

**International Symposium: The Morbidly Obese Adolescent: Is
Bariatric Surgery the Only Option?, 6.-7. Mai 2011
Billrothhaus, Wien - Abstracts**

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International Symposium

The Morbidly Obese Adolescent: Is Bariatric Surgery the Only Option?

ABSTRACTS

May 6-7, 2011, Billrothhaus, Vienna

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International Symposium The Morbidly Obese Adolescent: Is Bariatric Surgery the Only Option?

ABSTRACTS

May 6-7, 2011, Billrothhaus, Vienna

Invited Lecture

PSYCHISCHE ASPEKTE DER ADIPOSITAS oder ADIPOSITAS IST EINE SUCHT, DIE MAN NICHT KONTROLLIEREN SOLLTE UND VON DER MAN NICHT TROCKEN SEIN KANN

Elisabeth Ardelt-Gattinger¹, Harald Mangge², Markus Meindl³, Susanne Ring-Dimitriou³, Leonhard Thun-Hohenstein⁴, Daniel Weghuber⁴

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Nach dem Alltagsverständnis ist Adipositas keine Krankheit, sondern müssten sich Adipöse vor allem mehr „zusammennehmen“, „besser kontrollieren“ etc. Die Theorie der Gedankenunterdrückung zeigt uns, unterstützt von neuerer neurokognitiver Forschung, das Konstrukt der Kontrolle in einem neuen Licht. Kontrolle ist der Versuch NICHT-an-etwas-zu-denken. Er führt zu den sog. „ironischen Prozessen“ des Gehirns, vor allem dazu, dass die vorher unterdrückten Inhalte stärker als zuvor ins Bewusstsein gelangen und Verhalten steuernd werden. Diese Steuerung wird durch die Tatsache erschwert, dass adipöse Erwachsene sich in der Intensität des Verlangens nach übermäßigem Essen nicht von anderen Suchterkrankten unterscheiden und die Suchtvariable auch einen starken Prädiktor der Gewichtszunahme und -abnahme darstellt. Acht Studien, die wir an insgesamt 4483 Kindern/Jugendlichen durchführten,

zeigen, dass Ähnliches für Kinder und Jugendliche von 8 bis 18 Jahren gilt.

Ähnlich wie bei Erwachsenen zeigten unsere Studien an der oben genannten Zahl von Kindern/Jugendlichen, dass überdurchschnittlich viele Adipöse zudem mit den Vollbildern klinischer Essstörungen komorbid sind und überdies stark erhöhte Werte in vorklinischen Essstörungen des „Preoccupied with Weight and Shape“ zeigen. Neue Daten aus unserer Evaluation von 80 PatientInnen nach chirurgischen Maßnahmen zeigen, dass Sucht wie Essstörungen nach zwei Jahren mit hoher Gewichtsabnahme – ohne weitere interdisziplinäre Interventionen – stark absinken. Unterschiede in den Methoden verweisen aber auf Vorsicht gegenüber der Indikation zum Magenband, das meist für Jugendliche bevorzugt wird.

Für den Praktiker ergibt sich aus dem Gesagten der Wechsel zu vorwiegend salutogenem (Ziele günstigen Essens formulieren statt „verbotene“ Essgedanken zu unterdrücken) Vorgehen sowie eine exakte Diagnostik der Sucht- und Essstörungskomponenten vor und nach konservativen und chirurgischen Interventionen.

Invited Lecture

CURRENT GUIDELINES OF BARIATRIC SURGERY IN ADOLESCENTS AND EPIDEMIOLOGY OF OBESITY IN ADOLESCENTS IN EUROPE

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Morbid obesity and its rapidly increasing prevalence has become a serious health, social and economic problem not only in Europe, but in other developed countries in the western world. Available data show that paediatric obesity is increasing throughout Europe, however there is also substantial variation among different age groups, sex and geographical regions. In about half of the countries of the European region the prevalence

of excess body weight including obesity exceeds 15% in 13 year old boys and girls. Worldwide, over 20% of children have their body mass index above the 85th percentile. Up to 10% of children have body mass index above the 97th (obesity range) age- and gender-adjusted percentile. This corresponds with similar data obtained in the US, where from the 2007–2008 NHANES, using measured heights and weights, indicate that an estimated 16.9% of children and adolescents aged 2–19 years are obese.

Between 1976–1980 and 1999–2000, the prevalence of obesity increased. In the USA, about 30% of children born since 2000 will develop T2DM. Even more striking is the fact that

about 50% out of all Hispanic and African American children born since 2000 will develop T2DM. In addition to the general increase in adiposity in European youth, there is also evidence of an increasing degree of obesity, particularly in older children and adolescents and it has been shown that up to 77% of obese children and adolescents carry their obesity into adulthood. Situation is becoming critical, especially in obesity related comorbidities, such as T2 diabetes mellitus in all over the world. It is widely accepted that bariatric surgery has proved to be the most effective mode of treatment for morbidly obese patients.

There is a substantial reduction in mortality after bariatric surgery, improvement or resolution in metabolic co-morbidities, as well as decreased risk of developing new obesity-related comorbidities, decreased health-care utilization and decreased direct health-care costs. However there is neither consensus on how to treat morbidly obese children and adolescents (including bariatric surgery), nor existing specific, rigorous and widely accepted children/adolescents guidelines on this topic. The author presents an overview of existing guidelines, views and practices in the field of bariatric surgery in adolescents.

Invited Lecture

KONSERVATIVE MASSNAHMEN ZUR GEWICHTSREGULIERUNG

Leopold Gradauer

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Eine Zunahme des Körpergewichtes in teils gesundheitsgefährdendem Ausmaß stellt seit Jahrzehnten ein weltweites Phänomen dar. Die Ursachen sind unzweifelhaft generell in den modernen Lebensbedingungen bzw. -möglichkeiten mit abnehmender Erfordernis der Bewegung, zunehmender Verfügbarkeit subjektiv attraktiver, hochkalorischer, medial beworbener Nahrung, zunehmenden Möglichkeiten der Kompensation für psychosoziale Belastungen (Beruf, Beziehungen) durch Ernährungsverhalten, mit Variationen im Einzelfall, zu finden. Dem entsprechend sind Interventionen je nach Zielgruppe differenziert zu gestalten. Es

muss von einem Bedarf an sehr unterschiedlichen Angeboten ausgegangen werden, primärprophylaktisch u. a. durch Basiswissensvermittlung in der Pflichtschule, Diät- und Sportberatung auf Krankenschein, spezifische Elemente im Mutter-Kind-Pass, niederschwellige Beratungseinrichtungen bei pädagogischen Fragen, gesundheitsbewusstes Nahrungs-Angebot an Schulen, Limitation von Werbung für Nahrungsmittel, diverseste Förderung körperlicher Bewegungsmöglichkeiten etc. In der Sekundärprophylaxe sind nach vorangehender Ursachenanalyse in einem Stufenplan, eingebettet in ein organisiertes Netzwerk, individuelle, konsequente, differenzierte (multimodale), intensive Therapieansätze mit einem starken Fokus auf Nachhaltigkeit erforderlich und dann auch erfolgreich. In vielen dieser Punkte stehen wir erst am Anfang unserer Arbeit.

