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Definitions

- **Polychlorinated Biphenyls (PCBs):** Industrial chemicals that can cause environmental and health issues.
- **Endocrine Disrupting Chemicals (EDCs):** Substances that interfere with hormone systems.
- **Toxicant-Associated Steatohepatitis (TASH):** A liver disease caused by exposure to toxic substances, characterized by fat buildup and inflammation.
- **Biomarkers:** Biological indicators used to measure the presence or severity of a disease.
- **Adipocytokines:** Proteins released by fat cells that can signal other parts of the body.

Key Findings

- High prevalence of liver disease (60.2%) among people with elevated PCB exposures.
- TASH was associated with increased PCB levels, insulin resistance, and inflammation.
- Differences in liver disease prevalence were noted based on sex and race.

Introduction

This study examines the impact of elevated PCB exposures on liver health in a community near a former PCB manufacturing site. PCBs are harmful chemicals that can disrupt hormone and metabolic functions, leading to liver diseases such as TASH.

Main Content

Background

PCBs are harmful environmental pollutants known to cause liver damage. They disrupt hormone systems and can lead to conditions like TASH, characterized by liver inflammation and cell death.

Methods

- **Participants:** 738 individuals from the Anniston Community Health Survey.
- **Assessments:** Liver disease status was determined using serum cytokeratin 18 (CK18) biomarkers.

- **Data Collection:** Participants completed a survey, clinic visit, and blood draw to measure glucose, lipids, and PCBs.
- **Analysis:** Relationships between PCB exposure and liver disease were analyzed using statistical models.

Results

- **Demographics:** The cohort included a high percentage of African Americans (46.8%) and females (70.1%).
- **Liver Disease Prevalence:** 60.2% had liver disease, with 48.6% classified as TASH.
- **PCB Levels:** Higher PCB levels were associated with liver necrosis and increased biomarkers of inflammation and insulin resistance.
- **Biomarkers:**
 - CK18 M65 was higher in TASH and other liver disease groups.
 - TASH was associated with higher levels of triglycerides, insulin, and proinflammatory cytokines.

Conclusion

The study found a high prevalence of liver disease in a community exposed to elevated PCB levels, with significant associations between PCB exposure, insulin resistance, and liver inflammation. These findings highlight the health risks of PCB exposure and the need for further research to develop strategies to mitigate these effects.

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