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OBESITY AND TYPE 2 DIABETES

48. Sarcopenic obesity: diagnosis and nutritional treatment

Krajcik S, Mikus P
Geriatric clinic, Slovak Medical University, Bratislava, Slovakia

Sarcopenic obesity (SO) is combination of sarcopenia (muscle mass smaller than -1 SD of average mass in young people) and obesity. Reduction of skeletal muscles mass is caused by ageing, inactivity and obesity itself. Muscles are harmed by inflammatory cytokins produced in fat tissue and their contractility is compromised with fat infiltration (myosteatosis), decreasing uptake of glucose. Changes of muscles further decrease mobility, and contribute to progression of obesity and glucose tolerance impairment. There is reduction of anabolic factors in SO (decreased effect of insulin due to fat infiltration, decreased level of IGF-I and GF). Aforementioned changes increase rate of obesity complications (increased mortality and disability, hypertension, dementia etc.). Reduction of weight is associated with loss of muscles mass which can be attenuated with exercise. There are big differences between SO prevalence in different studies, ranging from 0 to 25 %. Approximate average prevalence is 5–10 % both in men and women.

49. Targeting gastrointestinal tract in the treatment of obesity/type 2 diabetes

Haluzik M
Institute for Clinical and Experimental Medicine, Prague, Czech Republic

Bariatric surgery is the most efficacious method in the treatment of both obesity and its metabolic complications, in particular type 2 diabetes mellitus. In general, bariatric procedures can be subdivided into two categories. The first one are purely restrictive procedures that limit food intake through decreasing stomach volume with subsequent decreased food intake, weight loss and metabolic improvements (e.g. gastric banding). The second group is represented by either combined or purely malabsorptive procedures that are based on the bypassing of the part of small intestine in some cases combined with decreased stomach volume (e.g. gastric bypass). Numerous studies have shown that exclusion of the proximal part of small intestine from the contact with food (for example duodenum exclusion in gastric bypass) markedly improves glucose control even leading to diabetes remission in some patients before significant weight loss clearly suggesting that weight loss-independent mechanisms are in place. Numerous endoscopic or surgical procedures have been developed based on the notion that exclusion of proximal intestine improves metabolic control and induces weight loss. The most extensively tested device was duodenal-jejunal bypass liner that can be inserted endoscopically in the duodenum and jejunum and kept in place for 12 months. This procedure mimics most of the effects of gastric bypass suggesting that some of the endoscopically placed devices can at least partially substitute for some of the bariatric procedures in the future.

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50. Dulaglutide: a new once-weekly glucagon–like peptide-1 receptor agonist in clinical practice

Schroner Z
Out patient Department of Internal medicine and Diabetology, Kosice, Slovakia

At present, individual approach is recommended for the treatment of type 2 diabetes mellitus. It is proven, that incretin based therapy with glucagon-like peptide-1 receptor agonists, is sufficiently effective and safe. Dulaglutide, long acting once-weekly applicated glucagon-like peptide-1 receptor agonist, is a new drug from this group available in clinical practice. Results of programme AWARD confirmed, that dulaglutide in dose 1,5 mg is superior in HBA_{1c} reduction in comparison with oral antidiabetics (metformin, sitagliptin), insulin glargin and exenatide BID.

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Study AWARD-6 proved, that HbA_{1c} reduction with dulaglutide was comparable to liraglutide 1,8 mg. Treatment with this drug is associated with weight reduction, and low risk of hypoglycaemia. The most common adverse effects of dulaglutide are nausea, vomiting and diarrhoea, comparable with other glucagon-like peptide-1 receptor agonists. The advantage of this preparation is simple initiation of treatment by a pre-filled pen designed with the patient in mind.

51. Childhood Obesity Surveillance Initiative (COSI) in the Czech Republic

Kunesova M[1], Braunerova R[1], Zamrazilova H[1], Prochazka B[2], Vignerova J[3],Parizkova J[1], Hill M[4], Steflova A[5]
[1]*Obesity Management Centre, Institute of Endocrinology, Prague, Czech Republic*
[2]*Paediatric Clinic, Kolin, Czech Republic*
[3]*National Institute of Public Health, Prague, Czech Republic*
[4]*Institute of Endocrinology, Prague, Czech Republic*
[5]*Regional Office WHO Czech Republic, Prague, Czech Republic*

Childhood obesity represents a global health risk. For evaluation of childhood obesity prevalence in individual countries the precise measurement by the approved method is necessary. Since 2007 WHO Europe has started Childhood obesity surveillance initiative (COSI). Aim of the is to evaluate obesity prevalence in 7 years children in the Czech republic since 2008. **Methods:** Weight, height, waist and hip circumference were measured in a representative sample of the Czech 7 year children and questionnaires about their family and school environment were filled in four rounds of COSI (2008, 2010, 2013, 2016). The data were collected by primary care paediatricians. BMI was evaluated according to WHO references (2007) and according to the Czech reference standards (1991). The data were compared with the previous Crech data in the same age category (since 1951). **Results:** Obesity prevalence increased in boys in 2008 (in comparison with 2001) followed with a decrease to under 2001 level in 2013. In girls after decline in 2008 obesity prevalence increased to 2001 value in 2013. In comparison with European countries the CR ranks between the countries with lower prevalence of overweight and obesity in 7 year old children (Wijnhoven et al 2014). Overweight and obesity prevalence from 2016 will be shown. **Conclusion:** The results suggest levelling of the prevalence of obesity and overweight in the Czech Republic in 7 years old children during the last 10 years. Underweight prevalence has remained low.

