Emerging Pathomechanisms Involved In Obesity: A Pediatric Pilot Study


Department of Medicine, Pediatrics Section University of Salerno, Baronissi (SA), Italy
*These authors contributed equally to the work

Overweight/obesity prevalence has increased dramatically worldwide. Recent evidences suggest sleep deprivation/fragmentation, obesogenic gut microbiota, fructose-exceedingly rich diets and exposition to endocrine disruptors (e.g. Bisphenol A, BPA) as 4 emerging factors involved in patho-mechanisms and treatment-resistance of obesity and its complications. Our pilot study focuses on these factors as further preventive/therapeutic approaches in pediatric obesity.

54 Italian children [Cases: n = 31 overweight/obese; Controls: n = 23 normal-weight] were clinically/anthropometrically characterized. Parents completed questionnaires on the relationship between the above 4 obesogenic factors and childhood obesity. BPA was measured by GC/MS-MS on early morning urine sample. Correlations between continuous variables were analyzed by Spearman's Rank Correlation.

Sleep deprivation or fragmentation, nocturnal breathing problems and daytime sleepiness increased with increasing BMI, correlating with presence of clinical markers of metabolic syndrome (e.g. Acanthosis Nigricans). Frequency of sugar-enriched drinks consumption and amount of fructose per portion and/or per week increased paralleling the ponderal excess and all the other anthropometric parameters. A positive correlation was found with factors affecting gut microbiota [e.g. neonatal bottle feeding and antibiotic therapy]. Use of probiotics or prebiotics correlated negatively with waist circumference and blood pressure. In the whole population free and total BPA increased paralleling the BMI increase (r > 0.8), whereas the conjugate behaved the opposite way. Re-use of disposable plastic showed a positive correlation with urinary BPA levels.

The results of our study confirm the close relationship between these 4 factors and pediatric obesity, underscoring their role as emerging target for prevention and therapy.