



Perspective Article

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Non-Alcoholic Fatty Liver Disease (NAFLD) After Liver Hepatectomy Effects on Alzheimer's Patients' Dementia Risks According to NCCN Guidelines for Patient High-Risk Liver Cancer Disease Analysis

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Abstract

Surgical resection is the treatment of choice for patients with early-stage liver cancer without cirrhosis, and orthotopic liver transplantation is the best treatment for liver cancer with the lowest risk of tumor recurrence for patients with cirrhosis. According to statistics, liver cancer is the second leading cause of cancer death, and the main reason for dying from liver cancer every year is the high prevalence of hepatitis B and hepatitis C, which enables chronic liver diseases to further develop into cirrhosis and liver cancer. If the patient's liver cancer is not resection for transplantation, alternative therapies are needed to assess the risk of developing dementia after surgical resection. NCCN Patient Guidelines: A perspective of Nonalcoholic Fatty Liver Disease (NAFLD) on the risk of dementia in non-Alzheimer's Disease patients after hepatectomy in high-risk liver cancer disease analysis. Dementia is a disease rather than normal aging, and many people think that people are a normal aging phenomenon, and it is often easy to find delayed treatment. Due to non-alcoholic fatty liver disease to liver cancer, and after liver resection, patients always had different dementia from Alzheimer's disease. It is worth studying whether the molecular transfer of liver regeneration after liver resection in elderly people with liver cancer is the same as that of young people. Prospective risk of liver cancer after hepatectomy on the risk of dementia in non-Alzheimer's patients. Thus, the risk of dementia in liver cancer patients who undergo liver resection surgery is very different from that of Alzheimer's patients.

Keywords: Surgical resection, Liver cancer, Nonalcoholic fatty liver disease, Alzheimer's patients, Dementia, Aging, Hepatectomy

Introduction

Nonalcoholic Fatty Liver Disease (NAFLD) Liver cancer is a global health issue. After many years, it ranks fifth in the incidence of liver cancer and second in cancer mortality in the world [1]. The incidence and mortality rate of liver cancer ranked second among the top ten cancers. With the advancement of medicine to improve the health of people, many incurable diseases can be controlled, and the prevention and treatment of liver cancer must find out its cause and treat it symptomatically, but cancer is still a difficult problem. The main risk factor for liver cancer is viral hepatitis [2]. Chronic hepatitis B and C are the main causes of liver cancer, and liver cancer is still the second cause of cancer incidence and death,

in addition to vaccination to prevent hepatitis B or antiviral drugs to treat hepatitis, it is also necessary to pay attention to other causes and prevent it [3]. From 2014 to 2021, the number of patients undergoing partial hepatic resection due to liver cancer caused by non-alcoholic fatty liver disease, alcoholic fatty liver disease, cirrhosis, hepatitis B, and hepatitis C increased, and United States the National Comprehensive Cancer Network (NCCN) guidelines in 2021, the number of liver cancers caused by NAFLD increased significantly in the past decade [4]. NAFLD ranks second in liver regeneration leading to partial resection of the liver for liver cancer, after hepatitis B and C [5]. According to this trend, NAFLD will become the leading cause of liver cancer in the United States soon. This per-

spective sought a retrospective of the effect of NAFLD on the risk of dementia in patients with Alzheimer's disease in the NCCN analysis of high-risk liver cancer diseases [6]. According to the latest statistics of the World Health Organization, NAFLD and liver cancer are the third leading cancer deaths in the world, according to the data show a direct association between non-alcoholic fatty liver disease and liver cancer, and liver cancer caused by non-alcoholic fatty hepatitis and cirrhosis accounts for 7% of all cancers. The incidence of liver cancer is associated with the prevalence of hepatitis B virus [7]. There is a clear geographical distribution of hepatitis virus incidence, however, the available risk estimates are currently unclear. Due to the very high prevalence of metabolic syndrome, chronic hepatitis B and hepatitis C are prevalent [8,9], resulting in a risk ranking of liver cancer that exceeds the global average. The incidence of liver cancer caused by non-alcoholic fatty liver disease is common with dietary culture, and the risk of obesity, hyperlipidemia, hyperglycemia, hypertension, cardiovascular disease, and type 2 diabetes will also increase [10]. According to the data, there is a risk of developing cirrhosis in 3~7 years, but non-alcoholic fatty liver disease may also lead to liver cancer without cirrhosis [11]. The likely incidence of liver cancer due to nonalcoholic fatty liver disease increases with age until it reaches a peak at about the age of 70 [12]. NAFLD is diagnosed as the accumulation of fat in the liver, mainly triglycerides containing more than 5% of the liver's body weight, and more than 10% of liver cells are found to have fat vacuoles in liver tissue sections [13,14].

