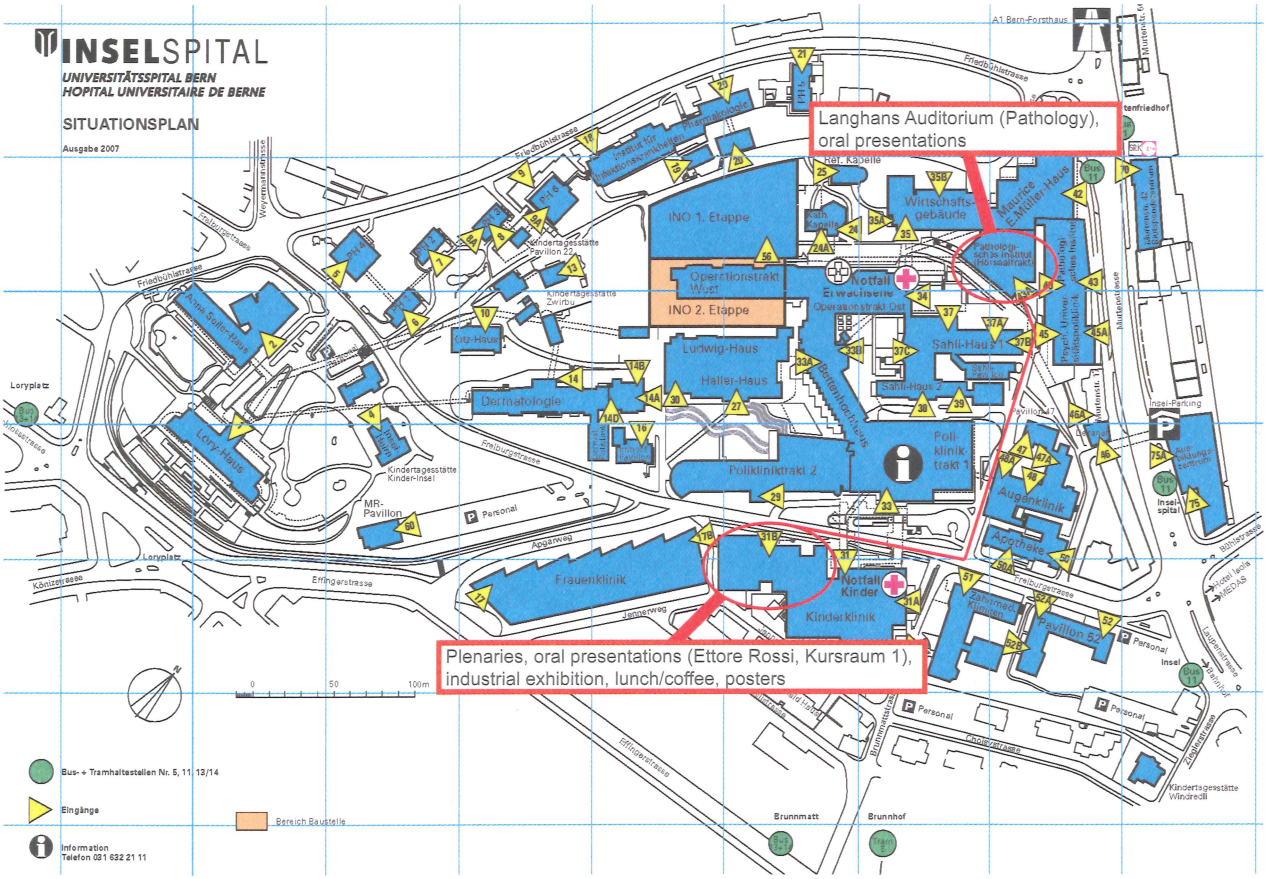

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Schweiz. Arbeitsgruppe Metabolismus und Obesitas

Schweizerische Gesellschaft für Endokrinologie und Diabetologie
Société Suisse d'Endocrinologie et de Diabétologie

Programme of the 5th Annual Meeting ASEMO-SAMO

Association Suisse pour l'Etude du Métabolisme et de l'Obésité
Schweiz. Arbeitsgruppe Metabolismus und Obesitas

(preceding the Annual Meeting of SGED)

Thursday, November 18, 2010, Inselspital Bern, Kinderklinik

Update lectures and new issues
Chairman: *Alain Golay*

9.15 – 10.00 **Overweight and obesity in Switzerland: costs and future prospects.**
Heinz Schneider, Basel

Research Communications
Chairmen: *Abdul Dulloo, Yves Schutz*

10.00 – 10.15 **Abstract 67 – PI3Kγ in Non-Hematopoietic Cells Plays a Major Role in the Promotion of Obesity, Inflammation, and Glucose Intolerance**
Giovanni Solinas, Romina Marone, Barbara Becattini, Fabio Zani, Abdul G. Dulloo, Jean-Pierre Montani, Frederic Preitner, Matthias P. Wymann; Fribourg, Basel, Lausanne

10.15 – 10.30 **Abstract 1 – Skeletal muscle insulin resistance and lipotoxicity: differential effects of diacylglycerols and ceramides**
Francesca Amati, Bret H. Goodpaster; Lausanne, Pittsburgh

10.30 – 10.45 **Abstract 33 – A multifactorial approach to prevent adiposity and improve fitness in predominantly migrant preschool children: cluster-randomized controlled trial (the Ballabeina Study)**
Puder JJ, Marques-Vidal P, Zahner L, Niederer I, Bürgi F, Ebenegger V, Hartmann T, Meyer U, Schindler Ch, Nydegger A, Kriemler S; Lausanne, Basel

10.45 – 11.00 **Abstract 25 – Cardiorespiratory fitness prevents the increase in blood pressure due to body fat in adolescents**
Gisela Marcelino, João Melich-Cerveira, Fred Paccaud, Pedro Marques-Vidal; Lisbon, Lausanne

11.00 – 11.30 Break with Coffee and Juice

Chairpersons: *Kurt Laederach, Anne Laurent-Jaccard*

11.30 – 12.15	**Obesity as cancer risk factor** *André-Pascal Sappino, Geneva*
12.15 – 12.45	**Bariatric surgery : the final cure for diabetes?** *Ulrich Keller, Basel*
12.45	End of the scientific ASEMO meeting

12.45 – 13.45 General Assembly of ASEMO for members

Access is free.

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