Invited Lecture

METABOLIC, CARDIOVASCULAR AND QUALITY OF LIFE EFFECTS OF GASTRIC BYPASS IN ADOLESCENTS – A TWO YEAR REPORT FROM THE AMOS STUDY

Claude Marcus

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Severe obesity in adolescence is associated with high risk of metabolic syndrome and reduced life expectancy. There is no behavioural or drug treatment with any documented long-term effect for severely obese adolescents. AMOS is a prospective matched controlled intervention study with laparoscopic gastric bypass. Inclusion criteria was BMI >40 kg/m² or >35 with co-morbidities. Eighty-one adolescents (13-18y, 28 males, 53 females, mean age 16.5y) underwent laparoscopic gastric bypass surgery from June 2006 - April 2009. Inclusion mean weight was 133 kg; BMI 45.5 kg/m². We here present 2y results on cardiometabolic risk markers. Mental retardation, severe depression, severe eating disorders and drug abuse were exclusion criteria but subjects with ADD and minor psychiatric illness were included.

Results: At one and two years postoperatively the mean weight was 92 kg (total weight loss 31.4%), BMI 31 kg/m²

($p<0.001$) and at two years 89 kg; 30 kg/m². Fasting insulin decreased from 31.7 mU/L to 7.4 mU/L, HbA1C from 4.37 to 4.17, fasting glucose from 5.1 to 4.9, LDL cholesterol from 2.6 to 2.0 mol/L, triglycerides from 1.2 to 0.9 mmol/L, Apo B lipoprotein from 1.3 to 0.7 g/L, CRP from 7.2 to 2.5 white blood cell count from 8.2 to 6.5 blood pressure from 124/78 to 117/71 mmHg (all changes $p<0.001$). Apo A lipoprotein increased from 1.13 to 1.33 and HDL cholesterol from 1.09-1.37 (both changes $p<0.001$). The treatment was generally well tolerated and quality of life was improved in all parameters of SF-36, i.e. both from a physical and psychological point of view. In a subgroup ($n=5$) no improvement could be detected and two suicidal attempts were noted postoperatively.

Interpretation: All metabolic, inflammatory and vascular risk markers studied were normalized two years after surgery despite remaining obesity. The weight loss was similar to that in adults and improvements in health and quality of life were substantial. A careful follow-up is of importance to identify subjects who postoperatively require additional psychological support. Long-term results compared to control groups are also required before general recommendations.

Invited Lecture

CARDIOVASCULAR RISK IN EXTREME OBESE CHILDREN & ADOLESCENTS

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Degree of childhood obesity has a major impact on life expectancy as recently described in large long-term prospective studies. The morbidity and mortality of obesity is mainly determined by macroangiopathy and type 2 diabetes mellitus. Therefore, extreme obese children and adolescents and especially those with cardiovascular risk factors are at an increased cardiovascular risk. In the cohort of extreme obese children and adolescents (>1500) at the Vestische Hospital for Children and Adolescents Datteln, 31% suffered from arterial hypertension, 25% of dyslipidemia, 18% of impaired glucose tolerance, and 1% of type 2 diabetes mellitus.

While the risk of diabetes is mainly associated with increased BMI close to the time of diagnosis (and therefore type 2 diabetes

is already present in extreme obese adolescents), coronary heart disease and atherosclerosis occur only very rarely in adolescents. However, the risk of coronary heart disease is associated with an elevated BMI both in adolescence and in adulthood, supporting the hypothesis that adolescent BMI influence the risk of coronary heart disease. Measuring the intima-media thickness (IMT) of the common carotid artery is a new reliable, non-invasive predictive marker for early atherosclerotic changes. Increased IMT has been reported in obese children and adolescents with diabetes mellitus type 2, impaired glucose tolerance, hypertension and dyslipidemia. Nearly one fourth of these extremely obese children and adolescents have an increased IMT (defined by > 0.06cm) suggesting early vascular changes.

Weight loss due to lifestyle intervention is the therapy of choice normalizing IMT and all cardiovascular risk factors. However, especially in extreme obese adolescents the effect is only very moderate and success is very difficult to achieve. Therefore, other therapeutic approaches also including drugs and bariatric surgery seem to be needed in these high-risk patients.

Invited Lecture

LANGZEITTHERAPIE DER EXTREMEN JUVENILEN ADIPOSITAS

Wolfgang Siegfried

Rehazentrum Insula, Bischofswiesen/Strub, Germany

Im Rehazentrum Insula in Bischofswiesen/Strub werden seit 1992 extrem übergewichtige Jugendliche und junge Erwachsene (Durchschnittsalter 16 Jahre) in Langzeittherapie über einen Zeitraum von zwei bis neun Monaten behandelt. Der durchschnittliche Aufnahme-BMI ist immer weiter angestiegen, liegt mittlerweile bei 41,5 kg/m² und geht in Extremfällen weit über 80 kg/m². Entsprechend häufig werden Folgeerkrankungen der Adipositas diagnostiziert. Die Durchschnitts-Gewichtsabnahme liegt bei 1,3 kg/Woche bei einer durchschnittlichen Therapie-dauer von 4,7 Monaten. In schwierigen Fällen und bei unzureichender familiärer Versorgung kann eine weitere poststationäre Betreuung in den beiden therapeutischen Adipositas-Wohngruppen von bis zu zwei Jahren mit Kostenträger Jugendamt angeschlossen werden.

Die drei wichtigen Therapiesäulen des Langzeitreha-Konzeptes der Insula sind die Sporttherapie, die Ernährungstherapie und eine systemisch ausgerichtete psychologische Therapie. Gerade ein intensives Training von Ausdauer und Kraft ermöglicht es, dass auch bei höhergradigen Gewichtsreduktionen über sechs bis neun

Monate die Abnahme der Muskelmasse höchstens 10 bis 20 % der Gesamtabnahme ausmacht und somit als wichtigstes Therapieziel eine deutliche Verbesserung der Körperzusammensetzung erreicht wird.

Immer häufiger kommen Patienten mit Begleit-Diagnosen wie Depression, emotionale Störung im Jugendalter, Essstörung, selbstverletzendes Verhalten und Borderline-Syndrom zur Langzeittherapie, weshalb der psychotherapeutische Anteil der Arbeit im Insulakonzert ständig zunimmt. Ganz speziell ist hier die fatale Verbindung aus Internetrollenspielabhängigkeit, schulvermeidendem Verhalten und Adipositas (Obesitas) zu nennen, die wir als ISO-Syndrom benennen möchten. Hier kann jeder Punkt dieser fatalen Trias Ursache oder Folge der anderen beiden sein. Mehr als 30 % der aktuellen, extrem adipösen Patienten der Insula berichten entsprechende Verhaltensweisen.

