

ABSTRACT 1009

INFLAMMATION, DIABETES, OBESITY AND THEIR IMPACT ON RIGHT VENTRICULAR FUNCTION

Authors

- Oana Vittos (Speaker) (1, 2)
- Florentina Halici (2)
- Alexandros Vittos (1)
- Bogdan Toana (3)

Institutes

- 1 - Carol Davila University of Medicine and Pharmacy
- 2 - MedCenter
- 3 - Emergency Military Hospital "Carol Davila"

Topic : T3/T4:PS1 - Crosstalk of Adipose Tissue with other Organs

Abstract Text

Purpose: Obesity and Diabetes Mellitus type 2 (DM) are characterized by a chronic low-grade inflammation. In our study we investigate the correlation between increasing degrees of body mass index (BMI), inflammatory markers and right ventricular dysfunction in diabetic patients.

Methods: We enrolled 43 patients with DM and controlled high blood pressure, with no other coexisting cardiovascular complications (aged 62.86 ± 4.3 years). Patients were divided into 3 groups based on BMI: 5 normal weight (N: BMI= 22 ± 1.8); 12 overweight (OW: BMI= 27.8 ± 1.6), 26 obese (O: BMI= 34.2 ± 2.7). We evaluated the right ventricular (RV) function (strain and strain rate) through Vector Velocity Imaging (VVI) and determined the inflammatory profile (high sensitivity C- reactive protein (hsCRP) and lipoprotein associated phospholipase A2 (Lp-PLA2) activity) level for each patient.

Results: hsCRP levels were significantly higher in O (4.68 ± 0.23) vs OW (3.56 ± 0.17) vs N (2.69 ± 0.21). Similarly, Lp-PLA2 activity level were higher in O ($314.22 \text{ UI} \pm 21.01$) vs OW ($297.22 \text{ UI} \pm 16.23$) vs N ($264.12 \text{ UI} \pm 14.54$). For all investigated groups, there was a positive correlation between hsCRP and Lp-PLA2 levels in all groups ($p < 0.01$); Lp-PLA2 correlates positively with BMI, strain and strain rate RV parameters ($p < 0.001$). Systolic strain and strain rates in the basal segment of the RV free wall in O patients were significantly lower, indicating higher impairment of RV systolic function within this group.

Conclusions: Obese diabetic patients have higher levels of hsCRP and Lp-PLA2 and even those asymptomatic for cardiovascular disease have a low-grade inflammatory status, together with a higher impairment in RV systolic function.

Conflict of Interest

The authors declare that they have no potential or actual conflicts of interest

Funding

ABSTRACT 1010

WEIGHT LOSS AND REDUCTION IN ANTIDIABETIC MEDICATIONS WITH EXTENDED-RELEASE PHENTERMINE/TOPIRAMATE OVER 2 YEARS

Authors

- W. Timothy Garvey (Speaker) (1)
- Stephan Rössner (2)
- Charles Bowden (3)

Institutes

- 1 - University of Alabama at Birmingham
- 2 - Karolinska University Hospital
- 3 - Vivus, Inc.

Topic : T5:PSO - Present and Future of Pharmacological Treatment

Abstract Text

Introduction: Glycaemic control in type 2 diabetes mellitus (T2DM) includes lifestyle interventions, medication, and weight loss (WL). Significant WL has been observed in obese subjects receiving extended-release phentermine/ topiramate (PHEN/TPM ER) versus placebo in the 56-week CONQUER trial and was evaluated through 108 weeks in a blinded extension (SEQUEL). This post-hoc analysis assessed WL and net change in antidiabetic medication dose (percent subjects increasing-decreasing dose) in subjects with T2DM at baseline through 108 weeks.

Methods: Randomisation to placebo (n=227), PHEN 7.5mg/TPM ER 46mg (7.5/46; n=153), or PHEN 15mg/TPM ER 92mg (15/92; n=295) was maintained in SEQUEL (ITT). Diet/exercise or metformin monotherapy were permitted at enrollment. Addition of oral hypoglycaemics by physicians blinded to treatment-group assignment was permitted to achieve established HbA1c targets.

Results: At Week 108, least-squares mean percent WL (ITT-LOCF) among subjects with T2DM (placebo: n=55; 7.5/46: n=26; 15/92: n=64; baseline metformin use was placebo: 52.7%; 7.5/46: 46.2%, 15/92: 59.4%) was significantly greater with PHEN/TPM ER versus placebo (P<.0001): 2.0%, 9.0%, and 9.0% for placebo, 7.5/46, and 15/92, respectively. Furthermore, 25.5% of placebo-treated subjects had a net increase in antidiabetic medication dose, 7.5/46-treated subjects had no net change, and 3.1% of 15/92-treated subjects had a net decrease (P=.0005 versus placebo, both comparisons). Discontinuation rates in the overall safety population due to adverse events were 3.1%, 4.6%, and 4.4% for placebo, 7.5/46, and 15/92, respectively.

Conclusions: Subjects receiving PHEN/TPM ER showed greater WL and required less antidiabetic medication, representing a potential added benefit of PHEN/TPM ER for obese patients with T2DM.

Conflict of Interest

Dr. Garvey is an Advisory Board member for Daiicho-Sankyo, Johnson & Johnson, Vivus Inc., LipoScience and Alkermes; is a Consultant for Abbott Nutrition; is an Investigator of clinical trials for Merck & Co., Inc., Amylin Pharmaceuticals, Vivus, Inc., Abbott and Daiichi-Sankyo; is a stockholder of Merck & Co. Inc.; Isis/Genzyme, Vivus, Inc., Bristol Myers Squibb and Amylin; and a Speakers Bureau member for Merck & Co., Inc. and Abbott Nutrition. Dr. Rössner is a Consultant for Vivus, Inc. Dr. Bowden is an employee of Vivus, Inc., the manufacturer of the study drug.

Funding

Research funding provided by Vivus, Inc.

A NEW BIOMARKER FOR HUMAN OBESITY: SALIVARY ENDOCANNABINOIDS

Authors

- Blandine Gatta (Speaker) (1, 2, 3)
- Isabelle Matias (4, 5)
- Antoine Tabarin (1, 2, 6)
- Samantha Clark (2, 7)
- Thierry Leste-Lasserre (8, 7)
- Giovanni Marsicano (9, 5)
- Pier-Vincenzo Piazza (8, 5)
- Daniela Cota (2, 5)

Institutes

- 1 - CHU Bordeaux
- 2 - INSERM
- 3 - Universite Bordeaux Segalen
- 4 - INSERM
- 5 - Universite Bordeaux Segalen
- 6 - Univrsite Bordeaux Segalen
- 7 - Universite Bordeaux Segalen
- 8 - INSERM
- 9 - INSERM

Topic : T5:PS5 - New Technical Approaches and Pharmacology

Abstract Text

Introduction: The endocannabinoid system (ECS) is critically involved in energy balance regulation. However, the study of the ECS in humans requires invasive procedures. Saliva can be easily and non-invasively collected. The aim of our study was to explore the ECS in human saliva.

Methods: We determined plasma and saliva concentrations of fasting endocannabinoids (ECs) and N-acylethanolamines (NAEs) in 12 normal weight and 12 obese subjects after an overnight fast and in response to a meal. Salivary Ecs and NAEs were also measured in 12 obese before and after body weight loss (BWL) induced by lifestyle intervention. We assessed mRNAs coding for enzymes for the synthesis and the degradation of ECs, cannabinoid receptor type 1 as well as the content of ECs and NAEs in salivary glands.

Results: ECs (anandamide, AEA and 2 arachidonoyglycerol, 2-AG) and NAEs (oleylethanolamide, OEA and palmitoylethanolamine, PEA) were quantifiable in human saliva and higher in obese than in normal weight subjects. A trend for a positive correlation between plasma and salivary AEA was found. Fasting salivary AEA and OEA correlated positively with BMI, waist circumference and insulin. Salivary ECs and NAEs did not change in response to a balanced meal. Salivary AEA significantly decreased after a 5% BWL. Enzymes and CB1 mRNAs as well as ECs and NAEs were present in human salivary glands.

Conclusion: ECs and NAEs are reliably measured in saliva and the ECS is present in human salivary glands. Salivary ECs and AEA in particular might be a useful biomarker in obesity.

Conflict of Interest

None

Funding

NSERM/AVENIR (D.C., G.M.), INSERM/ interface (D.C.), Region Aquitaine (D.C., G.M.), French Society of Endocrinology (B.G.C.), Fondation pour la Recherche Medicale, EU-FP7 HEALTH-F2-2008-223713 and EU-FP7 ENDOFOOD ERC-2010-StG (G.M.)

ABSTRACT 1013

INSULIN RESISTANCE DETERMINES THE PRESENCE OF ENDOTHELIAL DYSFUNCTION IN MESENTERIC MICROVESSELS DERIVED FROM HUMAN MORBID OBESE SUBJECTS

Authors

- Mariam El Assar (Speaker) (1)
- Juan Carlos Ruiz de Adana (2)
- María de la Luz Pindado (3)
- Alberto Hernández-Matías (2)
- Raquel León (2)
- Marta González (2)
- Javier Angulo (4)
- Leocadio Rodríguez-Mañas (5, 1)

Institutes

- 1 - Fundación para la Investigación Biomédica del Hospital de Getafe
- 2 - Hospital Universitario de Getafe
- 3 - Hospital Universitario de Getafe
- 4 - Instituto Ramón y Cajal de Investigación Sanitaria
- 5 - Hospital Universitario de Getafe

Topic : T3/T4:PS1 - Crosstalk of Adipose Tissue with other Organs

Abstract Text

Introduction. Obesity represents an important risk for cardiovascular disease. The physiopathological mechanisms underlying the link between obesity and vascular disease are not well elucidated. The objective was to evaluate if insulin resistance is a determinant factor in the endothelial dysfunction associated to human morbid obesity and to study possible molecular mechanisms involved.

Methods: Mesenteric microvessels derived from 17 noninsulin resistant morbid obese (NIR-MO), 22 insulin resistant morbid obese (IR-MO) and 12 healthy non-obese subjects undergoing laparoscopic intervention, were mounted in wire myograph to evaluate endothelium-dependent relaxation to bradykinin (BK). Vascular superoxide generation was assessed by dihydroethidium (DHE) staining. Systemic concentrations of the pro-inflammatory cytokines, interleukin-6 (IL-6), tumor necrosis factor alpha (TNF α), and resistin and the anti-inflammatory adipokine (adiponectin) were evaluated by ELISA.

Results. Relaxation to BK was blunted in mesenteric arteries derived from IR-MO, but not from those NIR-MO subjects (pD₂ for BK was 6.63 \pm 0.18 vs 7.26 \pm 0.13, respectively; p=0,01). Vasodilation to BK was improved by pre-incubating the vessels of IR-MO with superoxide scavenger, superoxide dismutase (SOD; 100 U/ml). Consistently DHE positive vascular staining was higher in IR-MO. IL-6, and TNF- α levels were only significantly elevated in IR-MO while resistin and adiponectin were elevated and reduced, respectively in all MO.

Conclusion. The presence of insulin resistance is a determinant factor of endothelial dysfunction in human morbid obesity. Increased superoxide generation is involved in the impaired endothelial-dependent relaxation in IR-MO subjects. In addition, systemic inflammation is present in IR-MO subjects.

Conflict of Interest

Funding

Research relating to this abstract was funded by (PI08/1649 and PI10/02781), ISCIII.

ABSTRACT 1014

ORIGIN OF WHITE AND BROWN ADIPOSE CELLS FROM VASCULAR ENDOTHELIUM

Authors

- Khanh-Van Tran (Speaker) (1)
- Olga Gealekman (1)
- Andrea Frontini (2)
- Saverio Cinti (2)
- Silvia Corvera (1)

Institutes

- 1 - UMass Medical School
- 2 - University of Ancona

Topic : T3/T4:PS7 - Dynamics of Adipose Tissue Cells

Abstract Text

Introduction: Adipose tissue expansion requires the enlargement of existing adipocytes, differentiation of adipocyte progenitors, and the development of a supporting vascular network. Adipocyte progenitors reside in the vasculature of adipose tissue, however their identities are not completely clear. Here we address the hypothesis that adipocytes may be derived from an endothelial cell lineage.

