Disparities and Microbiome Affecting Liver Disease Progression

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Non-alcoholic fatty liver disease (NAFLD) is a metabolic illness that encompasses a wide range of pathological states, from simple steatosis to steatohepatitis (NASH) to cirrhosis and hepatocellular carcinoma. NAFLD is the most prevalent liver disease in the world, accounting for 25% of all liver disesase cases. A high-fat diet, smoking, and alcohol consumption have all been proven to disrupt the balance of beneficial and possibly pathogenic bacterial species, resulting in intestinal dysbiosis. The prevalence of liver cancer (LC) among Latinos in South Texas remains greater than elsewhere in the United States, necessitating further research on population-specific risk factors and aggressive mortality. Incidence rates among Hispanics are three to four times greater than among non-Hispanic whites. There are no precise molecular markers or imaging modalities that have the sensitivity or specificity to identify NAFLD patients at an early stage of illness or at a high risk of developing NASH/Cirrhosis or HCC and consider them candidates for early surgical intervention. Therefore, there is a need for the creation of non-invasive, selective molecular markers for detecting precursor lesions with dysplasia that advance to HCC. The makeup of the human gut microbiota, which is made up of hundreds of microbial species, can change with chronic illnesses that underpin health inequities that disproportionately afflict ethnic minorities. In this study, we explored the incidence and mortality rates of liver cancer in different ethnicities, Hispanics, African Americans, and non-Hispanic whites (NHW). Hispanics have the highest microbial richness and evenness in both study groups, followed by Non-Hispanic whites and Asian Pacific Islanders. Obesity, diabetes, and lifestyle changes, among other factors, have contributed to an increase in the number of instances of NAFLD in Hispanics. An increase in the number of Enterobacteriaceae, Veillonellaceae, and Streptococcaceae, as well as a reduction in the abundance of Lachnospiracea is witnessed in cirrhosis patients. There are different microbial fingerprints and interspecies interactions in several liver disorders that are susceptible to develop in HCC across ethnicities. Future studies are warranted to investigate the role of microbiota in conversion of NAFLD patients, role of microbiota in mediating HCC.

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