Der Langzeiterfolg wurde mit einer Katamnese studie an 98 konsekutiv aufgenommenen Patienten auf intention to treat basis untersucht, wobei fehlende Rückmeldungen als Misserfolg gewertet wurden. Nur Rückmeldungen mit Stempel und Unterschrift des Hausarztes wurden gewertet. Dabei konnte bei 55,1 % der Patienten 2 Jahre nach Therapiebeginn ein Langzeiterfolg nachgewiesen werden.

Invited Lecture

INFLAMMATION AS A TRIGGER FOR INSULIN RESISTANCE AND CARDIOMETABOLIC DISEASE

Thomas M. Stulnig

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Obesity predisposes to insulin resistance and a variety of metabolic and cardiovascular disorders particularly in presence of the so-called metabolic syndrome. Recently, increasing evidence revealed that inflammation is a common mechanism for both type 2 diabetes and cardiovascular disease. In obesity, inflammation originates primarily in adipose tissue by infiltration of inflammatory macrophages, activation of inflammatory signaling pathways, secretion of inflammatory adipokines and interference

with insulin action. Inflammation is predominant in atherogenesis even occurring before cholesterol accumulation. Interestingly, adipose tissue inflammation itself promotes atherogenesis. Interference with adipose tissue inflammation by diet and drugs is currently under intense investigation as novel strategies to prevent and treat obesity-driven cardiometabolic disease. In addition to its profound effect on body weight bariatric surgery improves insulin sensitivity and inflammatory changes and dramatically reduces diabetes risk.

This work was supported by the European Commission (FP7 project TOBI – Targeting OBesity-driven Inflammation; no. 201608) and the Austrian National Bank (project no. 12735; both to T.M.S.).

Invited Lecture

DIFFERENCES IN BLOOD PRESSURE AND METABOLISM IN OVERWEIGHT SCHOOL CHILDREN

Tamas Zsamosi

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Objective: To study similarities and differences in blood pressure and metabolism of mild or morbid obese schoolchildren in order to establish the current preventive care.

Patients and methods: The file of 104 earlier cared 10-17 years old schoolchildren (53 girls and 51 boys) were analyzed. Morbid obesity was stated above 35 body mass index (BMI) of 21 schoolchildren (12 girls and 9 boys) (group 1). The other 41 girls and 42 boys had a BMI above the 95th percentile, but below or equal 35 kg/m² (group 2). Blood pressure, fasting blood glucose, serum total cholesterol and triglyceride, HDL cholesterol levels, plasma insulin and tiobarbituric acid reactive system (TBARS) were measured and serum LDL cholesterol

level and HOMA index were estimated before and after a 2 years long life modification treatment containing a diet full of antioxidants. Activity of liver enzymes and the frequency of non alcoholic fatty liver diseases (NAFLD), detected by ultrasound, was investigated. Statistic analysis was performed by Fisher exact test.

Results: Almost all parameters were similar in both groups and the frequency of improved cases was similar, too (about 40%). The following differences were detected: 1) The frequency of NAFLD was significantly higher in group 1. 2) Mean plasma TBARS level was higher in group 1 than in group 2 before the treatment but not after.

Consequences: Life modification treatment seems to be an effective method in the care of both morbid and mild obese schoolchildren. The abdominal ultrasound is an important method in the investigation of obese children especially in morbid obesity. Diet full of antioxidants may help the treatment of morbidly obese schoolchildren.

Short Communication

PERCEPTIONS AND IMAGINATIONS OF OBESITY AS A SOCIO-SCIENTIFIC PROBLEM IN THE AUSTRIAN CONTEXT

Ulrike Felt, Kay Felder, Theresa Öhler, Michael Penkler

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In recent years, obesity as a public health problem has gained increasing prominence both on the policy agenda and in public discourse. At the same time, different scientific disciplines ranging from nutritional science, psychology to genomics are increasingly involved in the definition, classification and treatment of obesity. Yet, a problem like obesity cannot be regarded as simply

given, but develops in a complex interplay of different actors, logics and forces at work. This project aims at understanding how obesity as a socio-scientific problem and its possible solutions are co-produced with scientific, political, moral and social orders. To this end, we trace the different ways in which obesity is conceptualised, imagined, and thus acted upon in different arenas like politics, science, medicine, media, and the wider public space. Understanding “obesity in the making” is crucial for promoting enhanced reflexivity both in framing it as a public health problem and in developing forms of its governance.

Short Communication

BODY COMPOSITION CHANGES FOLLOWING LAPAROSCOPIC ROUX-EN-Y GASTRIC BYPASS IN ADOLESCENTS (AMOS STUDY)

E. Gronowitz¹, T. Olbers¹, S. Mårild¹, J. Dahlgren¹, C.E. Flodmark³, M. Werling¹, P. Friberg¹, H. Lönroth¹, C. Marcus²

¹ Sahlgrenska University Hospital, Göteborg, Sweden, ²Karolinska Institutet, Stockholm, Sweden, ³UMAS Malmö University Hospital, Malmö, Sweden

Background: Morbid obesity in adolescence (BMI>40) is rapidly increasing and associated with reduced life expectancy. Gastric bypass surgery for morbid obesity in adolescents has been performed in a nationwide Swedish study (Adolescent Morbidity Obesity Surgery study, AMOS).

Methods: Seventy-two morbidly obese adolescents (22 boys, 50 girls), aged 13.6–18.8 yrs, underwent laparoscopic gastric bypass and were followed with DXA preoperatively and at one and two years postoperatively.

Results: Mean (SD) age at baseline was 16.5 (1.2) years. BMI decreased from 44.8 (5.1) to 30.3 (4.2) and after two years to 29.7

(4.2). Total Fat mass (FM) decreased by 46% over the first year (64.9 to 35.2 kg); at two years it was 35.6 kg. Lean tissue mass (LTM) decreased by 17% (60.3 to 50.1 kg), and at two years 50.6 kg (both $p<0.001$). Delta FM and LTM over the first year shows a gender difference: boys lose more FM and retain LTM better (both $p=0.01$). BMD gr/cm^2 , expressed as z-scores in relation to gender and age-matched controls was +1.8 and +0.6 at one year and 0.8 at two years. Bone mineral content (BMC) increased from 3.0 to 3.2 and at two years 3.1 kg ($p<0.001$).

Conclusion: Laparoscopic gastric bypass due to morbid obesity in adolescents leads to weight loss characterized predominantly by loss of body fat. Lean tissue was well preserved in boys. BMD decreased from supra-normal to normal levels while BMC continued to increase the first year, which may suggest that peak bone mass had not yet been achieved. To learn more about the impact of losing large amounts of weight, long-term observations with DXA and monitoring vitamin D status is indicated to clarify changes in body composition and to optimize bone growth in adolescents after gastric bypass.

