

Relationship Between Non-Alcoholic Fatty Liver, Intestine, And Microbiota

Mini Review

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Abstract

Non-alcoholic fatty liver disease (NAFLD) is a serious disease that can contribute to liver cancer and death associated with liver diseases. There is a close relationship between the liver and the intestine via the portal vein, and gut microbiota plays a role in the pathogenesis of NAFLD. As a result of increased intestinal permeability and endotoxin transmission due to bacterial overgrowth in the intestine, the production of proinflammatory cytokines and chemokines in the liver increases. It triggers fatty liver. In this mini-review, we will describe the relationship between NAFLD, intestine, and microbiota

Introduction

Non-alcoholic fatty liver disease (NAFLD) is one of the most common liver disorders in the world [1]. NAFLD is a liver disease that causes simple fatty liver (NAFL), non-alcoholic steatohepatitis (NASH), fibrosis, cirrhosis, and hepatocellular carcinoma (HCC) in the absence of secondary causes (drugs, over-consumption of alcohol, or some hereditary diseases) [2]. NAFL; there is no lobular inflammation in hepatocytes. NASH is characterized by ballooning degeneration of hepatocytes, diffuse lobular inflammation, and fibrosis [3,4]. NAFLD has increased dramatically in children and adults. Prevalence of NAFLD is common approximately between 17-46% in adults and it depends on gender, age, and race [5,6]. NAFLD is 7% in individuals with normal weight [7]. The incidence of NAFLD can change significantly on gender, ethnicity, and geographical regions. Researchers have suggested that the prevalence of NAFLD will be 3.6 million in the future [8]. NAFLD is the relationship between some metabolic factors and gastrointestinal system diseases such as obesity, insulin resistance, type 2 diabetes, dyslipidemia, inflammatory bowel diseases (IBD), Crohn Diseases (CH), and ulcerative colitis [9]. IBD is generally relationship between extraintestinal symptoms. Recent studies have shown that NAFLD is the relationship between IBD. IBD is generally characterized by malabsorption and severe weight loss in some cases, recent data indicate that the prevalence of non-alcoholic fatty liver

disease among inflammatory bowel patients is increasing compared to the general population [10]. The causes and predisposing factors for NAFLD among patients with inflammatory bowel disease have not been adequately studied. Some studies have shown that duration of disease, previous bowel surgery, long-term steroid usage, immunosuppressants, and biological agent treatments may increase the risk of developing nonalcoholic fatty liver disease in patients with inflammatory bowel disease [11]. The prevalence of non-alcoholic fatty liver disease is increasing in patients with a diagnosis of IBD, and its frequency in reported studies varies between 8-59% [12,13]. Liver and intestine are in a relationship with each other anatomically and functionally. Approximately 70% of the blood released to the liver comes from the portal system and the intestines, and the liver represents the first line of defense against intestinal-derived antigens. Due to its anatomical connection, the liver is constantly exposed to bacterial products of intestinal origin. Some immune cells have duties. For instance; Kupffer cells recognize pathogen-associated molecular models with their recognition receptors such as Toll-like receptor (TLR) and thus play an important role in protection against bacteria [14]. Latest technologies have shown that role of intestinal microbiota is understood in many diseases such as inflammatory bowel diseases, colon cancer, and irritable bowel syndrome, and new treatment strategies are developed. Some intestinal alteration can affect to the development of NAFLD and it causes overgrowth of bacteria in the gut and a disrupted in-



testinal barrier. It also affects bile acid balance, choline availability, energy balance, inflammatory mediators such as TNF- α , and TLR signal activation.

Conclusion

NAFLD is an important health problem. Microbiota is closely related to many diseases and can be effective on choline metabolism, bile synthesis, the amount of energy provided from the diet, intestinal permeability, and formation. Some studies have shown that type of diet plays a role in the modification of microbiota. In our country, there is no study reporting the prevalence of nonalcoholic fatty liver disease in inflammatory bowel disease. In the future, researchers need to highlight the connection between microbiota and liver diseases.

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