Methods: We used the VE-Cadherin-CreERT2/R26R mouse to determine if mature adipocytes, at some point in development, express VE-Cadherin, an endothelial specific gene. To address the relationship between vasculature and adipocyte development in humans, we analyzed capillary sprouts arising from human subcutaneous fat tissue embedded in an extracellular matrix.

Results: Fate tracing experiments reveal reporter gene expression in endothelial cells, pre-adipocytes and adipocytes of white and brown mouse fat depots. In response to PPAR activation, the endothelial cell features of cells sprouting from human subcutaneous fat were progressively lost, and these cells formed structurally and biochemically defined adipocytes. Capillary sprouts arising from cultured mouse aortic rings were also able to give rise to adipocytes in the presence of rosiglitazone. Furthermore, capillary sprouts from human adipose tissue and from mouse aortas were found to express Zfp423, a recently identified marker of pre-adipocyte determination.

Conclusion: Lineage tracing experiments show the existence of a common precursor that can give rise to both endothelial cells and adipocytes. Ex-vivo data analyzing adipose and non-adipose angiogenesis suggest that these progenitors may not be confined to adipose tissue vasculature. Thus, the microenvironment of the adipose tissue may be crucial in determining cell fates in vivo.

Conflict of Interest

The authors declare that they have no competing financial interests

Funding

The research described in this study was supported by grants from Universita Politecnica delle Marche and Cariverona Foundation to Saverio Cinti and NIH grant DK089101 to Silvia Corvera. The FACS analysis was funded in part by the NIDDK Diabetes and Endocrinology Research Center (DK52530).

ABSTRACT 1015

PHYSIOLOGICAL PARAMETERS AND WEIGHT CORRELATIONS IN AGESPECIFIC OBESITY IN WOMEN

Authors

- Mikhail GAVRILOV (Speaker) (1)
- Irina Maltseva (2)

Institutes

- 1 - Moscow State Medical Stomatological University
- 2 - Biologist

Topic : T3/T4:PSO - Functional Imaging (Brain and other Organs)

Abstract Text

Investigation objective: a search of related groups of body functions in obese women Materials and methods 102 women aged 25 to 75, from 73 to 167 kg of weight have been studied as well as 102 relevant indicators of physiological and biological functions. Results Over 40 significant weight to body-function correlations ($p < 0,05$) have been discovered. The top correlation is ($0,8 > r > 0,6$) weight to 2 release, medium correlations ($0,6 > r > 0,4$) are weight to lung ventilation, vital lung capacity, haemoglobin, erythrocytes, bloodtriglycerides, amylase. Age/weight ($r = 0,22$, $P < 0,05$) being the lowest correlation. Selected Parameters Multiple Correlations Table Test 1 2 3 4 5 6 7 1 haemoglobin (gr/l) 2 erythrocytes (1012/l) 0,92* 3 amylase (gr/l*hour) 0,36* 0,31* 4 vital lung capacity (sm3) 0,12 0,09 -0,06 5 lung ventilation (l/min) 0,39* 0,30* 0,20* 0,25* 6 blood triglycerides (mmole/l) 0,28* 0,21** 0,41* - ,15 0,37* 7 2 release (ml/min) 0,57* 0,52* 0,36* 0,31* 0,75* 0,24* 8 Age (Calendar age) 0,17 0,23** 0,38* 0,01 0,19 0,43* 0,08 * $P < 0,01$ ** $P < 0,05$ Conclusion Variations of multiple parameters correlations with weight are related to an increase in the indicators of outer breath and oxygen exchange, age rate and blood triglycerides, alimentary dis-balance. Age or lipid exchange rates are optional. Of particular interest are correlations of weight increase and lung functioning that could be linked with big cities toxic ecology effecting human metabolism.

Conflict of Interest

None disclosed.

Funding

None disclosed.

ABSTRACT 1016

EXAMINATION OF TYPE 2 DIABETES VARIANTS FOR BMI ASSOCIATIONS AND REPLICATION OF CHILDHOOD OBESITY LOCI

Authors

- Rajkumar Dorajoo (Speaker) (1, 2)

Institutes

- 1 - Genome Institute of Singapore
- 2 - Imperial College

Topic : T3/T4:PSO - Missing Heritability

Abstract Text

Aims: To examine common Type 2 diabetes (T2D) risk variants for BMI associations in adult East-Asian populations, including validation of HHEX and CDKAL1 as childhood obesity loci among Chinese children.

Methods: In silico assessment of T2D risk variants for adult BMI associations was conducted using GWAS data from 3 Chinese cohorts (N=6,284) that included 2 Singaporean Chinese population-based datasets and a Singaporean Chinese diabetic cohort. Subsequent validation was sought in 2 additional East-Asian (Malays and Koreans, N=11,329) and 2 European (Finns and Australians, N=6,692) datasets, respectively. Analyses were repeated excluding diabetics to prevent confounding of study results and to better understand the associations observed, we assessed for selection signals in the Singaporean datasets using an integrated haplotype score analysis and carried out LD quantification and haplotype analyses at the HHEX locus. In addition, HHEX and CDKAL1 SNPs were analysed for associations with birth weight (BW) and BMI (at age 9 years) using data from a GWAS of a Singaporean Chinese pediatric dataset (N=1,006).

Results: 3 SNPs, rs7754840 at CDKAL1, rs9939609 at FTO and rs1111875 at the HHEX locus were associated with adult BMI in the initial meta-analysis of adult Singaporean Chinese (corrected meta p-value = 0.033). The CDKAL1 and FTO regions are known obesity loci and thus, only the HHEX variant was followed-up. Rs1111875 remained significant after exclusion of diabetic samples (beta = -0.060, p-value = 0.002). Although this association did not achieve statistical significance in additional adult East-Asians, direction of effects were consistent and meta-analysis of all 5 East-Asian datasets showed significant associations with Z-BMI (beta = -0.036, meta p-value = 0.001). This association was stronger after exclusion of diabetic patients from the adult East-Asian datasets (beta = -0.043, meta p-value=0.0004). The HHEX variant did not show associations or directional consistency among the European datasets (beta=0.19, meta p-value = 0.272). The genomic region surrounding HHEX showed strong selection signals in the East-Asian populations (top 0.1 and 0.5 percentiles in Malays and Chinese, respectively) and we identified an extended haplotype containing rs1111875 in East-Asians which was not seen in Europeans. However, no common regional SNPs at the selected region showed strong associations with BMI. BW was associated with another HHEX variant, rs7923837, (beta=-0.054, corrected p-value=0.0081). BMI at age 9 years was observed to be modulated by BW interaction (p-value=0.0282), with reduced BMI among those of low BW and larger BMI among those of high BW.

Conclusion: T2D risk variants at the HHEX locus may affect adult BMI (rs1111875), BW (rs7923837), and childhood BMI (rs7923837) in East-Asian populations.

Conflict of Interest

Authors declare no conflict of interest.

Funding

Financial support was received from the Academy of Finland (project grants 104781, 120315 and Center of Excellence in Complex Disease Genetics), University Hospital Oulu, Biocenter, University of Oulu, Finland, the European Commission (EURO-BLCS, Framework 5 award QLG1-CT-2000-01643), NHLBI grant 5R01HL087679- 02 through the STAMPEED program (1RL1MH083268-01), NIH/NIMH (5R01MH63706:02), ENGAGE project and grant agreement HEALTH-F4-2007-201413, and the Medical Research Council (studentship grant G0500539, PrevMetSyn/ SALVE). The DNA extractions, sample quality controls, biobank up-keeping and aliquotting was performed in the National Public Health Institute, Biomedicum Helsinki, Finland and supported financially by the Academy of Finland

and Biocentrum Helsinki. We thank Professor Paula Rantakallio (launch of NFBC1966 and 1986), Ms Outi Tornwall and Ms Minttu Jussila (DNA biobanking). Financial support was received from the Academy of Finland (project grants 104781, 120315 and Center of Excellence in Complex Disease Genetics), University Hospital Oulu, Biocenter, University of Oulu, Finland, the European Commission (EURO-BLCS, Framework 5 award QLG1-CT- 2000-01643), NHLBI grant 5R01HL087679-02 through the STAMPEED program (1RL1MH083268-01), NIH/NIMH (5R01MH63706:02), ENGAGE project and grant agreement HEALTH-F4-2007-201413, and the Medical Research Council (studentship grant G0500539). The DNA extractions, sample quality controls, biobank up-keeping and aliquotting was performed in the National Public Health Institute, Biomedicum Helsinki, Finland and supported financially by the Academy of Finland and Biocentrum Helsinki. The Blue Mountains Eye Study (BMES) was supported by the Australian National Health & Medical Research Council, Canberra Australia (Grant No 974159, 211069, 302068, and Centre for Clinical Research Excellence in Translational Clinical Research in Eye Diseases, CCRE in TCR-Eye). The BMES GWAS was supported by Australian National Health & Medical Research Council, Canberra, Australia (Grant No 512423, 475604, 529912), and the Wellcome Trust, UK. In addition, funding by the Wellcome Trust, UK as part of Wellcome Trust Case Control Consortium 2 (A Viswanathan, P McGuffin, P Mitchell, F Topouzis, P Foster) has supported the genotyping costs of the entire BMES population (Grant numbers 085475/B/08/Z and 085475/08/Z). KARE study was supported by grants from Korea Centers for Disease Control and Prevention (4845- 301, 4851-302, 4851-307) and an intramural grant from the Korea National Institute of Health (2011-N73005-00), the Republic of Korea. AIFB is supported by Diabetes UK and the NIHR Biomedical Research Centre Scheme.

ABSTRACT 1018

IMPACT OF DIFFERENT DIETARY FAT SOURCES ON THE BLOOD-BRAIN BARRIER AND BRAIN METABOLISM OF OBESE MINIPIGS

Authors

- David Val-Laillet (Speaker) (1)
- Paul Meurice (1)
- Jacques Mourot (2)
- Jean-Paul Lallès (1)
- Charles-Henri Malbert (1)

Institutes

- 1 - INRA
- 2 - INRA

Topic : T3/T4:PSO - Functional Imaging (Brain and other Organs)

Abstract Text

Introduction: Diet-induced obesity can alter the blood-brain barrier (BBB) and brain metabolism. We previously demonstrated that the brain alterations observed in obese subjects are induced by the diet and weight gain. We hypothesized that diets differing on their fat sources might have contrasted effects on the brain functions.

Methods: 15 obese minipigs were fed with isocaloric high-fat diets enriched with either fish oil (FO), sunflower oil (SO), or lard (L). After 5 weeks of treatment, the animals were subjected to adiposity estimation by CT-scan, BBB permeability evaluation by dynamic injected CT-scan, and brain metabolism exploration by Positronic Emission Tomography.

Results: There was no significant difference between groups for the body weight and adiposity. The BBB was the most permeable in the FO group, intermediary in the L group, and the least permeable in the SO group. The anterior prefrontal cortex (PFC) metabolism was lesser for FO, intermediary for L, and higher for SO. There was also a decreased activity in the nucleus accumbens (NA) for FO compared to SO. There was a significant correlation between the BBB permeability and the PFC activity.

Conclusion: Diets leading to similar body weight and adiposity had contrasted effects on the BBB and brain metabolism, suggesting that the caloric intake and quality of nutrients both have an influence on the brain functions. Further research is needed to elucidate whether a causal relationship between these two phenomena exists, and why the SO diet, unlike FO, had this protective effect.

Conflict of Interest

None Disclosed.

Funding

Research relating to this abstract was funded by the Brittany Region, France.