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52. Prevention of childhood obesity in Bulgaria

Handjiev S[1], Handjieva-Darlenska T[2]
[1]*Bulgarian association for the study of obesity and related diseases (BASORD), Sofia, Bulgaria*
[2]*Department of Pharmacology and Toxicology, Medical University, Sofia, Bulgaria*

According to the National survey on nutrition in the population above 1-year old obesity in boys below 5 years was 7.1 % in 2014 in comparison with 3.3 % in the same age in 2004. There is a positive trend towards a slight decrease in obesity levels in girls below 5 years with 2.7 % in 2014 compared to 5.4 % in 2004. However, the data presented on October 9th 2016, the World Obesity Day, showed that in Bulgaria 230,000 school-age children are expected to be overweight or obese by 2025. Obesity puts our children health in danger. By 2025 as many as 8,000 will have impaired glucose tolerance, 2 000 will have type 2 diabetes, 18,000 will have high blood pressure, 25,000 will have first stage fatty liver disease. The reasons of these striking numbers are clear: a sedentary lifestyle and a poor nutrition. Data show that there is an increase in the consumption of sugar–containing food and beverages, in salt, very early beginning of alcohol consumption, low intake of yoghurt and fish in school-age children in Bulgaria. The European project EPHE (EPODE for the promotion of healthy equity) demonstrated that Bulgarian children between 6–9 years old consume more fruit and vegetables compared to the Netherlands, Belgium, and France. On the other hand, Bulgarian children spend approximately 26 hour weekly screen time compared to the children in the Netherlands with 14.5 hours. Since 2013 BASORD organizes annually 1-week "School for health – for children, parents and teachers" with promotion of healthy lifestyle, incl. increased physical activity and good nutrition habits. This initiative is one of the few in this field. Bulgaria doesn't have a working state programme for prevention of childhood overweight and obesity.

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53. Overweight and obesity in children – WHO Childhood Obesity Surveillance Initiative in Slovakia

Ticha L[1], Regecova V[2], Sedlakova D[3], Mesarosova I[3], Hamade J[4], Podracka L[1]
[1]*Faculty of Medicine, Comenius University and University Children's Hospital, Bratislava, Slovakia*
[2]*Slovak Academy of Sciences, Bratislava, Slovakia*
[3]*WHO Country Office in Slovakia, Bratislava, Slovakia*
[4]*Public Health Institute, Banska Bystrica, Slovakia*

Prevalence of overweight and obesity is relevant for programs that focus on reducing obesity. According to the WHO European project – Childhood Obesity Surveillance Initiative – we evaluated prevalence of obesity in Slovak school children, to develop internationally comparable indicators. **Patients and methods:** We measured anthropometric parameters (weight, height, waist and hips) among 2,805 school 7–7.99 year-old children (1,406 boys and 1,399 girls), (1,547 rural, 1,258 urban). The prevalence of overweight and obesity according to the WHO and International Obesity Taskforce definition was determined with the use of LMSGrowth software. **Results:** According to the WHO, we found 16.5 % (OITF: 13.8 %) overweight boys and 13.5 % (OITF: 12.6 %) overweight girls. There were 13.8 % (OITF: 8.8 %) obese boys and 10.7 % (OITF: 8.1 %) obese girls. **Conclusions:** This is a preliminary data of COSI project results. We note the high incidence of obesity early in school age, which requires the introduction of preventive measures against obesity. The results are compared with the prevalence of obesity in other European countries.

54. Whys and hows of physical exercise for children

Hamar D
Faculty of Physical Education and Sport, Comenius University, Bratislava, Slovakia

There is hardly any doubt on health benefits of physical exercise in children. Positive effects on cardiovascular system, musculoskeletal tissues, energy balance and healthy body weight, psychophysiological wel-being, self-expression, self-confidence, social integration, cognitive functions including academic performance at school as well enhancement of adoption of healthy behavior (e.g. avoidance of tobacco, alcohol and drug use) have been well documented and are generally accepted. However, the application of this knowledge into practical life is more problematic. Firstly, in modern industrial societies demands of education process, attractivness of sedentary leisure activities (TV, computer, game consoles, tablets and smartphones) and often also problematic access to exercise facilities make it difficult to fulfill dailly amount of physical activities recommended for children population. Secondly, general knowlege on appropriate form of physical activities is rather poor with lots of prejudices. Childern´s physiological specificities of response to exercise should be taken into account while designing exercise programs for young population. These include namely unmature glycolytic system and lower buffering capacity of lactate, faster oxygen uptake kinetics at the onset of exercise and lower tolerance to monotonous endurance exercise. Such physiological specificities are well met by frequent intermittent activities with high intensity of active intervals not exceeding 20 seconds. „Fun factor" is of paramount importance. Only attractive activities have a potential to creating a postive attitude to physical activities. Despite of still prevailing over causiosness toward strength exercise, these activities should be an integral part of exercise programs for children. It has been demonstrated that, if carried out properly, they are not only safe, but can contribute to a substantial reduction of injuries while performing other activities as e.g. soccer, ice hockey, basketball etc. and enhancement of musculoskeletal health. Mandatory physical education (even in countries offering one-hour class on dailly basis) do not meet the minimum requirements for children and should be complemented by additional leisure activities.