Short Communication

PERCEIVED NEED OF PLASTIC SURGERY AFTER BARIATRIC SURGERY IN ADOLESCENTS

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Background: Bariatric surgery is the most effective treatment to achieve sustainable weight-loss in adults with severe obesity and is also increasingly used in adolescents. The expected reduction in weight after Roux-en-Y gastric bypass (RYGB) is 25–40%, indicating that adolescents with severe obesity will remain obese/overweight even after major weight-loss. The benefits of the operation include improvements of metabolic parameters and even more important improvement of well-being and quality of life. A major issue concerning adolescents' well-being after bariatric surgery is their desire to have plastic surgery to reduce excess skin. In some regions of Sweden the guidelines for plastic surgery after major weight loss requires a weight loss below BMI 27.

Subjects and Methods: RYGB was performed on 9 morbidly obese (BMI 36.6–48.3 kg/m^2) adolescents from Malmö, Swe-

den, as part of the national AMOS-study. Two years after the procedure they participated in a follow-up, investigating their perception of excess skin.

Results: Eight out of nine adolescents expressed a need for plastic surgery to reduce excess skin. Eight stated that the excess skin limited their ability to be physically active, and in many cases refrained them from participating in sports, age appropriate activities or intimate relationships with a partner. Eight had difficulties to keep their excess skin clean. Three had experienced skin infections (fungi or bacterial) and the same number had received comments about bad odour.

Conclusion: Morbidly obese adolescents that underwent RYGB perceive their excess skin as problematic. The desire to undergo plastic surgery was high in our group. To what extent the plastic surgical intervention could improve their possibilities to engage in physical activity, thereby facilitating a healthy lifestyle as well as improving their well-being is an important topic for further studies.

Short Communication

DEFICIENCIES OF MICRO- AND MACRONUTRIENTS IN 20 ADOLESCENT PATIENTS AFTER BARIATRIC SURGERY

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Introduction: The Viennese Center for bariatric surgery has performed bariatric operations in adolescents for several years. While these surgical procedures are often necessary when conventional weight-loss routines failed, the possible adverse effects like deficiencies are not to be taken lightly and need to be closely monitored.

Methods: 20 adolescent patients (mean age 17.4 $\pm$ 2.9 years; mean BMI 51.7 $\pm$ 8) were followed up for a mean time of 43 months after a bariatric procedure was performed. Eight of these patients underwent a Gastric banding, four of them however had to receive a gastric bypass as a secondary procedure after inadequate weight loss. One patient received a sleeve, while a gastric bypass was performed on eleven patients as the primary procedure. All 20 patients have had monthly visits with our experienced dietologists and received vitamin substitution.

Results: Iron deficiencies occurred in four patients of the gastric bypass group post-surgery. One of these patients already suffered from a hypoferrremia before surgical treatment, which worsened after the procedure. Vitamin D deficiencies could be found in four gastric bypass, one gastric banding (after 3 months) and one sleeve patient. Magnesium, phosphor and selenium deficiencies occurred in one gastric bypass patient each. HsCRP dropped from 0.59mg/dl ($\pm$ 0.21) before surgery to 0.36mg/dl ($\pm$ 0.12) 12 months post-surgery. Due to low patient number the correlation between BMI and HsCRP was not significant ($p=0.143$) although a clear trend could be seen. Mean weight loss in all patients after 42 months was 33kg ($\pm$ 10.1).

Conclusion: Strict follow-up programs are required to prevent long-term adverse effects such as osteomalacia, nyctopia and neurological problems in adolescent patients after bariatric surgery. An increase of vitamin supplementation dosages should be discussed. While all our patients showed significant weight loss after they had undergone a gastric bypass it should also be noted that deficiencies were most common within this group.

Short Communication

PSYCHOLOGICAL OUTCOMES IN SEVERELY OBESE ADOLESCENTS SHORT TERM AFTER GASTRIC BYPASS

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Background and aims: Bariatric surgery is suggested as a treatment option for severely obese adolescents. Since the adolescence is a period in life characterized by intense psychosocial development it is important to study the effect of the procedure on psychological health. The aim of the present study was to evaluate the mental health-status in Swedish obese teenagers before and short term after Roux-en-Y gastric bypass (RYGB).

Method: This study examined base-line status and short-term changes in anxiety, depression, anger, disruptive behaviour, and self-concept. Thirtyseven adolescents (mean age 16.6 $\pm$ 1.3) recruited from the Adolescent Morbid Obesity Surgery-study

completed Beck Youth Inventories (BYI) at inclusion and on average 4 months after RYGB.

Results: Internalizing (anxiety and depression) and externalizing (anger and disruptive behaviour) symptoms were elevated at baseline compared to gender specific norms. One fifth had a very low self-concept. After surgery, the adolescents showed significantly lower levels of anxiety and depression symptoms and significantly improved self-concept compared to baseline. Anger and disruptive behaviour showed no significant changes. No gender differences were found. An analysis of clinically meaningful changes was conducted, and beside the overall positive outcome, 16% ($n=6$) of the adolescents were deteriorated on two or more inventories in BYI after surgery. This impaired group did not differ from the other adolescents at inclusion.

Conclusion: Many adolescents presenting for bariatric surgery have an impaired mental health compared to other teenagers. On a group level we found improvements in anxiety and depression symptoms as well as self-concept four months after gastric bypass. However a subgroup, which did not show any specific features at baseline, deteriorated postoperatively. The results indicate the need for psychological monitoring after bariatric surgery and to have a preparedness to offer additional psychosocial support.

Short Communication

PREVENTIVE MEDICINE PROGRAM OF CHILDREN AGED 2-5 IN DAYCARE CENTRES IN ATHENS 401 GENERAL MILITARY HOSPITAL

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Aim: The aim of this report is to present the results of preventive medicine programs in daycare centre children in Athens 401 General Military Hospital.

Methods: Body weight, height and vaccination status of 73 children aged 2-5 were checked during January 2011. These children attend the two daycare centres of Athens 401 General Military Hospital. 52.1% of them were girls while 47.9% of them were boys. Needless to say that consent of the military authorities and the children's parents was given to us in order to conduct our survey.

Results: Based on BMI, 10.9% of children were above normal range (4.1% were obese and 6.8% were overweight), 5.5%

were underweight while the majority of them (83%) were within normal range. As far as their vaccination status is concerned, a high percentage of 95.9% were fully vaccinated according to the National Vaccination Program (DtaP, IPV, MCC, PCV, Var, BCG, Hep A, Hep B, MMR, Hib). In addition, 4.1% were not fully vaccinated for Hepatitis A.

