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Definitions

- **BTEXS:** A group of volatile organic compounds, including benzene, toluene, ethylbenzene, xylene, and styrene.
- **Heavy Metals:** Elements like lead and cadmium that can be toxic to the body.
- **Liver Injury Biomarkers:** Substances in the blood that indicate liver damage, such as cytokeratin 18.
- **Systemic Inflammation:** Body-wide inflammation that can affect various organs, including the liver.

Key Findings

- Exposure to BTEXS and heavy metals is linked to liver injury and inflammation.
- Obesity increases the risk of liver damage from these pollutants.
- Lead and cadmium are particularly harmful, causing both liver injury and inflammation.

Introduction

This study looks at how exposure to certain pollutants, like BTEXS and heavy metals, affects liver health and causes inflammation in people living in Gulf states. The research focuses on the relationship between these pollutants and liver injury, especially in obese individuals.

Main Content

Background

Exposure to pollutants like BTEXS and heavy metals has been linked to liver diseases and inflammation. This study aims to understand these associations better, particularly in people from the Gulf states who may be exposed to these chemicals due to environmental factors.

Methods

- **Study Design:** Researchers conducted a cross-sectional study using data from the Gulf Long-term Follow-up (GuLF) Study.
- **Participants:** The study included 214 adult nonsmoking men with no history of liver disease or heavy alcohol consumption.

- **Data Collection:** Blood samples were taken from participants to measure levels of BTEXS and heavy metals. Liver injury and inflammation were assessed using biomarkers like cytokeratin 18 and various cytokines.
- **Statistical Analysis:** Linear regression models were used to determine the relationship between pollutant levels and health outcomes, adjusting for factors like age, race, and body mass index (BMI).

Results

1. Overall Sample:

- **Lead Exposure:** Lead was linked to increased levels of liver injury markers (CK18 M30) and inflammatory markers (IL-1 β , IL-6, and IL-8).
- **Cadmium Exposure:** Cadmium was associated with higher levels of inflammatory markers IL-1 β and IL-8.

2. Obesity Interactions:

- Obesity intensified the effects of lead, cadmium, and benzene on liver injury and inflammation.
- In obese participants, benzene exposure was linked to higher levels of CK18 M30 and inflammatory markers.

Conclusion

Exposure to BTEXS and heavy metals, especially in obese individuals, can lead to liver injury and systemic inflammation. Lead and cadmium are particularly harmful, emphasizing the need for further research and measures to reduce exposure to these pollutants to protect liver health.

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