

conference abstract

observational

people

Obesity risk may be increased by exposure to common environmental chemicals

Exposure to common every day chemicals, called phthalates, may increase the risk of metabolic disorders including obesity and diabetes, according to findings to be presented in Lyon, at the [European Society of Endocrinology](#) annual meeting, [ECE 2019](#). The study found a correlation between levels of phthalate exposure and markers of impaired liver function, as well as indicators of increased risk of obesity, diabetes and cardiovascular diseases. These findings suggest that more actions may need to be taken to reduce people's exposure to these potentially harmful, yet commonly used chemicals.

Phthalates are common additives used in manufacturing to produce plastics and they can be detected in numerous every day items including milk, bottled water, instant coffee, perfume, make up, shampoo, toys and food packaging. Exposure to endocrine-disrupting chemicals has previously been implicated in causing serious harm to fertility and development, as well as increased obesity risk in rodents and people. However, no studies have directly investigated how phthalate exposure is associated with obesity and metabolism.

In this study, Professor Milica Medić Stojanoska, and colleagues from the University of Novi Sad in Serbia, correlated the levels of pthalate absorbed by people with their body weight, type 2 diabetes and markers of impaired liver and metabolic function. Higher exposure to phthalates was associated with increased markers of liver damage, insulin resistance, increased fat circulating in the blood and lower levels of 'healthy' cholesterol in people with obesity and diabetes.

Prof Medic-Stojanoska says, "Although a small association study, these findings suggest that not only do phthalates alter metabolism to increase the risk of obesity and diabetes but that they are also causing toxic damage to the liver."

Prof Medic-Stojanoska's research is now looking at the effects of endocrine-disrupting chemicals on human health in adults, adolescents and babies.

Prof Medic- Stojanoska comments, "We need to inform people about the potential adverse effects of endocrine disruptors on their health and look at ways to minimise our contact with these harmful chemicals."

Abstract

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Can Phthalates Impair Liver Function?

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Introduction: The impairment of liver function and enhancement for NAFLD development may be attributed to the ubiquitous exposure to endocrine disrupting chemicals such as phthalates. In this study the urinary levels of monoethyl phthalate (MEP) and mono-(2-ethylhexyl) phthalate (MEHP) were compared with the parameters of hepatic function and lipids in overweight, diabetic patients and normal weight population.

Methods and patients: In 305 volunteers of both genders who were divided into three groups based on the body mass index, waist circumference and glucose levels: I -obese with central obesity, II -patients with diagnosed type 2 diabetes mellitus (T2DM) treated only with medical nutrition therapy and III-control, normal weight healthy volunteers, phthalate metabolites concentration was determined in the morning spot urine.

Results: The urine samples from 66 volunteers were positive on MEP while 72 were positive on MEHP. Aspartate Aminotrasferase (AST) and Alanine Aminotransferase (ALT) concentrations differed significantly between MEP+ and MEP- normal weight healthy volunteers ($p=0.02$ and $p=0.01$, respectively) while significantly higher Gamma-Glutamyl transferase GGT levels were observed in MEHP+ control subgroup ($p=0.017$). The positive correlation was observed between AST, ALT and \log_{10} MEP levels in obese patients ($p=0.02$ and $p=0.05$). GGT positively correlated with MEP concentration in T2DM patients ($p=0.048$). Negative correlation was found between \log_{10} MEP values in the control group and both total cholesterol and LDL levels ($p=0.0051$ and $p=0.0015$, respectively) while in obese group MEP was positively associated with serum triglycerides ($p=0.024$). The \log_{10} MEHP in the control group was correlated negatively with serum HDL ($p=0.0035$). BMI was significantly increased ($p=0.044$) in MEHP+ control subgroup compared to MEHP.

Conclusions: The ubiquitous exposure to phthalates may be related to the impairment of normal liver function according to the results obtained in this study.

Notes for Editors

1. The poster “*Can Phthalates Impair Liver Function?*” was presented on Tuesday 21 May 2019, at the European Congress of Endocrinology at the Lyon Convention Centre, Lyon, France.
2. For other press enquiries please contact the ECE 2019 press office:

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3. The European Congress of Endocrinology was held at Lyon Convention Centre, Lyon, France on the 18-21 May 2019.
4. The [European Society of Endocrinology](#) was created to promote research, education and clinical practice in endocrinology by the organisation of conferences, training courses and publications, by raising public awareness, liaison with national and international legislators, and by any other appropriate means.