Conclusion: Taking into account all the above, it is clear that the percentage of obese and overweight children was 10.9%. The fact that the majority of these children were within normal range concerning their weight was a result of their healthy diet as it appeared on the daily menu of the daycare centres. In addition, the vaccination status of 95.9% of these children was sufficient. Nevertheless, throughout our work with some specific social groups (Muslims, Roma) we have observed that their vaccination condition appears to be insufficient. On the other hand, the percentage of obese and overweight children of preschool age in the municipality of Athens, Greece, was 18.6% as it appeared in a survey conducted by the Department of Social Medicine, Children's Hospital "P. & A. Kyriakou", Athens, Greece, from October 2005 until May 2006.

Short Communication

EATING KNOWLEDGE VS BEHAVIOUR: RESULTS FROM THE HELENA-STUDY

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Background: Adolescence is a period of life including multiple physiological and psychological changes of an organism such as development of abstract thinking. Adolescents seem to adopt lifestyle with negative influence on their nutritional and health status, so that overweight and obesity among youth is an increasing health problem across the developed and the developing world. There is consistent evidence that obesity is associated with non-communicable diseases, which are the most common causes of mortality in Europe. "Energy intake and diet composition, food preferences, physical activity and sedentary behaviours, nutritional, genetic and hormonal status, and the influence of behavioural factors all play a role in body fatness" (Pietrobelli A, Steinbeck KS. *Int J Obes* 2004;28:2-3) and may all supply important clues. Precise understanding of interactions between all those several factors and overweight onset is indispensable to establish and promote healthy lifestyle. The HELENA Project (Healthy Lifestyle in Europe by Nutrition in Adolescence) is a multi-center research project financed by the EU Sixth Framework Program as an integrated approach to the above-mentioned problem. One of the aims of dietary evaluation in HELENA is the description of food patterns, nutrient intakes, nutritional knowledge and eating behaviour of adolescents across Europe.

Objective and Methods: The purpose of this study was to describe relationship between nutritional knowledge in European

adolescents participating in HELENA-Project and their BMI and assessment of familial diet quality as well as influence on eating habits and BMI in adolescents, using data from well-validated questionnaires. The nutrition questionnaires were distributed to 3046 individuals. Comparison of nutritional knowledge and BMI of adolescents were made using Food Frequency Questionnaires (FFQ). The assessment of relationship between familial eating habits and BMI of adolescents were made with Healthy Eating Questionnaires (HE).

Results: Results demonstrated that there was no evident relationship between nutritional knowledge and BMI in European adolescents, however a high level on nutritional knowledge was found among the sample. Moreover obese adolescents showed tendency to have better nutritional knowledge and they were better able to identify unhealthy food as pizza or hamburgers compared to normal weight adolescents. There was also no evidence that optimal family eating habits and familial motivation to healthy eating behavior are common with optimal BMI of adolescents

Conclusion: Overall nutrition knowledge did not differ between obese and normal-weight adolescents. Furthermore, obese adolescents have surprisingly shown slightly drift to better assessment of food healthiness. Adequate Results were shown in assessment of familial influence on healthy eating and BMI of adolescents. Motivation through family members on healthy eating were interestingly more often indicated among obese adolescents. Thus the results of this nutritional survey indicate that overweight has a multifactor etiology. Our findings suggest the need for detailed analysis of all of the factors and the need for development of controlled school nutritional programs.

Short Communication

NEOPTERIN CORRELATES WITH VISFATIN LEVELS IN A COHORT OF OBESE AND NON OBESE CHILDREN AND ADOLESCENTS

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Low grade inflammation has been associated with increasing body mass index (BMI) in the adult population. In childhood, however, this has been diversely discussed. Visfatin, originally known as pre B colony enhancing factor, expressed in peripheral blood neutrophils upon inflammatory stimulation, has been recently rediscovered as powerful adipokine through its insulin mimetic capacity expressed by the lowering of plasma glucose levels [1, 2]. Visfatin furthermore regulates metabolism in adipose tissue by transfer of biochemical signals to organs of metabolic importance such as brain, liver and the activated immune system. In light of the rising prevalence of paediatric obesity it is necessary to unravel its association with immunologic processes in search of therapeutic intervention capabilities.

In a cross sectional approach, serum visfatin and neopterin concentrations were examined in 357 otherwise healthy obese (body mass index, BMI >25 kg/m² and 33 normal weighted (BMI 19-25 kg/m²) children and adolescents. Their age varied from 11.3. +/- 2.97 years, female to male distribution was 2:1. Visfatin and neopterin were measured by enzyme linked immunosorbent assay (Phoenix peptides, Karlsruhe, Germany and BRAHMS, Hennigsdorf, Germany). We furthermore tested fasting triglyceride levels enzymatically (CHOD-PAP and GPO-PAP calorimetric methods, Boehringer Mannheim GmbH, Mannheim, Germany). Plasma glucose concentrations were determined by the glucose oxidase method using a glucose analyzer (Beckman Instruments, Fullerton, CA, USA). Plasma insulin concentrations were measured by chemiluminescence microparticle method (ELISA Mercodia, Uppsala Sweden). Insulin resistance was assessed by homeostatic model assessment-insulin resistance (HOMA-IR).

Differences in distribution of laboratory variables among patients groups were statistically analyzed by non-parametric

Mann-Whitney test, correlation analyses were done by Spearman's rank test. BMI differed significantly (obese mean±SD 28: ± 5.64 vs. non-obese: 18.2 ± 2.19 kg/m², U =9.24, p<0.00001). Visfatin was significantly higher in the obese group (11 .67 ± 18.07 vs. 8.82 ± 3.59 ng/ml, p <0.02) and so were fasting glucose levels (88.8 ± 9.49 vs. 75.6 ± 7.61 mmol/L, p <0.0001), insulin (16.8 ± 14.37 vs. 5.58 ± 2.85 U/ml, p <0.0001) and the HOMA-IR index (3.52 ± 3.39 vs. 1.01± 0.18, p <0.0001). Visfatin levels correlated with neopterin in the obese (rs = 0.166, p = 0.005), but there was only a trend for such an association in the control group (rs = -0.140, p = 0.07). In the obese group no associations were observed between visfatin levels and fasting glucose (rs = 0.045), insulin (rs = -0.073) and HOMA-IR indices (rs = -0.074, all p >0.05), whereas they were significant in the non-obese controls (glucose: rs = 0.343, insulin: rs = 0.347, HOMA-IR: rs = 0.391, all p <0.03). Only in the obese but not in the non-obese controls, there existed inverse correlations between neopterin concentrations and body size (rs = -0.128, p <0.01) and weight (rs = -0.117, p <0.02). Neopterin concentrations and other markers of immune activation were found to be increased in obese adults [3] but this was not the case not in children and juveniles [4]. In agreement with these latter findings, we found an inverse correlation between serum neopterin and body size and weight indicating weight gain to be associated with decreasing neopterin levels in obese children/juveniles. In them also a positive association was found between neopterin and visfatin, an adipokine and pre B colony stimulating factor dedicated previously as of the Th1 immunity. In our subjects, the well known insulin-mimetic feature of visfatin was exclusively found in the normal weight children, but not in the obese.