ABSTRACT 1019

TRIP4 IS A NOVEL FTO BINDING PARTNER THAT ENHANCES FTO'S ABILITY TO DEMETHYLATE RNA

Authors

- Pawan Gulati (Speaker) (1)
- Marcella Ma (2)
- YC Loraine Tung (1)
- Karine Proulx (1)
- Stephen O'Rahilly (1)
- Vladimir Saudek (1)
- Giles Yeo (1)

Institutes

- 1 - Institute of Metabolic Science
- 2 - Institute of Metabolic Science

Topic : T3/T4:PS9 - Obesomics

Abstract Text

Introduction: Sequence variants in the first intron of FTO (Fat mass and Obesity related) are strongly associated with human obesity and human carriers of the risk alleles show evidence for increased appetite and food intake. FTO is part of the family of Fe(II) 2-oxoglutarate (2-OG) oxygenases and we have shown that FTO can demethylate 3-methylthymine (3meT) and 3-methyluracil (3meU) in vitro. Moreover global FTO null mice display decreased fat and lean body mass, increased metabolic rate and food intake. However, FTO's physiological role and how it influences bodyweight is yet to be determined.

Methods: One of the approaches we have taken is to look for potential protein binding partners of FTO, which may then shed some light on its function.

Results: Using bioinformatics we found that FTO homologues exist only in vertebrates and in marine algae. Algal FTO however, has an additional C-terminal ASCH (Activating Signal Cointegrator Homologue) domain. During evolution it is common for protein domains in a polypeptide to separate but remain within the same functional pathway and frequently to physically interact. Mammalian genome has only three ASCH domain-containing proteins, CXorf40a, CXorf40b and TRIP4 (Thyroid receptor interacting protein). In co-immunoprecipitation experiments, we show that out of these proteins only TRIP4 physically interact with FTO. Moreover we found that in a demethylation assay, TRIP4 enhances the ability of FTO to demethylate RNA (3meU).

Conclusion: Thus we have identified TRIP4 as novel FTO binding partner that interacts and modulates FTO activity.

Conflict of Interest

None.

Funding

EurOCHIP and MRC funded this project.

ABSTRACT 1020

BIRTH SIZE MODIFY LATER LIFE DIETARY PREFERENCES ESPECIALLY IN OBESE SUBJECTS

Authors

- Mia-Maria Perälä (Speaker) (1)
- Satu Männistö (1)
- Eero Kajantie (1, 2)
- Johan Eriksson (1, 3)

Institutes

- 1 - National Institute for Health and Welfare
- 2 - Helsinki University Central Hospital
- 3 - University of Helsinki

Topic : T2:PSO - Adults

Abstract Text

Introduction: Small body size at birth is associated with increased rates of cardiovascular diseases and type 2 diabetes, but the mechanisms involved are largely unknown. One potential mechanism explaining the association could be through modification of dietary habits. Our aim was to examine whether body size at birth modifies intake of macronutrients and foods in normal weight and overweight adults.

Methods: We studied 1797 participants of the Helsinki Birth Cohort Study whose birth weight and length were recorded. During a clinical study, at the mean age of 62-y, body weight and height were measured, and diet was assessed with a validated food-frequency questionnaire. Subjects were divided into groups according to their birth size (ponderal index tertiles) and body mass index at adulthood (<25 kg/m², 25-30 kg/m², >30 kg/m²). Differences in macronutrient and food intakes between groups were tested by ANOVA with post-hoc comparisons.

Results: In those who were small at birth and obese in adulthood had significantly higher intake of total fat (35.1 E% vs. 33.3 E%; P=0.017) and saturated fatty acids (12.6 E% vs. 11.7 E%; P=0.008) and lower intake of carbohydrates (44.4 E% vs. 46.9 E%; P=0.009) and fruits and berries (339 g/d vs. 431 g/d; P=0.026) compared with obese subjects with medium ponderal index at birth. No such differences were observed in normal weight subjects.

Conclusions: Especially in subjects who are obese in adulthood, small body size at birth seems to modify the preference to eat a high fat and low carbohydrate content diet in adult life.

Conflict of Interest

None Disclosed.

Funding

Research relating to this abstract was funded by the Finnish Graduate School on Applied Bioscience and Academy of Finland.

ABSTRACT 1021

MILK COMBINED WITH HIGH INTENSITY TRAINING IMPROVES BODY FAT AND PROTEIN BALANCE IN OVERWEIGHT CHILDREN

Authors

- Linda Gillis (Speaker) (1)
- Stuart Phillips (2)
- Stephanie Atkinson (1)
- Brian Timmons (1)

Institutes

- 1 - McMaster University
- 2 - McMaster University

Topic : CO:PS1 - Childhood and Adolescence

Abstract Text

Introduction: An optimal dietary and exercise regime, allowing growth but minimizing fat gain is needed for treatment of pediatric obesity. The purpose of the study was to determine if there could be a synergistic effect of milk and exercise that could promote a greater body fat deficit and improve protein balance.

Methods: This was a randomized, controlled intervention with a 7-day protocol of mild energy deficit brought about by daily one hour exercise sessions (weight training and high intensity cycling). One group (n=23) received 750 ml of milk while a second group (n=23), an isoenergetic carbohydrate beverage. Both groups received a portioned out diet based on their resting energy expenditure. Protein balance was determined by ¹⁵N-glycine methodology with overnight urine collections.

Results: Post treatment, the milk group had a greater decrease in body fat (-0.4% in milk group compared to +0.5% in control group, p<0.04), despite no significant differences in body weight. There were time and group effects in protein balance with the milk group having a more positive net protein balance after 7 days of treatment (+1.02 vs 0.69 g/kg body weight/day in milk and control respectively, p<0.0005).

Conclusion: The addition of milk to a short-term exercise regime improves body proportions and protein balance. Continuing with this protocol over four months could lead to a significant muscle enhancement and 13% greater body fat loss.

Conflict of Interest

None.

Funding

Research related to this abstract was funded by National Dairy Council (U.S.) and administered by Dairy Research Institute.

STANDARDIZED PHASEOLUS VULGARIS EXTRACT FOR WEIGHT MANAGEMENT: A 12-WEEK RANDOMIZED CONTROLLED TRIAL

Authors

- Wen Fen Chong (Speaker) (1)
- Pee Win Chong (1)
- Barbara Grube (2)
- Linda Böhme (3)

Institutes

- 1 - InQpharm Europe Ltd
- 2 - General practitioner
- 3 - analyze realize ag

Topic : T5:PSO - Present and Future of Pharmacological Treatment

Abstract Text

Introduction: IQP-PV101, a standardized Phaseolus vulgaris extract with a favourable safety profile from preliminary studies, is hypothesized to promote weight loss by blocking the digestion of dietary starch.

Methods: 123 overweight and obese subjects (intent-to-treat population) from 2 sites in Germany were included in this double-blind trial. After a 2-week run-in phase, subjects were randomized to receive either IQP-PV101 (n=62) or a placebo (n=61). Over 12 weeks, subjects adhered to a slightly hypocaloric diet with 40% of energy from starchy food. Body weight was measured at screening, randomization (baseline), week 4, week 8 and week 12.

Results: Baseline demographics were similar in both groups. At week 12, IQP-PV101 resulted in a mean weight loss of 2.91kg compared to 0.92kg for placebo ($p<0.001$), and a mean BMI reduction of 1.05kg/m² compared to 0.32kg/m² for placebo ($p<0.001$). The mean percentage of body weight loss was significantly greater for IQP-PV101 compared to placebo at week 4 (1.5% vs. 0.6%, $p=0.005$), week 8 (3.2% vs. 1.1%, $p<0.001$) and week 12 (3.5% vs. 1.0%, $p<0.001$). 30.6% in the IQP-PV101 group and 8.2% in the placebo group lost at least 5% of their baseline body weight ($p<0.001$). No serious or related adverse events were reported. **Conclusion:** IQP-PV101 showed potential as a safe and effective weight management agent, leading to clinically significant weight loss.

Conflict of Interest

None.

Funding

The trial was funded by InQpharm Europe Ltd.

ABSTRACT 1023

PERCEIVED MOTHER'S VERBALIZATIONS ABOUT FATNESS AND PERCEIVED PRESSURE TO EAT, AS PREDICTORS OF FAT STEREOTYPING IN 7- TO 11-YEAR-OLD CHILDREN.

Authors

- Blanca Elizabeth Jiménez Cruz (Speaker) (1)
- Cecilia Silva Gutiérrez (1)
- Rigoberto León-Sánchez (1)

Institutes

1 - National Autonomous University of Mexico (UNAM)

Topic : T5:PSO - Discrimination and Stigmatisation

Abstract Text

Introduction: Previous studies have shown some relation between mother's and children's anti-fat attitudes, but little work has been carried out to explore children's perceptions about mother's behaviours and verbalizations as possible predictors of children's fat stereotyping.

Method: One hundred and sixty eight children (55.9% girls) between 7 and 11 years old ($M = 8.93$, $S.D. = 1.3$) were interviewed. Six items from the Pressure to eat subscale from the Kids Child Feeding Questionnaire were used, and one question to evaluate perception about mother's verbalizations on "the bad looking" of fatness. Fat stereotypes were evaluated using the fifth figure of Collin's drawings line, and only same sexed-figure was shown; figures were evaluated using a list of adjectives on a Likert scale.

Results: In the case of girls, fat stereotypes were significantly predicted ($R^2 = 10.8$, $F = 5.532$, $p < .01$) by their perception about the amount of pressure to eat ($b = -.239$), and their perception on the verbalizations about the "bad looking" of obese people ($b = .261$). Additionally, age of girls correlated significantly with fat stereotyping ($r = .214$, $p < .05$). For boys none of these variables predicted fat stereotyping.

Conclusion: Perceptions about mother's negative-verbalizations regarding obesity relate to fat stereotyping in the case of girls. However, perceptions about pressure to eat healthy food are discussed as a protective factor against fat stereotyping.

Conflict of Interest

None Disclosed.

Funding

No Funding.

THE IDEAS OF MEXICAN AND SPANIARD UNDERGRADUATES ON THE CAUSES OF OBESITY.

Authors

- Rigoberto León-Sánchez (Speaker) (1)
- Blanca Elizabeth Jiménez Cruz (1)
- Asunción López-Manjón (2)
- Kirareset Barrera García (3)

Institutes

- 1 - National Autonomous University of Mexico (UNAM)
- 2 - Autonomus University of Madrid
- 3 - National Autonomus University of Mexico

Topic : T5:PSO - Discrimination and Stigmatisation

Abstract Text

Introduction: Diverse studies have shown that health professionals stigmatize obesity, even those whose practice focuses on the treatment of the obese patient. Those negative believes regarding the obesity might be related to the way in which its causes are attributed; i.e., if it is thought that the obese person is responsible for his condition or not.

Method: The purpose of this paper is to examine the believes regarding the causes of obesity in two groups of students of psychology, one from a Mexican university (n=83), the other from a Spaniard one (n=77). Ideas on the causes of obesity were evaluated using an ex profeso-designed questionnaire consisting of 34 items, which were scored on a 4-point Likert scale with responses ranging from 1 = strongly agree to 4 = strongly disagree.

Results: The results obtained show that the students allot more weight to those items in which the obese person could be pointed out as responsible for his condition or "guilty" of it [tSpain(76) = 4.163; tMexico(82) = 2.927], even when both groups of students admit that obesity is caused by situations for which the obese person might be accounted responsible or not.

Conclusion: Such data suggest that even that group of professionals, regardless of the fact that they admit that the causes of obesity are multifactorial, performs what has been called the "Ideology of Blame" (Crandall, 1994) and that that could explain, according to some authors, the stigmatization of obesity.

Conflict of Interest

None Disclosed.

Funding

No Funding.

PREVENTING EXCESS GESTATIONAL WEIGHT GAIN IN OVERWEIGHT AND OBESE WOMEN.

