15th Euro-Global Conference on
Infectious Diseases
October 09-10, 2023
Zurich, Switzerland

Uncover unique gut microbiota signatures in hepatitis B virus-infected patients using culturomics and metagenomic approaches: A case-control study

Reham Magdy Wasfy
IHU Méditerranée Infection, France

Background: Hepatitis B virus (HBV) infection is a global health epidemic that causes fatal complications leading to liver cirrhosis and hepatocellular carcinoma. The link between HBV-related dysbiosis and certain known or uncultivated bacterial taxa is still under investigation. Enterocloster is emerging as a new genus associated with dysbiosis and human diseases; however, its role in liver diseases is not reported.

Objective: To investigate the role of such highly abundant taxa in HBV infection.

Methods: We analysed the fecal samples of 24 patients with HBV and 24 healthy individuals using high-throughput culturomics (applied on 18 samples) compared to 16S rRNA sequencing. Quantification of ethanol produced from bacterial strains enriched in HBV was carried out by gas chromatography-mass spectrometry.

Results: By culturomics, 29,120 isolated colonies were analysed by MALDI-TOF to identify 340 species. In the HBV group, 48 species were already known in humans but had not been previously found in the gut, 17 known species not previously found in humans, and six new species were isolated. Comparing bacterial composition frequency, we serendipitously found Enterocloster genus with significantly enriched bacterial diversity in HBV ($p= 0.0016$). At the species level, significantly enriched *E. bolteae* showed high ethanol production. Moreover, Members of uncultivated Candida Phyla Radiation (CPR) are reported for the first time in HBV-associated dysbiosis such as Candidatus Saccharibacteria ($p < 0.0001$), and Atribacter phylum was found to be negatively correlated with prothrombin activity.

Conclusions: Culturomics allowed us to identify viable Enterocloster species, specifically *E. bolteae*, enriched in HBV patients. These species have never been isolated in HBV patients so far. Moreover, ethanol production by the isolated *E. bolteae* strains could contribute to liver disease progression. Additionally, the role of CPR in HBV-associated complications deserves further investigation.

Biography

Reham Magdy Wasfy is an experienced Infectious Disease Assistant Lecturer skilled and interested in clinical microbiota research in patients with infectious disorders, primarily hepatic patients. Furthermore, she possesses extensive expertise and experience in characterizing novel species introduced to the human microbiome repertory, Molecular and Immunological diagnosis of infectious disorders, Academic Teaching, Patient Safety, and Healthcare Quality. She has gained exposure to various working contexts by participating in clinical and research training opportunities at respected multinational medical facilities in the United Kingdom, Germany, and France. Her goal is to broaden her expert horizon in scientific integrity abilities through high-quality publications and to get additional scientific experience by working on projects with demand new ideas and a requirement for leadership skills.

Received: September 07, 2023; **Accepted**: September 11, 2023; **Published**: October 10, 2023