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Poster Presentation

CONSERVATIVE TREATMENT – SITUATION IN SWEDEN

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Introduction: More than fifteen percent of children in Europe are overweight; another five percent are obese. The high prevalence of obesity emphasizes the necessity of developing evidence based treatment programs that are useful in a clinical setting. Management of childhood obesity is commonly based on lifestyle interventions where nutrition, physical activity and behavior modification are the main targets. To incorporate lifestyle interventions, many pediatric obesity treatment models use different psychological models, such as behavior modification, cognitive behavior therapy or family systems therapy. Furthermore, pedagogical methods, outpatient clinical programmes and experimental designs are used in major centres. Data is collected in a nationwide quality register "Boris" for basic evaluation.

Methods: Different psychological models are presented from a theoretical point of view. For each theory relevant studies are presented where controlled clinical studies have been performed.

Results: Behavioural therapy, cognitive behavioural therapy and family systems therapy are supported by controlled clinical trials or randomized clinical trials. No comparative study has been performed between different psychological methods regarding efficacy and cost effectiveness. Most clinical trials in childhood obesity report no clear theoretical framework. One common finding is that family involvement is necessary to achieve a significant improvement regarding the child's obesity or quality of life. Data from quality registers is continuously evaluated.

Conclusion: Clinical trials should better describe the psychological framework of the study to improve the possibility to implement successful programs in other areas. Quality control registers is an attempt to secure every day care.

Poster Presentation

VALIDITY OF SELF-REPORTED WEIGHT AND HEIGHT: SOCIO-DEMOGRAPHIC DETERMINANTS AND CONSEQUENCES FOR THE CLASSIFICATION OF BMI CATEGORIES

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Background and aim: Epidemiological studies have shown that people tend to underestimate their weight and overestimate their height. This may lead to a misclassification of their body mass index (BMI) in studies based on self-reported data. The aim of this study was to assess the validity of self-reported weight and height in Austrians.

Methods: Data on weight, height, health behaviour and socio-demographic characteristics of 473 Austrian residents, aged 18 years and older were collected in a standardised procedure in a public outpatient unit via a self-filling questionnaire and a body examination.

Results: The mean difference between reported and measured BMI was comparatively low in younger age groups but increased

significantly with age. The prevalence of normal weight (BMI: 18.5 – 24.9 kg/m²) and overweight (BMI: 25 – 29.9 kg/m²) was overestimated based on self-reported data on BMI, while those for underweight (BMI: <18.5 kg/m²) and obesity (BMI: > 30 kg/m²) were underestimated. Self-reported data showed an obesity prevalence of 12.5 %. The prevalence after re-measurement was 15.4 %. A multiple linear regression analysis was performed with gender, educational level, smoking behaviour and age group as independent variables and differences between self-reported and measured BMI as dependent variable. Age was the only predictor that was statistically significantly associated with the difference between measured and reported BMI ($p < 0.001$).

Conclusions: Our results indicate that prevalence rates of obesity are probably underestimated for Austrian population when using self-reported weight and height information. The deviations from the measured data clearly increased with age. Analyses based on self-reported data should therefore be adjusted for the age-dependency of the validity. To analyse the validity of reported data on weight and height for Austria in more detail, investigations in further settings are recommended.

Poster Presentation

EVALUATION OF ADIPOSITAS CAMPS AND THEIR LONG TERM SUCCESS

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The effects of a long-term outpatient treatment program for overweight and obese children are being evaluated. The "OBEL-DICKS" program consists of physical exercise, nutrition education therapy and behavioural therapy.

Two consecutive (one in 2009 and one 2010) groups of 10 overweight and obese children with concomitant psychosomatic morbidities were enrolled for 1 month in an Adipositas camp in our day clinic and then followed at regular time intervals for up to 36 months. Their SDS-BMI was measured. A Strengths and Difficulties Questionnaire (SDQ) was completed

by parents at 36 or 18 months post camp while at the same time participating children underwent a test evaluating their impulsivity.

The BMI and SDS-BMI were obtained upon enrolment and by completion of the Adipositas camps.

Results indicated a significant decrease of their BMI in both groups ($p < 0.001$). In the first group (2009) an average decrease of 0.242 SDS-BMI and a range from 0.116 to 0.641 SDS-BMI was observed. In the second group (2010) an average decrease of 0.218 SDS-BMI and a range from 0.082 to 0.563 SDS-BMI was observed. BMI seems to be inversely correlated with success of the intervention, $r = -0.877$ (pooled data from both groups). The follow up results are currently under investigation.

Poster Presentation

INFLAMMATORY AND METABOLIC CONSEQUENCES OF PEDIATRIC OBESITY – TOBI KIDS

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Background: The prevalence rate of pediatric obesity is rising alarmingly. In addition to the economic burden, individual health consequences are serious and in worst case pediatric obesity causes premature death. Furthermore obesity is associated with a chronic low-grade inflammation which leads to impaired glucose tolerance and finally to type 2 diabetes. The chronic inflammation originates in the adipose tissue and it results in elevated circulating concentrations of CRP, IL-6, IL-8 and TNF- α . The aim of the study is to evaluate possible correlations of metabolic and inflammatory alterations in obese children and adolescents.

Methods: Currently, we have recruited 65 subjects (43 male, 22 female) aged 10 to 18 years (mean 13.6 ± 2.2) of a planned total of 100 non-diabetic obese children and adolescents, defined as having a body mass index (BMI) exceeding the 97th percentile for age and sex. Anthropometric parameters were evaluated and measures of insulin resistance were obtained by an oral glucose tolerance test and using the homeostasis model assessment for insulin resistance (HOMA-IR). Serum and plasma samples were taken to evaluate fasting blood concentra-

tions of various metabolic and inflammatory markers. Furthermore adipokines and systemic inflammatory markers (e.g. CRP, TNF- α) will be analyzed when recruitment is completed. The carotid intima-media thickness (cIMT) was examined by ultrasound.

Results: Anthropometric data of the study population: the SDS of BMI was 2.9 ± 0.46 , the weight was 100.3 ± 25.1 kg, the waist-hip-ratio was 0.94 ± 0.1 and the neck circumference 40.8 ± 4.5 cm. Metabolic and inflammatory data: the mean glucose level was 82.7 ± 10 mg/dl, insulin 25.4 ± 25.9 μ U/ml, cholesterol 176.6 ± 39 mg/dl, HOMA-IR 4.6 ± 6.8 , low density lipoproteins 97.7 ± 34.1 mg/dl, triglycerides 149.4 ± 92.6 mg/dl and the mean of the high sensitive C-reactive protein was 0.52 ± 0.6 mg/dl. Girls had significantly lower triglycerides (103.4 vs. 117.8 , $p = 0.002$) than the recruited boys. The mean of cIMT left was 0.41 ± 0.05 mm and right 0.39 ± 0.04 mm. The participants spent on average 2.8 hours ± 1 hour per day watching TV or playing computer games. Notably, we found a highly significant positive correlation between body weight and cIMT (right: $p = 0.001$, Rho: 0.622 , left: $p = 0.004$, Rho 0.54).