Authors

- Catherine Lombard (Speaker) (1, 2)
- Cheryce Harrison (1)
- Helena Teede (1, 3)

Institutes

- 1 - Monash Univeristy
- 2 - Jean Hailes for Women's Health
- 3 - Southern Health

Topic : T2:PSO - Adults

Abstract Text

Introduction: Prevalence of overweight and obesity is increasing in young women raising the proportion of women entering pregnancy with existing overweight or obesity. Overweight and obesity is an established risk factor for maternal complications including miscarriage, hypertension and gestational diabetes mellitus (1). The International Institute of Medicine (IOM) has developed guidelines for gestational weight gain.

Methods: Between May 2009 and May 2011, 200 women, <15 weeks gestation were randomised to a brief lifestyle intervention (2) or health information control. Weight gain was measured at 28 weeks gestation. Results were stratified according to BMI.

Results:The difference in weight gain between control and intervention groups (6.9 ± 3.3 versus 6.0 ± 2.8 kg, $p<0.05$) at 28wks was significant. Stratified by baseline BMI, overweight control women (<29.99 kg/m²) gained significantly more weight (26%) than overweight intervention women (7.8 ± 3.4 vs 6.0 ± 2.2 kg, $p<0.05$). In contrast, obese women (>30.00 kg/m²) gained less weight overall than overweight women but with no difference between groups (5.2 ± 2.6 vs 5.9 ± 3.5 kg, $p=0.32$). Overweight women exceeding IOM minimum recommendations for weight gain was reduced in the intervention group (17.6% vs. 55% in control ($p<0.05$)). However, 60% of obese women exceeded minimum IOM recommendations, with equal representation between control and intervention groups.

Conclusions: Women entering pregnancy benefit from a brief lifestyle intervention to prevent excess weight gain. Obese women appear to engage strategies to manage weight gain and require more intense intervention in order to meet IOM recommendations.1. Callaway et al. MJA, 2006;184(2):p56-59.2. Lombard et al, BMJ, 2010;341:3215.

Conflict of Interest

Nil.

Funding

This project is supported by a BRIDGES Grant from the Global Diabetes Foundation. BRIDGES, an International Diabetes Foundation project is supported by an educational grant from Eli Lilly and Company. C Lombard is supported by a Helen McPherson Smith, Australia, Fellowship.

ABSTRACT 1026

THE IMPACT OF ETHNICITY IN A RANDOMISED CONTROLLED TRIAL TO OPTIMISE GESTATIONAL WEIGHT GAIN DURING PREGNANCY

Authors

- Cheryce Harrison (Speaker) (1)
- Catherine Lombard (1, 2)
- Helena Teede (1, 3)

Institutes

- 1 - Monash University
- 2 - Jean Hailes
- 3 - Southern Health

Topic : T2:PSO - Women's Lifecycle

Abstract Text

Introduction: Women of Asian descent have increased maternal health risks, including gestational diabetes (GDM), at a lower body mass index (BMI) compared to Caucasian women. Risk is exacerbated by excessive gestational weight gain (GWG). We aimed to optimise, and compare, GWG in ethnically diverse high-risk women.

Methods: Overweight women, <15 weeks gestation and at high-risk for GDM (1) were randomised to lifestyle intervention (4 behavioural sessions) or control (generic health information) (2). Data collection occurred at baseline, 28 weeks gestation and 6 weeks postpartum. Results were stratified according to birth country (Australian vs. non-Australian born [ethnic]).

Results: Baseline demographics were similar between intervention (n=106) and control (n=99) groups. Overall, 37% were Australian born, 36% Southern Asian and 16% South East/Chinese Asian. Ethnic women perceived less risk of excessive GWG and GDM development at baseline compared to Australian women ($p<0.05$). By 28 weeks, ethnic women in the intervention gained significantly less than ethnic control participants (5.8 ± 2.7 vs. 7.6 ± 3.5 kg, $p<0.05$). Post pregnancy, differences persisted with ethnic women in the intervention gaining significantly less weight overall compared to controls (1.2 ± 4.1 vs. 3.7 ± 5.4 kg, $p<0.01$). Australian women gained less weight at all time points in comparison to ethnic women, but with no significant between groups differences.

Conclusions: Despite lower risk perception for excessive GWG and GDM, we demonstrate a simple behavioural intervention is effective in significantly optimising GWG in ethnically diverse women with increased likelihood to return to pre-pregnancy body weight postpartum. 1. Teede et al. ANZJOG; 51:4992. Lombard et al, BMJ; 341:3215.

Conflict of Interest

The authors have no conflict of interest.

Funding

This project is supported by a BRIDGES Grant from the Global Diabetes Foundation. BRIDGES, an International Diabetes Foundation project is supported by an educational grant from Eli Lilly and Company.

DIETARY FISH OIL ALTERS ILEAL AND COLONIC PERMEABILITY AND COLONIC HSP70 AND INCREASES PLASMA LPS IN OBESE ADULT MINIPIGS

Authors

- Aafke Taekema (Speaker) (1)
- Marie-Caroline MICHALSKI (2)
- Gaëlle PINEAU (2)
- Jacques Mourot (3)
- Marie-Edith Arnal (1)
- David Val-Laillet (1)
- Charles-Henri Malbert (1)
- Jean-Paul Lallès (1)

Institutes

- 1 - INRA
- 2 - INSERM U1060, INRA U1235, CarMeN
- 3 - INRA

Topic : T3/T4:PS2 - Gastrointestinal Tract and Energy Balance

Abstract Text

Introduction: Gut permeability is a key function incriminated in the development of local and systemic inflammation. Chronic consumption of high-fat diets leads to obesity and inflammation. Fish oil (FO) displays anti-inflammatory properties. Increased gut permeability to bacterial lipopolysaccharide (LPS) causes adipose tissue expansion and inflammation in mice. We hypothesized that in obese state a FO diet limits gut permeability-induced LPS passage.

Methods: 16 adult obese minipigs were fed for 10 weeks with high-fat (12%) diets containing lard, sunflower oil (SO) or fish oil (FO). Plasma LPS was analysed postprandially by LAL test, while gut permeability was measured in Ussing chambers and HSP70 levels by Western blotting after slaughter.

Results: Groups did not differ for food intake, body weight and adiposity. Colonic paracellular permeability was higher with FO than SO. Ileal and colonic transcellular and paracellular permeabilities tended to be higher with FO than SO in presence of LPS. Permeability alterations with FO were associated with lower ZO-1 mRNA, lower colonic HSP70 and threefold higher plasma LPS concentrations. By contrast, FO appeared to be protective to proximal intestine, as suggested by higher jejunal HSP27 and alkaline phosphatase.

Conclusion: Collectively, our data indicate that gut permeability is modulated regionally and differently by dietary fatty acid sources in the context of obesity. Surprisingly, FO was protective in jejunum but deleterious in ileum and colon. This might involve the microbiota and/or FO peroxidation products. SO was protective and lard often intermediate but closer to SO. Further research is needed to elucidate underlying molecular mechanisms.

Conflict of Interest

None disclosed.

Funding

Research relating to this abstract was funded by the Brittany Region, France.

CONTRIBUTION OF PHYSICAL ACTIVITY, SEDENTARY TIME, SLEEP AND CARDIO-RESPIRATORY FITNESS AS RISK FACTORS FOR OVERWEIGHT AND OBESITY IN DANISH CHILDREN

Authors

- Mads Hjorth (Speaker) (1)
- Chaput Jean-Philippe (2)
- Stine-Mathilde Dalskov (1)
- Arne Astrup (1)
- Kim Fleischer Michaelsen (1)
- Inge Tetens (3)
- Anders Sjödín (1)

Institutes

- 1 - Faculty of Science, University of Copenhagen
- 2 - Healthy Active Living and Obesity Research Group, Children's Hospital of Eastern Ontario Research Institute
- 3 - National Food Institute, Division of Nutrition, DTU Food, Technical University of Denmark

Topic : CO:PS1 - Childhood and Adolescence

Abstract Text

Introduction: Sparse data exist on the independent associations between physical activity, sedentary time, sleep and cardio-respiratory fitness with percent body fat (%BF). Therefore, these independent associations were investigated in Danish children.

Methods: Moderate-to-vigorous physical activity (MVPA; >2000 counts/min), sedentary time (<100 counts/min) and sleep duration (h/night) were objectively measured for 7 consecutive days using an accelerometer in a cross-sectional sample of 834 Danish school children aged 8-11 years. The Children's Sleep Habit Questionnaire (CSHQ), designed to screen for common sleep problems, was also used. Cardio-respiratory fitness (ml/kg/min) was assessed using an intermittent running test and %BF was measured by DEXA.

Results: Overall, mean±SD MVPA, sedentary time, cardio-respiratory fitness and %BF were 61±26 min/day, 448±64 min/day, 47.7±5.4 ml/min/kg and 23.8±8.8% and 13.9% of children were classified as overweight or obese using the IOTF cut-points. Time in MVPA ($\beta=-0.11$; $P=0.01$) and cardio-respiratory fitness ($\beta=-0.52$; $P<0.001$) were associated with %BF independent of age, sex, highest education level of the parents, time spent sedentary, CSHQ score and either MVPA or cardio-respiratory fitness. Sedentary time was not associated with %BF. Sleep duration from the ActiGraph accelerometer is not yet analysed (will be presented at the conference); however, the CSHQ tended to be significantly associated with %BF ($\beta=0.06$; $P=0.06$) independent of age, sex, highest education level of the parents, time spent sedentary, MVPA and cardio-respiratory fitness.

Conclusion: Higher cardio-respiratory fitness level and MVPA time were negatively associated with %BF regardless of the amount of sedentary time while sleep problems tended to be positively associated with %BF.

Conflict of Interest

No conflict of interest to declare.

Funding

The study is part of the OPUS project 'Optimal well-being, development and health for Danish children through a healthy New Nordic Diet'. Supported by a grant from the Nordea Foundation.

ABSTRACT 1029

1,25 DIHYDROXYVITAMIN D3 INHIBITS PROINFLAMMATORY CYTOKINE AND CHEMOKINE EXPRESSION IN ADIPOSE TISSUE

Authors

- Julie Marcotorchino (Speaker) (1)
- Jean-François Landrier (1)
- Erwan Gouranton (1)
- Béatrice Romier-Crouzet (1)

Institutes

1 - INRA, UMR1260

Topic : T3/T4:PS7 - Dynamics of Adipose Tissue Cells

Abstract Text

Introduction: Obese people often display a vitamin D deficiency as well as a low grade inflammation characterized by an increased secretion of pro-inflammatory cytokines by adipose tissue, suspected to contribute to the development of insulin resistance. We aim to evaluate the ability of vitamin D to modulate proinflammatory cytokine expression by adipocytes and adipose tissue in basal conditions and TNF_α-mediated stimulated conditions.

Methods: We incubated human adipocytes and 3T3-L1 adipocytes with 1, 25 dihydroxyvitamin D3 (VD3) and we evaluated the effect of this vitamin in basal and TNF_α-mediated stimulated conditions. Specific markers of inflammation such as IL6, IL1_α and MCP-1 were evaluated by real-time qPCR and circulating cytokines determined by ELISA assays or by luminex.

Results: In 3T3-L1 adipocytes, a decrease of IL6, IL1_α and MCP-1 (mRNA and protein expression) was observed after a 24h incubation with VD3. VD3 was also able to reverse the proinflammatory effect of TNF_α. The molecular mechanism has been studied. RNA interference experiments showed the role of the vitamin D Receptor in this regulation. The involvement of NF- κ B signaling pathway has been demonstrated (decrease of IKK α phosphorylation under VD3 effect). In parallel, we have shown an inhibition of p38 phosphorylation under VD3 effect, which could be related to the increase of Dusp10 expression, a phosphatase involved in p38 dephosphorylation.

Conclusion: These molecular mechanisms allowed to explain at least in part the decrease of expression of the proinflammatory cytokines observed. The physiological relevance of these results will be tested in vivo in mice.