Conclusions: Obesity in pediatric patients is associated with alarming signs of low-grade inflammation, insulin resistance, and early atherosclerotic alterations.

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Poster Presentation

BLOOD PRESSURE AND BODY MASS INDEX CORRELATION IN PUBLIC ELEMENTARY SCHOOLS IN ATTICA THROUGH PREVENTIVE MEDICINE PROGRAMS

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Aim: We aim to detect obese, overweight and underweight children and blood pressure variations in elementary schoolchildren in Ag. Anargyroi, Galatsi, N. Philadelphia, N. Herachlion and Geraka municipalities in Attica Greece during 2009-2010.

Methods: 1296 children have been checked (51.5% boys and 48.5% girls). Body mass index was used to detect obese, overweight and underweight children based on international cut-off points for each year and sex (Cole et. al, BMJ 2000). Blood pressure measurement was based on the fourth Report on the Diagnosis, Evaluation, and Treatment of High Blood Pressure in Children and Adolescents

(U.S. Department of Health and Human Services 2005).

Results: 18.1% of children were obese (10.4% boys and 7.7% girls), 21.8% were overweight (10.8% boys and 11.1% girls) and 2.7% (1.2% boys and 1.5% girls) were underweight. Blood pressure has been elevated in 11.5% of the children (5.3% boys and 6.2% girls). Of those children with elevated blood pressure, 53.02% have had increased body weight. Out of the total number of children with increased body weight, 19.2% of obese (N=234) and 12.1% of overweight children (N=282) have had elevated blood pressure, while 9.1% of the children with normal body weight (N=740) had elevated blood pressure. There is statistically significant correlation of increased body weight and elevated blood pressure ($p<0,001$).

Conclusions: Preventive medicine programs are of high importance in detection of elevated blood pressure and increased body weight in elementary schoolchildren, in order to introduce healthy dietary habits and exercise in their daily routine.

Poster Presentation

CHILDHOOD OBESITY AND OVERWEIGHTNESS

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Statistics show that obese and overweight adolescents have 70% chance of carrying the problem into adulthood, and it goes up to 80% if one or both of parents are obese. There is epidemic of children obesity in developed countries, which has significant impact on their both physical and psychological health. Mechanism of obesity development is not fully clear but there are

many factors directly or indirectly influencing childhood overweight rates including breastfeeding, food marketing, genetics (FTO genes), nutrition, physical activity and psychological factors. There are some effective strategies for each of these factors explained in the presentation. Considering the consequences of obesity as cardiovascular disease, hypertension, stroke, some cancers, kidney disease, diabetes type II, gallbladder disease, sleep apnea, ... special consideration and effective controlling and prevention ways has been given to this 2nd preventable cause of death.

Poster Presentation

IMPACT OF MOTHER TONGUE AND GENDER ON OVERWEIGHT, OBESITY AND MORBID OBESITY IN 24,989 VIENNESE CHILDREN/ADOLESCENTS (2 – 16 YEARS)

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Aim: To determine the prevalence of morbid obesity (defined as BMI $\geq$ 99.5th percentile) and the relationship between weight status and mother tongue in a representative Viennese sample of 24,989 children and adolescents (2 – 16y) with a percentage of approximately 46% of migration background.

Methods: Directly measured anthropometric data on body

weight and height were collected and BMI was calculated. Prevalence of overweight, obesity and morbid obesity was determined for every subgroup according to mother tongue using the German national reference criteria by Kromeyer-Hauschild et al.

Results: 2.1% of all children and adolescents were classified as morbidly obese. More boys (2.28%) than girls (1.92%) suffered from morbid obesity ($p=0.048$). 1.72% of children and adolescents with German as their native language, 2.53% of Turkish native speakers and 2.86% of children and adolescents with another mother tongue were morbidly obese.

Poster Presentation

EFFECTS OF ALTERNATE-DAY FASTING (ALFA) ON COGNITIVE ALERTNESS, MOOD AND BODY FAT DISTRIBUTION – A PROSPECTIVE PILOT STUDY ON OBESE ADULTS

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Background: The ability of alternate-day fasting (ALFA) to facilitate weight-loss and lower vascular disease risk has been shown previously through recent studies, but its effects on psychosomatic indicators remain uncertain.

Objective: Our goal is to determine whether ALFA is a feasible long term diet method without any sustainable effects on cog-

nitive alertness, mood or impuls control.

Design: In a 12-week prospective study about 15 obese adults fasted every other day. After the primary dietary screening, participants attended every two weeks for controlled check-ups, concentration tests and standardized eating questionnaires.

Results: Although the study is still in progress, the rate of weight loss remains consistent. Furthermore, percentage body fat, LDL cholesterol, total cholesterol, triacylglycerol and systolic blood pressure are decreasing. The psychosomatic parameters are still being examined.

Poster Presentation

SERUM NEOPTERIN AND TRYPTOPHAN CONCENTRATIONS IN NON OBESE AND OBESE CHILDREN

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Neopterin is synthesized from guanosine triphosphate by enzyme GTP cyclohydrolase I. It is released preferentially from human monocyte-derived macrophages upon stimulation with the Th 1-type cytokine interferon- γ that is the probably most important mediator of antimicrobial and antitumor defence in vivo. Thus, neopterin concentrations in body fluids usually correlate with immune activation and are significant predictors of chronic infections, various types of cancer and cardiovascular disease [1, 2]. In adults an association between increased body mass index and neopterin concentrations was observed [3]. Although there is evidence for a proinflammatory state accompanied by impaired vascular endothelial function in childhood and adolescence such data is still scarce [4]. Moreover, an earlier study indicated that neopterin concentrations are decreased rather than increased in juvenile obesity [5]. In a cross-sectional approach we investigated serum neopterin concentrations as well as tryptophan metabolism in a cohort of 356 overweight and obese (aged 11.3 ± 2.97 years: mean $\pm$ S.D.), otherwise healthy children and 32 non-obese controls which were recruited at the University Hospital of Salzburg, Department of Pediatrics. Distribution of female to male was equal in both groups. Neopterin concentrations were measured using ELISA (BRAHMS, Henningsdorf, Germany), tryptophan and kynurenine concentrations were determined by HPLC. Body mass index (BMI) differed significantly between obese and non obese probands (28 ± 5.64 vs. 18 ± 2.19 SD kg/m²: $U = 9.24$, $p < 0.0001$, Mann Whitney U-test). Obese children had significantly higher serum triglyceride 109 ± 63.9 vs. 51 ± 30.5 (U = 6.67 $p < 0.0001$), lower HDL-cholesterol (50 ± 12.3 vs. 63 ± 13.1 mg/dl: $U = 4.9$ p

< 0.0001), higher fasting glucose levels (88 ± 9.4 vs. 75 ± 7.6 mg/dl: $U = 7.3$ $p < 0.0001$) and were significantly more insulin resistant (HOMA-IR 1.0 vs. 3.5: $p < 0.0001$).

Serum neopterin concentrations were low in both groups with an average of 5.13 ± 1.59 in normal weight controls vs. 5.85 ± 2.86 nmol/L in obese juveniles (not significant). By contrast, there was no difference in kynurenine concentrations and the kynurenine to tryptophan ratio (kyn/trp). Although tryptophan concentrations were significantly lower in the obese (80.7 ± 12.7 μ mol/l) vs. non-obese subjects (74.7 ± 18.8 μ mol/l: $U = 2.384$, $p = 0.017$). Tryptophan concentrations correlated with size and weight in both groups but neither tryptophan nor kynurenine concentrations kyn/trp correlated with neopterin concentrations.

This study shows that neopterin is not associated with obesity and that serum levels do not differ between the two groups. Results suggest that obesity at least in the early course of the disease does not lead directly to Th 1-type immune activation and associated cardiovascular disease at this stage. Only in the later course of the disease a switch to Th-1 type immune activation and associated cardiovascular diseases may take place. Chronic infections or other cofactors might be important to trigger cytokine production and elevated neopterin concentrations later on.

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Poster Presentation

LAPAROSCOPIC ROUX-EN-Y GASTRIC BYPASS FOR ADOLESCENTS (13 – 17 y) WITH MORBID OBESITY – PRELIMINARY RESULTS FROM “AMOS”, A SWEDISH NATIONWIDE STUDY

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Introduction: Hereby we present initial results from a nationwide Swedish controlled study – AMOS – to assess the safety and feasibility of lap gastric bypass in morbidly obese adolescents.

Methods: Eighty-one adolescents (13 to 18 years) were included. Inclusion criteria included BMI >40 or >35 with comorbidities. Eighty one conventional treated obese adolescents and 81 obese adults treated with gastric bypass surgery are matched as controls. Follow up visits are scheduled up till 10 years after baseline visit.

Results: Baseline mean BMI did not differ significantly between

groups. Mean BMI changed from inclusion to 1 year after baseline for the surgically treated adolescents from 45.5 to 30.1 kg/m², surgically treated adults from 44.1 to 31.5 kg/m² and for the conventionally treated adolescents from 41.8 to 39.5 kg/m². Total weight loss for the surgically treated adolescents was at 2 years postoperatively 30.9% corresponding to BMI 31.3 kg/m² (p=0.000). For the surgically treated adolescents significant improvements were shown comparing baseline and 2 years postop for quality of life, insulin, blood glucose, OGTT, LDL, HDL, TG, Supersensitive CRP, ApoB, blood pressure and anthropometry. There were two minor perioperative complications (transfusion, infection) and two late re-operations. The treatment was generally well tolerated.

Conclusion: These initial data indicates that laparoscopic gastric bypass is at least equally effective in adolescents as in adults regarding weight loss and metabolic improvements up to two years after surgery. Further follow up regarding quality of life, long term results compared to control group is however required before general recommendations.

Poster Presentation

CORRELATION OF GHRELIN AND OBESTATIN LEVELS WITH TRYPTOPHAN DEGRADATION IN OBESE CHILDREN

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Background: Ghrelin is a recently discovered orexigenic hormone, secreted in the lateral hypothalamus and stomach cells. It has been shown to decrease insulin levels and increase appetite, body weight gain and fat accumulation. There is evidence, that it inhibits secretion of proinflammatory cytokines. It is decreased in massive obesity and associated diseases. Obestatin has been isolated as its counterpart, with the common precursor prepropeptid. Morbid obesity has also been associated with tryptophan metabolism, as 5-hydroxytryptophan, serotonin, known as mood hormone, is strongly involved in regulation of satiety.

Objective: To assess possible correlations between tryptophan degradation and serum ghrelin/obestatin and metabolic parameters in obese children and adolescents and non obese controls.

Patients and Methods: Outpatient clinic at the Department of Pediatrics, University Hospital of Salzburg; Cross-sectional approach; 390 healthy children, 357 BMI > 25 kg/m² (28±5.64),

33 with BMI 19-25 kg/m² (18 ± 2.19); age: 11.3±2.97 years; females:males 2: 1; Laboratory analytics: ghrelin, obestatin (RIA, Phoenix, Europe, Germany), fasting and postprandial (oGTI) insulin, neopterin (ELISA, Brahms Hennigsdorf), tryptophan, kynurenine (HPLC) Statistics: Non parametric.

Results: No difference was found in ghrelin serum levels between obese and non obese controls (see table 1). With the exception of ghrelin all investigated parameters differ significantly as compared to the obese group. Furthermore we found a significant association of ghrelin with weight and BMI, but not with obestatin (see table 2). Tryptophan degradation significantly correlated with ghrelin, but not with obestatin. In addition, tryptophan correlated significantly with parameters of the metabolic syndrome (table 3).

Table 1: Obese vs. Non Obese

	Non Obese	Obese
Ghrelin	452 ± 188	450 ± 321; z=-0.73, n. s.
Obestatin	19.7 ± 4.4	32.5 ± 72.9; z=2.8, p<0.05
Triglyceride	51.6 ± 30.5	109.9 ± 63.9; z=6.6, p<0.0001
HDL-cholesterol	63.4 ± 13.1	50.7 ± 12.3; z=-4.9, p<0.0001
Fasting insulin	5.58 ± 2.85	16.8 ± 14.3; z=-7.33, p<0.0001
HOMA-IR	1.01 ± 0.65	3.52 ± 6.66; z=-6.9, p<0.0001

Table 2: Correlation of growth parameters in the obese group

	Weight	BMI	R _{syst}
Ghrelin	rs=-0.32, p<0.0001	rs=-0.28, p<0.0001	rs=-0.18, p<0.01

Table 3: Correlation of tryptophan with ghrelin, obestatin and parameters of the metabolic syndrome

	Tryptophan
Ghrelin	rs=-0.14, p<0.02
Obestatin	rs=-0.05, n. s.
Triglyceride	rs=0.23, p<0.0001
HDL-cholesterol	rs=-0.09, p<0.043
Fasting insulin	rs=0.02, p<0.0001
HOMA-IR	rs=0.21, p<0.0001

Conclusion: Our results suggest a strong negative correlation of ghrelin and weight/BMI in obese children and adolescents. Furthermore we found a significant correlation between tryptophan degradation rate and ghrelin suggesting central biochemical collaterals. Thus ghrelin may play a role in mood disturbances which in turn ultimately lead to increased caloric intake.

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IMPRESSUM

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