Conflict of Interest

Funding

ABSTRACT 1030

EFFECT OF A MULTIDISCIPLINARY INTERVENTION ON 1H-MRS MEASURED MUSCLE FAT IN OBESE CHILDREN AND YOUTHS

Authors

- Cilius Esmann Fonvig (Speaker) (1)
- Dorthe Sadowa Bille (1)
- Tenna Ruest Haarmark Nielsen (1)
- Elizaveta Chabanova (2)
- Henrik S, Thomsen (2)
- Jens-Christian Holm (1)

Institutes

- 1 - Copenhagen University Hospital Holbæk
- 2 - Copenhagen University Hospital Herlev

Topic : CO:PS1 - Childhood and Adolescence

Abstract Text

Introduction: The ectopic fat deposition in skeletal muscle has deleterious effects including the development of insulin resistance and obesity related complications. This study investigated the effect of multidisciplinary childhood obesity treatment on muscular fat content and insulin sensitivity in a young population.

Methods: 105 individuals (45 boys) aged 6 to 20 years with a median 2.93 (range 1.32 to 5.20) body mass index (BMI) standard deviation score (SDS) were investigated. At baseline and after 1 year of intervention muscle fat content (MFC), subcutaneous fat (SAT), and visceral fat (VAT) was measured by magnetic resonance spectroscopy and imaging. Anthropometric measures and fasting plasma glucose and serum insulin were also obtained. The group was subsequently arranged in tertiles according to changes in BMI SDS.

Results: Tertile 1 decreased the BMI SDS the most and tertile 3 increased the BMI SDS. Tertile 1, compared to tertile 3, had a significantly greater reduction in BMI SDS (median change: -0.48 (-1.86 to -0.24) vs 0.10 (0.01 to 1.23), $P < 0.0001$), SAT ($P = 0.02$), and VAT ($P = 0.009$). The changes in BMI SDS were not associated with changes in MFC ($P = 0.36$) or HOMA-IR ($P = 0.45$) across tertiles.

Conclusion: As SAT and VAT decrease with weight loss, MFC and insulin sensitivity do not seem to improve, or worsen, in a 1 year multidisciplinary childhood obesity treatment program.

Conflict of Interest

None disclosed.

Funding

No funding.

ABSTRACT 1031

GENE EXPRESSION PROFILE IN SUBCUTANEOUS ADIPOSE TISSUE (SAT) FROM SEVERELY OBESE SUBJECTS BEFORE AND AFTER ONE YEAR FROM BARIATRIC SURGERY

Authors

- Pasqualina Buono (Speaker) (1, 2)
- Andreina Alfieri (1, 2)
- Carmela Nardelli (3, 4)
- Vincenzo Pilone (5)
- Rosario Liguori (4)
- Giuseppe Labruna (2)
- Aurora Daniele (2, 3, 6)
- Lucia Sacchetti (3, 4)

Institutes

- 1 - University "Parthenope"
- 2 - IRCCS-SDN, Naples
- 3 - CEINGE-biotecnologie avanzate
- 4 - University "Federico II"
- 5 - University "Federico II"
- 6 - University SUN, Naples

Topic : T3/T4:PS9 - Obesomics

Abstract Text

Introduction: The aim of this project was to evaluate the effects of bariatric surgery on mRNA expression profile of Sirtuin-1, adiponectin, FABP4, AdipoR1, AdipoR2, caveolin-1 and aquaporin-7 in SAT tissues from severely obese subjects before and after one year from bariatric surgery.

Methods: SAT biopsies were collected from 5 severely obese subjects (BMI >40 kg/m²) during bariatric surgery (T0) and after one year (T1) and from 10 normal-weight subjects. RTqPCR analysis was carried out on total RNA extracted from SAT.

Results: We found a significant ($p < 0.05$) increase in mRNA expression of Sirtuin-1, adiponectin, AdipoR1 and AdipoR2 in SAT at T1 compared to T0. The expression of these messengers resulted down-regulated in obese at T0 compared to gene expression in SAT from normal-weight subjects.

Conclusions: Our preliminary results indicate that bariatric surgery positively affects mRNA expression of key markers related to glucose and lipid metabolism in SAT. This intervention seems not sufficient to modulate the expression of FABP4, caveolin-1 and aquaporin-7 mRNAs. Positive results are associated to an improvement in glycemic and lipidic profiles.

Conflict of Interest

The authors declare no conflict of interest.

Funding

This work was supported by grants from Ministero Salute, Co-funding the Istituto di Ricovero e Cura a carattere scientifico, IRCCS, Fondazione SDN, Naples, Italy (RF2007-635809).

ABSTRACT 1032

ADIPOCYTES AS AN IMPORTANT SOURCE OF CHEMOKINES IN INFLAMED ADIPOSE TISSUE

Authors

- Franck Tourniaire (Speaker) (1)
- Béatrice Romier-Crouzet (2)
- Jong Han Lee (3)
- Julie Marcotorchino (1)
- Erwan Gouranton (1)
- Jérôme Salles (4)
- Christiane Malezet (1)
- Julien Astier (1)
- Patrice Darmon (1)
- Eric Blouin (5)
- Stéphane Walrand (4)
- Jianping Ye (3)
- Jean-François Landrier (1)

Institutes

- 1 - UMR INRA 1260 INSERM 1062 Université d'Aix Marseille
- 2 - Université de Reims Champagne-Ardenne
- 3 - Pennington Biomedical Research Center
- 4 - INRA, UMR 1019, UNH, CRNH Auvergne
- 5 - Laboratoire Labcatal

Topic : T3/T4:PS8 - Inflammation and Immunity

Abstract Text

Introduction: Obesity is now recognized as a low grade inflammation state, in which adipose tissue is infiltrated sequentially by immune cells, however the role of adipocytes in this process remains to be clarified. The objective of this work was to explore the contribution of adipocytes in the control of programmed infiltration of immune cells in inflamed adipose tissue in obesity.

Methods: Human and mouse adipocytes were analyzed for expression of chemokines in response to inflammation signal (TNF- α) using microarrays and gene set enrichment analysis. Gene expression was verified by qRT-PCR. Chemokine protein was determined in culture medium with ELISA. Chemokine expression was investigated in human adipose tissue biopsies and mouse adipocytes were compared with stromal vascular cells for. Mechanism of chemokine expression was investigated in NF- κ B p65 null cells and aP2-p65 overexpressing mice.

Results: Chemokine encoding genes were the most responsive genes in TNF- α treated human and mouse adipocytes. mRNA and protein of 34 chemokine genes were induced in a dose-dependent manner in the culture system. Furthermore, expression of those chemokines was elevated in human and murine adipocytes in obese condition but not in stromal vascular cells. Expression was reduced by NF- κ B inactivation and elevated by NF- κ B activation.

Conclusions: Besides CCL2 and CCL5, numerous other chemokines, such as CCL19, are expressed by adipocytes under obesity-associated chronic inflammation. Their expression is regulated by NF- κ B. Those chemokines may be involved the initiation of infiltration of leukocytes into obese adipose tissue.

Conflict of Interest

None.

Funding

The study is partially supported by NIH grant (DK068036 and DK085495) to JY, and funding from Laboratoire Labcatal to FT, BRC and JFL.

ABSTRACT 1033

ROUX-EN-Y GASTRIC BYPASS SURGERY DOES NOT PRESERVE ENERGY EXPENDITURE IN HUMANS

Authors

- Julie Berg Schmidt (Speaker) (1)
- Nikolaj Ture Gregersen (1)
- Sue Pedersen (1)
- Jens Juul Holst (2)
- Dorte Lindqvist Hansen (3)
- Dorte Worm (3)
- Sten Madsbad (3)
- Arne Astrup (1)
- Anders Sjødin (1)

Institutes

- 1 - Faculty of Science, University of Copenhagen
- 2 - Faculty of Health Science, University of Copenhagen
- 3 - Faculty of Health Science, Hvidovre University Hospital, University of Copenhagen

Topic : T5:PS1 - Biological Lessons from Bariatric/Metabolic Surgery

Abstract Text

Background: It has been suggested that the adaptive decrease in energy expenditure (EE) following Roux-en-Y gastric bypass (RYGB) surgery is attenuated compared with a similar weight reduction achieved by diet alone. However, this has never been investigated at a stable energy intake using a study design with "pair-fed" controls.

Objective: The aim of this study was to assess the short-term effect of RYGB on EE Design: 28 obese (BMI:45.8±4.4kg/m²), non-diabetic subjects were recruited from a waiting list of patients selected for RYGB, and randomized to undergo RYGB at either week 8 or 12 (after the study). The study included a baseline visit (week 0) and two visits (week 7,11) where 24 hour EE was assessed using respiration chambers. Body weight and composition (DXA) were measured at all visits. The participants were supervised by a dietician (weekly) to follow a low-calorie diet (Cambridge Weight Plan, 1000kcal/day) throughout the entire period, thereby providing a "paired" controls group and avoiding a between-group difference in energy intake as a result of RYGB.

Results: After weight loss (RYGB:-21.0±3.9kg vs. control:-18.0±6.6kg) both groups decreased their 24 hour EE from week 7 to 11 (RYGB:-165kcal/day;p<0.001 vs. control:-76kcal/day;p=0.004) with a larger decrease occurring in the RYGB group (p=0.017). However, when adjusting for changes in body composition the effect of surgery disappeared (p=0.142). (Correlations between changes in GI-hormones and EE will be presented at the conference).

Conclusions: As RYGB did not preserve EE, this mechanism does not explain the larger weight loss seen with RYGB compared to other treatments.

Conflict of Interest

The low calorie products and travel grants for JBS to attend scientific meetings were provided by Cambridge Weight PlanR , Northants, United Kingdom.

Funding

Research related to abstract this was funded by UNIK: Food, Fitness & Pharma for Health and Disease.

ABSTRACT 1034

RELATIONSHIP BETWEEN BODY COMPOSITION, SALIVARY IMMUNOGLOBULIN A, SALIVARY CORTISOL AND SALIVARY ALPHA-AMYLASE IN CHILDREN

Authors

- André Santos-Magalhães (Speaker) (1)
- Luis Rama (2)
- Luisa Aires (3)
- Clarice Martins (3)
- Jorge Mota (3)
- Ana Teixeira (2)

Institutes

- 1 - University Fernando Pessoa
- 2 - Faculty of Sport Sciences and Physical Education, University of Coimbra
- 3 - Faculty of Sports – CIAFEL, University of Oporto

Topic : CO:PS1 - Childhood and Adolescence

Abstract Text

Introduction: The excess of adipose tissue in adults and children is associated with a dysfunction in the normal activity of the autonomic nervous system (ANS) and hypothalamuspituitaryadrenal (HPA) axis. Growing evidence supports salivary immunoglobulin (slgA), cortisol (sCortisol) and alpha-amylase (sAA) as reliable biomarkers to access the functioning of the ANS and HPA axis. The aim of the present study was to determine concentrations of slgA, sCortisol, sAA and their association with body composition in children.

Methods: A total of 50 school children (20 normal weight; 8 pre-obese; 22 obese CDC Growth Charts), 6-10 year-olds (6.2 ± 1.16), of both genders (23 Males; 27 Females) were analyzed. Measurements included anthropometric (height, weight, BMI) and body composition variables as percentage of total body fat (%TBF) and percentage of trunk fat (%TF), acquired by DEXA. Resting saliva was collected and levels of slgA, sCortisol and sAA were determined by ELISA. Descriptive statistics and partial correlations with gender, age and maturational stage (Tanners criteria) adjustments were used.

Results: Obese children presented significantly higher slgA than their normal weight counterparts ($p=0.001$). %TBF and %TF were significantly correlated with slgA ($p=0.005$). Additionally, negative correlations between %TBF, %TF and sAA were observed ($p < 0.05$). No significant correlations were observed between %TBF, %TF and sCortisol.

Conclusion: Our results suggest an association between the quantity of adipose tissue and sAA, and especially a nouvelle association with slgA. Higher % body fat seems related to lower sAA and higher slgA levels in children.

Conflict of Interest

Funding

ABSTRACT 1035

HOW NUTRITIOUS ARE THE POPULAR LUNCH-TIME FOODS PURCHASED BY GLASGOW SCHOOL PUPILS FROM LOCAL FOOD OUTLETS?

Authors

- John Mooney (Speaker) (1)
- Dionne Mackison (2)
- Fiona Crawford (3)
- Kelda Maclean (4)
- Anne Ellaway (5)

Institutes

- 1 - Scottish Collaboration for Public Health Research and Policy
- 2 - University of Dundee
- 3 - Glasgow Centre for Population Health
- 4 - Glasgow Centre for Population Health
- 5 - MRC Social Public Health Sciences Unit

Topic : T1:PSO - Policy and Macro Economic Systems

Abstract Text

Introduction: The successful implementation of nutrition standards for school-meals in Scotland¹ may be jeopardised by a decline in the uptake of school-meals and an increase in the purchasing of energy-dense foods from commercial outlets nearby. We undertook a nutritional analysis of popular purchases from a range of food outlets around Glasgow secondary schools to assess whether they met recommended nutritional standards¹.

Methods: Five secondary schools, representing socially contrasting neighbourhoods of the city, were selected. The most popular choices in nearby food outlets were ascertained through structured covert observation and 50 savoury items were subsequently purchased for analysis. Additional items, drinks or snacks, were excluded from the summary analysis.

Results: 45 of the 50 purchases were eligible for comparison with nutritional standards for full schoolmeals¹. Of these, 27(60%) exceeded the recommendations for total fat, 29(64.4%) for total saturated fat and 22(48.9%) for total energy content. For nutrients with a minimum recommended threshold, only six purchases met the requirements for zinc, three for iron and one for protein. Sugared drinks were frequently purchased in addition to menu-choices. There was greater heterogeneity in the results by outlet-type than by school-site.

Conclusion: This study confirms the poor nutritional standards of typical lunch-time meals sold by high street vendors to secondary school pupils in Glasgow. Efforts to improve the dietary intake of school pupils should include working with local shopkeepers and local planning authorities, as well as further incentivising school-meals.

Reference: 1. Healthy Eating in Schools. Scottish Government (2008).
<http://www.scotland.gov.uk/Resource/Doc/238187/0065394.pdf>¹²

Conflict of Interest

None.

Funding

Glasgow Centre for Population Health and Scottish Collaboration for Public Health Research & Policy
1<http://www.scotland.gov.uk/Resource/Doc/238187/0065394.pdf>
2<http://www.scotland.gov.uk/Resource/Doc/238187/0065394.pdf>

PHYSICAL ACTIVITY PROMOTION INITIATIVES TARGETING OVERWEIGHT/OBESE PUPILS IN HEALTH PROMOTING SCHOOLS

Authors

- MARY ELIZABETH JACOBSON (Speaker) (1)
- JULIA ANNE POTTER (1)
- CHRISTOPHER JOHN LAWS (1)

Institutes

1 - University of Chichester

Topic : CO:PS1 - Childhood and Adolescence

Abstract Text

Introduction: 'Health promoting schools' is a concept embraced by an increasing number of schools worldwide, which utilises a holistic, whole-school approach to promote child health and address various health issues including childhood obesity. Currently, there is a dearth of information on how successful these schools are, in utilising this approach to implement effective physical activity (PA) promotion initiatives that target overweight/obese pupils. This study determined the opportunities for and experiences of heads of physical education (HOPE) and healthy school coordinators (HSC) implementing PA promotion initiatives that target overweight/obese pupils in health promoting secondary schools.

Methods: Ten semi-structured interviews were conducted with a sample of HOPE (n=5; 3 males) and HSC (n=5; 2 males) from five health promoting secondary schools in the south of England. All interviews were recorded and transcribed verbatim. Thematic data analysis was used to identify recurring themes.

Results: Most schools were involved in internal/external initiatives to identify and encourage overweight/obese pupils to participate in physical activities; however, most of these were short-term/occasional programmes. Most interviewees indicated that implementing such initiatives were highly challenging, as addressing obesity concerns was perceived to be a very sensitive issue (particularly, with girls) and had in the past resulted in incidents of pupil distress and consequently, parental complaints. A need for staff training to effectively implement such initiatives was also indicated.

Conclusion: There is a need for more long-term PA promotion initiatives designed to target overweight/obese pupils in schools, as well as intensive training for staff to implement them confidently and sensitively.

Conflict of Interest

None.

Funding

No funding received.

ABSTRACT 1037

OMISSION OF BREAKFAST CAUSES REDUCED BODY MASS BUT NEGATIVELY AFFECTS PHYSICAL ACTIVITY ENERGY EXPENDITURE UNDER FREE-LIVING CONDITIONS

Authors

- Enhad Chowdhury (Speaker) (1)
- Judith Richardson (1)
- Matthew Jeans (1)
- Tsintzas Kostas (2)
- Geoffrey Holman (3)
- Dylan Thompson (1)
- James Betts (1)

Institutes

- 1 - The University of Bath
- 2 - The University of Nottingham
- 3 - The University of Bath

Topic : T1:PS2 - Human Appetite and Nutrition

Abstract Text

Introduction: Cross-sectional associations link infrequent/insufficient breakfast consumption with increased adiposity and related negative health outcomes. However, regular breakfast consumers tend to exhibit other healthful behaviours. The Bath Breakfast Project is the first randomised controlled trial to examine causal relationships between breakfast and all components of energy balance in free-living individuals.

Methods: Thirty-one healthy, lean men and women were randomly assigned to either a group prescribed -700 kcal-d⁻¹ before 1100 h or a group that extended their overnight fast until 1200 h for 6 weeks, with pre-post measures of body composition by dual-energy x-ray absorptiometry and resting metabolic rate by indirect calorimetry. Physical activity was estimated by combined heart rate/accelerometry and energy intake by weighed food diaries.

Results: Omission of breakfast did not stimulate feeding behaviours later in the day sufficient to compensate for the prescribed morning deficit, as reflected by the sustained reduction in daily energy intake between groups (2091 ± 430 kcal-d⁻¹ vs 2730 ± 589 kcal-d⁻¹; $P < 0.01$). However, free-living physical activity was significantly lower in the breakfast omission group (1006 ± 424 kcal-d⁻¹) relative to those consuming (1449 ± 691 kcal-d⁻¹; $P = 0.04$). This culminated in a 547 ± 680 g reduction in body mass in the breakfast omission group ($P < 0.01$), contrasting with the more modest change in the breakfast consumption group (194 ± 1161 g; $P = 0.5$).

Conclusions: Contrary to cross-sectional evidence, breakfast omission resulted in significantly reduced energy intake and body mass relative to breakfast consumption; however, activity energy expenditure was also significantly decreased. Reduced physical activity may therefore contribute to the putative negative health consequences of breakfast omission.

Conflict of Interest

The authors declare they have no competing interests.

Funding

The Bath Breakfast Project is a registered clinical trial [ISRCTN31521726] funded by a grant from the UK Biotechnology and Biological Sciences Research Council (BBSRC; Ref: BB/H008322/1), with additional financial support from the University of Bath.

DISTINCT DEVELOPMENTAL SIGNATURES OF HUMAN ABDOMINAL AND GLUTEAL SUBCUTANEOUS ADIPOSE TISSUE DEPOTS

Authors

- Kalypso Karastergiou (Speaker) (1)
- Susan Fried (1)
- Hui Xie (2, 3)
- Shantele Thomas (4, 5)
- Mi-Jeong Lee (1)
- Marcus A. Rosencrantz (6)
- R. Jeffrey Chang (7)
- Steven R. Smith (4, 5)

Institutes

- 1 - Boston University School of Medicine
- 2 - Sanford/Burnham Medical Research Institute at Lake Nona
- 3 - Sanford-Burnham Medical Research Institute at Lake Nona
- 4 - Sanford/Burnham Medical Research Institute at Lake Nona
- 5 - Sanford-Burnham Medical Research Institute at Lake Nona
- 6 - School of Medicine, University of California
- 7 - School of Medicine, University of California

Topic : T3/T4:PS4 - Adipose Tissues

Abstract Text

Introduction: Peripheral fat distribution, as seen mainly in women, is associated with lower cardiometabolic risk. Despite its clear clinical significance, the biological underpinnings of the heterogeneous fat accumulation are poorly understood. The objective of this study was to identify differences in gene expression in abdominal and gluteal adipose tissue of lower body obese premenopausal women and upper body obese men.

Methods: Abdominal and gluteal adipose tissue aspirates were obtained from 14 premenopausal women (age 27.5±7.0 years, BMI 27.3±6.2 kg/m²) and 21 men (age 28.4±6.1 years, BMI 27.2±4.5 kg/m²) and used for whole genome transcriptome analysis to identify genes that were differentially expressed by depot and sex. Primary human preadipocytes were used to test whether differences in selected genes were cell autonomous and/or affected by estrogen treatment.

Results: Only a small percentage of genes (2.6%) were differentially expressed between abdominal and gluteal adipose tissue. Gene ontology and pathway analysis identified homeobox genes (HOXA2, HOXA3, HOXA4, HOXA5, HOXA9, HOXB7, HOXB8, HOXC8, IRX2) that were downregulated in the gluteal depot ($p=2 \times 10^{-10}$). Conversely, expression of HOXA10 was higher in gluteal tissue and expression of HOXC13 was detected exclusively in this depot. These differences were retained in ex vivo cultures of primary abdominal and gluteal preadipocytes and throughout in vitro differentiation. Estrogen treatment affected only selected HOX genes.

Conclusions: We conclude that developmentally programmed differences contribute to the distinct phenotypic characteristics and possibly, the protective role of peripheral fat.

Conflict of Interest

None disclosed.

Funding

NIH, Society for Women's Health Research Interdisciplinary Studies on Sex-Differences (ISIS) Network on Metabolism, Evans Center for Interdisciplinary Biomedical Research ARC on Sex Differences in Adipose Tissue at Boston University and Genomics Core Facility at the Pennington Biomedical Research Center.

ABSTRACT 1039

THE L--LYSOPHOSPHATIDYLINOSITOL/GPR55 SYSTEM AND ITS POTENTIAL ROLE IN HUMAN OBESITY.

Authors

- Mónica Imbernón (Speaker) (1)
- Jose María Moreno-Navarrete (2)
- Victoria Catalan (3)
- Lauren Whyte (4)
- Adenis Díaz-Artega (1)
- Rafael Vazquez Martinez (5)
- Fernando Rotellar (6)
- Rocío Guzman (5)
- Javier Gomez-Ambrosi (3)
- Marina R. Pulido (5)
- Wendy R. Russell (7)
- Ruth A. Ross (8)
- Maria Malagon (9)
- Carlos Dieguez (10)
- José Manuel Fernández-Real (11)
- Gema Frühbeck (3)
- Ruben Nogueiras (12)

Institutes

- 1 - CIBER Fisiología de la Obesidad y Nutrición
- 2 - CIBER Fisiología de la Obesidad y Nutrición
- 3 - Clinica Universidad de Navarra
- 4 - Institute of Medical Science
- 5 - IMIBIC, University of Cordoba
- 6 - Clinica Universidad de Navarra
- 7 - University of Aberdeen Rowett Institute of Nutrition and Health,
- 8 - Institute of medical science
- 9 - University of Cordoba
- 10 - University of Santiago de Compostela
- 11 - Institut d'Investigació Biomèdica de Girona
- 12 - University of Santiago de Compostela

Topic : T3/T4:PS6 - Neurobesity

Abstract Text

Introduction: GPR55 is a putative cannabinoid receptor, and L-lysophosphatidylinositol (LPI) is its only known endogenous ligand. We investigated 1) whether GPR55 is expressed in fat and liver; 2) the correlation of both GPR55 and LPI with several metabolic parameters; and 3) the actions of LPI on human adipocytes.

Methods: We analyzed CB1, CB2, and GPR55 gene expression and circulating LPI levels in two independent cohorts of obese and lean subjects, with both normal or impaired glucose tolerance and type 2 diabetes. Ex vivo experiments were used to measure intracellular calcium and lipid accumulation.

Results: GPR55 levels were augmented in the adipose tissue of obese subjects and further so in obese patients with type 2 diabetes when compared with nonobese subjects. Visceral adipose tissue GPR55 correlated positively with weight, BMI, and percent fat mass, particularly in women. Hepatic GPR55 gene expression was similar in obese and type 2 diabetic subjects. Circulating LPI levels were increased in obese patients and correlated with fat percentage and BMI in women. LPI increased the expression of lipogenic genes in visceral adipose tissue explants and intracellular calcium in differentiated visceral adipocytes.

Conclusion: These findings indicate that the LPI/GPR55 system is positively associated with obesity in humans.

Conflict of Interest

None Disclosed.

Funding

This work has been supported by grants from Ministerio de Ciencia e InnovaciN: RYC-2008-02219; RN: SAF2009- 07049; CD: BFU2008-02001, JMFR: SAF2008- 02073; MMM: BFU2010-17116), Instituto de Salud Carlos III (GF: FIS PS09/02330); Xunta de Galicia (CD: PGIDIT06PXIB208063PR); European Union (CD: Health-F2-2008- 223713: "Reprobesity"; the research leading to these results has also received funding from the European Community's Seventh Framework Programme (FP7/2007-2013) under grant agreement n_ 245009. CIBER de Fisiopatologie la Obesidad y Nutrici an initiative of ISCIII.

THE IMPACT OF SWEETS INTAKE AND OBESITY IN ADOLESCENTS

Authors

- Isabel Bica (Speaker) (1)
- Madalena Cunha (1)
- José Costa (1)
- Patrícia Costa (2)
- Oliveira António (1)
- Carlos Albuquerque (1)

Institutes

- 1 - Polytechnic Institute of Viseu
- 2 - University of Beira Interior

Topic : CO:PS1 - Childhood and Adolescence

Abstract Text

Introduction: In adolescents, food is often unregulated, with excessive intake of sweets and fizzy drinks. To describe the eating behavior of adolescents, to evaluate the BMI index.

Methods: A cross-sectional descriptive study on adolescent eating behaviors and BMI in a sample of 661 adolescents (56.3% girls and 43.7% boys) aged between 11 and 17 years, mean age of 13,22 years (SD = 1,139). The data collection was conducted through a questionnaire to young people about eating habits. We carried out further evaluation of BMI.

Results: With regard to eating habits, the highest percentage of teens do 5 meals a day (37.1). 45.0% of adolescents reported eating sometimes sweets between meals, 15.7% eat sweets almost every day and 6.7% every day. The fluid intake by adolescents between meals are soft drinks (46.4%) and fruit juices (42.3%). The body mass index (BMI) ranging from 13.8 to 21.23. The girls have a higher BMI than boys. Teenagers who have a higher BMI have worse eating habits ($r = -0,140$, $p = 0.027$), accounting for 1.9% of the variance in BMI in adolescents. Regarding the consumption of sweets was associated inversely with BMI, ie, adolescents with a lower BMI consume less sweet, with a significant association ($r = -0,108$, $p = 0.041$).

Conclusion: The results suggest that teens who eat more sugary foods have a higher BMI.

Conflict of Interest

Funding

INFLUENCE OF BODY COMPOSITION OF PREGNANT WOMEN ON BODY COMPOSITION OF THEIR NEONATES

Authors

- Tatjana Robič (Speaker) (1)
- Evgen Benedik (2)
- Borut Bratanič (3)
- Nataša Fidler Mis (2)
- Irena Rogelj (4)
- Petra Golja (1)

Institutes

- 1 - Biotechnical Faculty
- 2 - University Children's Hospital
- 3 - University Children's Hospital
- 4 - Biotechnical Faculty

Topic : CO:PS2 - Foetal and Early Life Determinants (Epigenetics)

Abstract Text

Introduction: Optimal body mass gain and adipose tissue in pregnancy reduces the risk of maternal obesity and optimizes fetal growth. Our aim was to compare body composition (BC) of pregnant women and their neonates, as BC or its change during pregnancy seem to be associated with neonates' BC.

Methods: The study is part of "The role of human milk in development of breast fed child's intestinal microbiota" project (ARRSJ4-3606, approved by Slovenian Ethics Committee). 120 women volunteers provided information on their pre-pregnancy body mass. Body height, body mass, and skinfolds were measured (A) in the (mean(SD)) 32nd(3) gestational week in women, and (B) 6 weeks after delivery in mothers and their neonates. Body height and mass of newborns at birth were also determined. BMI and body fat percentage (BFP) were calculated for women and neonates.

Results: Women with normal pre-pregnancy BMI had lower ($p < 0.01$) BFP in A (28.2(3.5)%), and B (26.9(3.0)%), as compared to overweight women (A: 35.9(4.1)%; B: 33.6(4.4)%). Women with lower pregnancy weight gain (10.6(2.1)kg) had lighter newborns (3234(423)g) with lower BMI (12.5(0.9)kg/m²), than women with larger (17.6(3.6)kg) weight gain (3520(464)g, 13.1(1.0)kg/m²) ($p < 0.001$). Lower birth weight resulted in lower BFP in neonates at B ($p < 0.01$).

Conclusion: Prepregnancy BMI affects women's BC in pregnancy. Lower pregnancy weight gain results in lower neonatal birth mass, birth BMI, and BFP at age of 6 weeks.

Conflict of Interest

Funding

ABSTRACT 1043

CENTRAL MELANIN-CONCENTRATING HORMONE INFLUENCES ADIPOSE AND LIVER LIPID METABOLISM VIA SPECIFIC HYPOTHALAMIC NUCLEI AND EFFERENT AUTONOMIC PATHWAYS.

Authors

- Daniel Beiroa (1)
- Mónica Imbernón (Speaker) (2)
- Adenis Díaz-Artega (1)
- Christelle Veyrat-Durebex (3)
- María J. Vazquez (1)
- Donald A Morgan (4)
- Begoña Porteiro (1)
- Silvia Busquets (5)
- Douglas A. Velásquez (1)
- Omar Al-Massadi (1)
- Luis Varela (1)
- Rosalia Gallego (6)
- Luisa M. Seoane (7)
- Josep Argiles (8)
- Miguel Lopez (1)
- Roger J. Davis (9)
- Guadalupe Sabio (10)
- Françoise Jeanrenaud (11)
- Kamal Rahmouni (4)
- Carlos Dieguez (12)
- Ruben Nogueiras (13)

Institutes

- 1 - University of Santiago de Compostela
- 2 - CIBER Fisiología de la Obesidad y Nutrición
- 3 - University of Geneva
- 4 - University of Iowa Carver College of Medicine
- 5 - University of Barcelona
- 6 - University of Santiago de Compostela
- 7 - Complejo Hospitalario Universitario de Santiago
- 8 - University of Barcelona
- 9 - Howard Hughes Medical Institute
- 10 - CNIC
- 11 - University of Geneva
- 12 - University of Santiago de Compostela
- 13 - ECO2012 International Scientific Committee

Topic : T3/T4:PS6 - Neurobesity

Abstract Text

Introduction: Melanin-concentrating hormone (MCH) is an orexigenic neuropeptide which is located in the lateral hypothalamus and regulate the energy balance. The MCH increases food intake and adiposity, so we sought to investigate the role of the MCH on adipocyte and hepatic metabolism.

Methods: MCH was chronically administered into the lateral ventricle using osmotic pumps that released the MCH for a week. To study whether the sympathetic nervous system mediates the actions of MCH adipocyte metabolism, deficient mice for the three beta-adrenergic receptors were used. To determine whether the central effect of MCH on the liver was mediated through the parasympathetic nervous system, the vagus nerve was dissected. We administered adenoviral particles overexpressing MCH receptors (MCH-R) into specific hypothalamic nuclei: lateral and arcuate (LHA, ARC). Tissues were analyzed to determine the expression of genes and proteins involved in lipid metabolism of liver and fat (quantitative RT-PCR, western blot).

Results: The activation of MCH-R increases fat deposition in WAT via the suppression of sympathetic traffic, whereas it promotes fat storage in the liver through the parasympathetic nervous system. In adipocytes, MCH induces metabolic pathways that promote lipid storage and decreases lipolysis; in the liver MCH triggers lipid accumulation and lipid uptake.

Conclusion: Genetic activation of MCH-R specifically in the LHA modulated hepatic lipid metabolism, whereas the specific activation of this receptor in the ARC affected adipocyte metabolism.

Conflict of Interest

None Disclosed.

Funding

This work has been supported by grants from Ministerio de Educacion y Ciencia (CD: BFU2008; ML: RyC-2007- 00211; RN: RYC-2008-02219 and SAF2009-07049; GS: RYC-2009-04972 and SAF2010-19347), Xunta de Galicia (CD: PGIDIT06PXIB208063PR; ML: 10PXIB208164PR and RN: 2010/14), Fondo Investigaciones Sanitarias (ML: PS09/01880), and European Union (CD, ML and RN: Health-F2-2008-223713: "Reprobesity"; and FP7/2007-2013 under grant agreement n_ 245009: "NeuroFAST", GS: ERC-2010-StG-OBECAN-260464; Swiss National Science Foundation, Bern, Switzerland N_ 31003A-134919/1 (FRJ). CIBER de Fisiopatologia la Obesidad y Nutrici an initiative of ISCIII. K Rahmouni is supported by the US National Institute of Health (grant HL084207) and American Diabetes Association (grant 1-11-BS-127).

INFLUENCES OF DIFFERENT PROTOCOLS OF EXERCISES ON THE CB1 RECEPTOR GENE EXPRESSION IN VISCERAL ADIPOSE TISSUE IN RATS FED HIGH-FAT DIET

Authors

- Marisa Rosante (1)
- Guilherme Speretta (1)
- Rafael Andre (1)
- João Guilherme de Oliveira Silvestre (2)
- Anderson Lino (1)
- Jorge Camargo Oishi (1)
- Fernanda Duarte (3)
- Ana Cláudia Duarte (Speaker) (1)

Institutes

- 1 - Federal University of São Carlos
- 2 - Federal University of São Carlos
- 3 - Federal University of São Carlos

Topic : T3/T4:PS7 - Dynamics of Adipose Tissue Cells

Abstract Text

Evidence suggests that endocannabinoid system is hyperactive in obese leading to increased food intake and weight gain (Blher et al, 2006). Exercise training plays a major role in the improving physiology of obesity. Thus, the aim of this study was to investigate the effect of swimming and resistance training exercise on gene expression of the CB1 receptor in rats fed high-fat diet. Wistar adult male rats were divided into 6 groups (n = 10): sedentary chow diet (CD); sedentary high-fat diet (HFD); swimming CD; swimming HFD; resistance training CD; resistance training HFD. Swimming groups performed 60 min/day, 5 days a week, with a constant overload of 5% body weight during 8 weeks. The animals of resistance training groups climbed 1.1-m vertical ladder with weights attached to their tails. The sessions were performed once every 3 days for 8 weeks. The gene expression of CB1 was analyzed by Quantitative PCR. The primer CB1 used was (Fwd: 5-TGGAAGGCTCACAGCCACGC-3, Rev: 5- GCTTGGTCAGGCCGGGTAC-3), and normalized against housekeeping gene GAPDH (Fwd: 5- GATGCTGGTGCTGAGTATGTGC- 3, Rev: 5-GTGGTGCAGGATGCATTGCTGA -3). HFD increased the gene expression of CB1 receptor in visceral adipose tissue. The trained groups presented lower values of gene expression of CB1 receptor. These results indicate the potential benefits of resistance training and swimming as non pharmacological alternatives to control the endocannabinoid system imbalance caused by HFD.

Conflict of Interest

No conflict of interest.

Funding

Sources of research support: Conselho Nacional de Desenvolvimento Cientico e Tecnolo (CNPq) and Coordina de Aperfeiamento de Pessoal de NI Superior (CAPES).

RESISTANCE TRAINING AND SWIMMING EXERCISE: INFLUENCES ON LIPID CONTENT IN LIVER AND ADIPOSE TISSUES

Authors

- Ana Cláudia Duarte (1)
- Marisa Rosante (2)
- Guilherme Speretta (Speaker) (1)
- Rafael Andre (3)
- João Guilherme de Oliveira Silvestre (1)
- Anderson Lino (1)
- Fernanda de Oliveira Duarte (1)
- Marcela Sene-Fiorese (1)
- Antonio Eduardo Aquino Junior (1)

Institutes

- 1 - Federal University of São Carlos
- 2 - Federal University of São Carlos
- 3 - Federal University of Sao Paulo

Topic : T3/T4:PS4 - Adipose Tissues

Abstract Text

Obesity is associated with metabolic disease and metabolic syndrome. Moreover, it is generally recognized that exercise can modulate obesity. Thus, the aim of this study was to investigate the effect of swimming and resistance training exercise on lipid content in liver and white adipose tissues in obese rats. Wistar adult male rats were divided into 6 groups (n = 10): sedentary chow diet (CD); sedentary high-fat diet (HFD); swimming CD; swimming HFD; resistance training CD; resistance training HFD. Swimming groups performed 60 min/day, 5 days a week, with a constant overload of 5% body weight during 8 weeks. Animals of resistance training groups climbed 1.1-m vertical ladder with weights attached to their tails. The sessions were performed once every 3 days, with 49 climbs and 812 dynamic movements per climb, for 8 weeks. The lipid content was obtained for saponification according to the method described by Stansbie et al. (1976). HFD increased the lipid content in liver and adipose tissues: epididymal, retroperitoneal, mesenteric and subcutaneous. The swimming groups had lower levels of lipid content for the retroperitoneal, subcutaneous and liver and the resistance training groups for epididymal tissue and liver. These results demonstrate the efficiency of resistance training and swimming to reduce the lipid content of the tissues, thus alternative non-pharmaceutical for the treatment of obesity.

Conflict of Interest

Funding

Sources of research support: Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) and Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES).

ABSTRACT 1046

ENERGY GAP ASSESSMENT IN THE AETIOLOGY OF THE OBESITY EPIDEMIC: FROM MULTIPLE ASSUMPTIONS TO FLAWED CONCLUSIONS?

Authors

- Yves Schutz (Speaker) (1, 2)
- Nuala Byrne (3)
- Abdul Dulloo (2)
- P. Andrew P. Hills (3)

Institutes

- 1 - University of Lausanne
- 2 - University of Fribourg
- 3 - Queensland University of Technology

Topic : T2:PS3 - Methodological Challenges/Multi Level Analyses

Abstract Text

Introduction. A critical re-evaluation of recent studies assessing the magnitude of the energy gap, using the Food Balance Sheet (FBS) method, in the context of the obesity epidemic, is timely.

Methods. Two published studies which used the same approach, were revisited: 1) Scarborough et al. Br J Nutr 2010,105:1-6 and 2) Swinburn et al. Am J Clin Nutr 2009; 90: 1453-6. The aim was to predict the average weight gain in these 2 populations and compare them to the calculated energy requirement based on doubly labeled water studies. The conclusions were that the rise in food supply was more than sufficient to explain the epidemic of obesity in UK women and in both US men and women.

Results. Our re-analysis in US was based on measured food intake evaluation in the same sample of individuals rather than on the gross food supply approach (FBS), highly corrected for food losses (30%) & other factors. The rise in food intake alone was not sufficient to explain the US epidemic of obesity, thereby suggesting that increased sedentariness also played a concomitant role. Similarly, the increased body weight in the UK may be due to both an increase in energy intake and a reduction in physical activity in women and men, rather than only in men.

Conclusions. Flaws in study findings can arise when a) conclusions are based on data pooled from different heterogeneous sources, b) when food intake is crudely estimated (FBS), and c) when most of the variables are roughly estimated, rather than measured in the same population

Conflict of Interest

Funding

ABSTRACT 1047

INCIDENCE OF BULIMIA AND BINGE EATING (BE) IN ADOLESCENTS FROM A PUBLIC SCHOOL IN SÃO CARLOS - SP - BRAZIL, RELATED TO GENDER, BMI AND BODY IMAGE (BI)

Authors

- Adriana Santa Maria (Speaker) (1)
- Anderson Lino (1)
- Jorge Camargo Oishi (1)
- Marcela Sene-Fiorese (1)
- Fernanda Duarte (1)
- Antonio Eduardo Aquino Junior (1)
- Ana Cláudia Duarte (1)

Institutes

1 - Federal University of São Carlos

Topic : CO:PS1 - Childhood and Adolescence

Abstract Text

Eating Disorders usually occur in adolescence due to concerns with the new shape and new weight of the body requiring readjustment to the body image. The aim of this study was to correlate the incidence of eating disorders (bulimia, BE), in adolescents with age between 11 and 18 years on both genders (G) of a public school from Sarlos, SP - BRAZIL, with obesity and body image. 55 adolescents (41 Female/14 Male) were participated this study, the Body Mass Index (BMI) was calculated and participants answered 3 Questionnaires: Body Shape Questionnaire, Binge Eating Scale and Bulimic Investigatory Test Edinburgh. The results are showed in Table 1: Results. The values are expressed in %. (OVW- overweight) The context of severe bulimia was only found among adolescents with normal BMI and overweight, indeed was not found in boys. Regarding the BE there is a higher-level prevalence for boys, but we can see the only girls in severe BE. Boys have greater satisfaction with their body image than girls, and none of the cases of dissatisfaction occurred among the obese. Even the girls showing a lower rate of obesity, they are more dissatisfied with their BI, perhaps for this reason they have a higher incidence of moderate and severe bulimia and severe BE framework. On the other hand, although they were more obese, the boys do not have bulimia and BE in its most severe stage and are more satisfied with their BI.

Conflict of Interest

Funding

ABSTRACT 1048

PRIMARY CARE REFERRAL TO A COMMERCIAL PROVIDER OF WEIGHT LOSS TREATMENT VERSUS STANDARD CARE: ONE YEAR FOLLOW UP

Authors

- Christina Holzapfel (Speaker) (1)
- Lynne Cresswell (2)
- L Amy L Ahern (3)
- Nick Fuller (4)
- E Annie E Simpson (4)
- Julia Stoll (1)
- P Adrian P Mander (2)
- Ian D Caterson (4)
- Susan A Jebb (3)
- Hans Hauner (1)

Institutes

- 1 - Technische Universität München, University Hospital "Klinikum rechts der Isar"
- 2 - MRC Biostatistics Unit
- 3 - Elsie Widdowson Laboratory
- 4 - University of Sydney

Topic : T5:PSO - Structure of care and Long Term Disease Management

Abstract Text

Introduction: Many weight loss programmes show short-term success, but longer-term data in larger studies are scarce, especially lifestyle intervention studies in primary care.

Methods: 772 overweight and obese adults were recruited by primary care practices in Australia, Germany and the UK and randomly assigned to 12 months standard care (SC) as defined by national treatment guidelines, or to a commercial programme (CP, Weight Watchers), and were followed up for another 12 months, in which they were free to self-select their method of weight management, or none.

Results: At 24 months, objective data were available for 203 (26%) persons. Weight loss from baseline was significant for both groups ($p < 0.001$) but greater in CP vs. SC in all analyses: last observation carried forward analysis -4.14 kg vs. -1.99 kg, adjusted difference -2.08 kg, $p < 0.001$; baseline observation carried forward analysis -1.33 kg vs. -0.74 kg, adjusted difference -0.60 kg, $p = 0.032$; completers analysis: -4.76 kg vs. -2.99 kg, adjusted difference -1.53 kg, $p = 0.113$. Both treatment groups gained weight from 12 to 24 months and weight regain was significantly greater for CP than SC ($p < 0.001$). Inclusion of self-reported weight data at 24 months from a further 138 participants (giving a total of 44% of those randomised) did not change the interpretation of the data.

Conclusion: This study re-emphasises the difficulty in obtaining follow-up data from weight loss trials. It confirms the greater effectiveness of a commercial provider relative to SC but emphasises the need for on-going intervention to consolidate initial weight loss. Registration: This trial is registered, number ISRCTN85485463

Conflict of Interest

All authors declare financial support to their institutions for the submitted work from Weight Watchers International. IDC has received research grants from Sanofi-Aventis, Allergan, Roche products, MSD, and GlaxoSmithKline and was a board member for the SCOUT trial. SAJ has received research grants from Sanofi-Aventis and Coca Cola and has received payment for nutrition articles and lectures from Rosemary Conley Enterprises. HH is on the Advisory Board for Weight Watchers International and has received payment for lectures from Sara Lee, Lilly, Novartis, Sanofi-Aventis, and Bristol-Myers Squibb.

Funding

This trial was funded by Weight Watchers International, through a grant to the UK Medical Research Council.

ABSTRACT 1049

BODY MASS INDEX INFLUENCES MYOCARDIAL BLUSH GRADE AFTER TENECTEPLASE THERAPY

Authors

- Livia Matos (Speaker) 1 ,
- Daniella Rangel 1 ,
- Joana Diniz 1 ,
- Carlos Oliveira 1 ,
- Adriano Barbosa 1 ,
- Claudia Alves 1 ,
- Iran Goncalves Jr 1 ,
- Vinicius Vitro 1 ,
- Marcos Vicentim 1 ,
- Antonio Carvalho 1 ,

Institutes :

1 : UNIFESP (Cardiology) , S.PAULO , Brazil

Topic : T5:PS7 - Treatment of Co-morbidities in Obese Patients

Abstract Text

Introduction: Obesity is a risk condition for developing cardiovascular disease. Tenecteplase (TNK) is an alternative for ST elevation myocardial infarction (STEMI) treatment in the prehospital setting; its dosage is determined by body weight, having, however, a maximum recommended dose of either 50 mg or 10,000 IU. The authors have hypothesized that increased body mass index (BMI) could have an inverse relationship with the myocardial blush grade (MBG) after thrombolysis with TNK. We aimed to up to six hours from onset of STEMI symptoms. We also sought to find out a cutoff value for BMI with highest accuracy in determining adequate myocardial perfusion.

Methods: We assessed patients who were consecutively referred, after TNK therapy, from low-complexity health care units to a tertiary care general hospital, where they underwent coronary angiography (cath) within 24 hours. The MBG (Gibson technique) was determined at the beginning of cath, by a single observer, experienced, considering either myocardial perfusion present (MBG 2 or 3) or absent (MBG zero or 1). Renal function was assessed through MDRD formula (Modification of Diet in Renal Disease).

Results: We studied 113 individuals (78 men, 56.7 ± 10.9 years). Forty-nine individuals had no myocardial perfusion (43.4%), sixty-four had adequate coronary perfusion (56.6%). In logistic regression analysis, age, diabetes mellitus, gender and renal function were not related to absence of myocardial perfusion. BMI correlated independently with absence of myocardial perfusion (OR 1.18; 95% CI 1.06 to 1.31; p = 0.002). In the ROC analysis the best cutoff value for BMI associated with the absence of myocardial perfusion was > 27.3 kg/m² (AUC = 0.66, 95% CI 0.57 to 0.75, p = 0.001).

Conclusion: BMI seems to influence coronary microvascular permeability assessed by the MBG in patients with STEMI undergoing early thrombolytic therapy with TNK. The cutoff point of BMI that correlated better with no myocardial blush was > 27.3 kg/m² in the sample studied.

Conflict of Interest

None.

Funding

None.