Non-Alcoholic Fatty Liver Disease (NAFLD) Develops into Cirrhosis or Liver Cancer

Most cases of NAFLD lead to cirrhosis and liver cancer, and liver cancer is also caused by chronic hepatitis B or C or alcohol consumption. The main pathogenesis of non-alcoholic fatty liver disease is that insulin resistance promotes the release of fatty acids from peripheral adipose tissue to the liver, which causes excessive fatty acids to accumulate in the liver to form triglycerides, and the increase in the accumulation of triglycerides promotes the synthesis of endogenous lipids in the liver to form fat cells, which makes more triglycerides accumulate in the liver and inhibits the endogenous lipolysis pathway, and also inhibits the synthesis of Very Low-Density Lipoprotein (VLDL) and Low-Density Lipoprotein (LDL) pathways [15]. However, if excessive triglycerides accumulate in the liver and are not transported to the peripheral adipose tissue, the adipocyte hormone is imbalanced. Leptin increases, and adiponectin decreases, resulting in the accumulation of peripheral adipose tissue and resulting in obesity, which accumulates in skeletal muscle and becomes sarcopenia [16-18]. The increase of insulin-like growth factor-1 increases the activity of proto-oncogenes, and there is an incidence and mortality of liver cirrhosis and liver cancer. The high-risk factors for the transformation of NAFLD to liver cancer are male sex, older age, and high Body Mass Index (BMI) [19]. Prospective studies have found that obesity and diabetes are high-risk factors for the development of NAFLD, that NAFLD is associated with a high risk of fatal cardiovascular disease events [20], that NAFLD may be associated with chronic kidney disease due to

obesity, renin-vasopressin system, fructose metabolism, and lipid dysregulation, and that most NAFLD is associated with liver cancer and cirrhosis with more than two metabolic diseases, and that in obese patients with NAFLD, Hypertension and hyper-insulin resistance are risk factors for predicting cirrhosis and fibrosis [21]. This perspective mainly explores the effect of NAFLD after hepatectomy on the risk of dementia in patients with Alzheimer's disease in the NCCN Patient Guidelines for high-risk liver cancer disease analysis. The effects of nonalcoholic fatty liver disease on liver cancer have been discovered through long-term follow-up studies of about 10 years. NAFLD has a 30%~50% risk of developing cirrhosis or liver cancer in 5~7 years [22].

The Growing Severity of NAFLD Makes the Signs of Alzheimer's Disease More Severe

For older people over the age of 65 with Alzheimer's disease, it is a serious problem. Liver inflammation caused by nonalcoholic fatty liver disease in adults over 65 years of age causes the activation of microglia in the brain and may induce neuronal apoptosis, leading to signs of Alzheimer's disease [23]. As we age, the growing severity of NAFLD makes the signs of Alzheimer's disease more severe. Patients with NAFLD develop neurodegenerative complications such as Alzheimer's disease in old age [24]. NAFLD occurs as a result of cirrhosis, and its risk factors include the elderly and metabolic syndrome factors. NAFLD is a common occurrence in patients with Alzheimer's disease and is at high risk of dementia [25]. This is due to the dysfunction of the blood-brain barrier due to neuroinflammation induced by nonalcoholic fatty liver disease, which leads to abnormal metabolic function associated with the liver-brain axis, leading to Alzheimer's disease [26]. The brain and liver are two relatively independent organs due to the isolation of the blood-brain barrier, and there is a similar lymphatic system in the brain responsible for detoxification, which is responsible for transporting cerebrospinal fluid and lymphocytes to the lymph nodes in the neck [27]. Nearly 70% of people with dementia worldwide have Alzheimer's disease. Cranial neurological disorders arise from the brain's inability to perform the function of poor protein storage, and these Alzheimer's patients often have more severe forms of dementia, memory loss, and hippocampal gyrus atrophy [28]. If the elderly over 65 years old exclude type 2 diabetes, obesity, renin-vasoconstriction system, hypertension, and high insulin resistance, it is possible for liver cancer patients with non-alcoholic fatty liver disease to be caused by non-alcoholic fatty liver disease. People with type 2 diabetes have twice as many cases of liver cancer as those without diabetes. Obese patients and type 2 diabetic patients also have non-alcoholic fatty liver disease, so obese patients and type 2 diabetic patients are at higher risk of developing liver cancer.

Liver Surgery to Remove NAFLD Part of the Liver in Alzheimer's Cancer Patients

According to the 2019 NCCN Guidelines for the Diagnosis of Liver Cancer Patients, from 2009 to 2019, the health insurance database collected data on the risk of dementia in patients with Alzheimer's disease and liver cancer from NAFLD after resection. Risk factors for people with liver cancer vary widely depending on

age, race, or ethnic group. NAFLD is more common in patients with Alzheimer's disease (65 to 85 years old) [29]. NAFLD is found in people aged 65 to 85 years, and Alzheimer's disease can also occur. From 2009 to 2019, the Statistical Analysis Database collected data on the risk of liver cancer resection in patients with Alzheimer's disease from NAFLD [30]. Liver cancer in non-alcoholic fatty liver disease requires surgery to remove part of the liver cancer tissue, and the regenerated liver function is sufficient to meet the body's needs [31], and the liver's regeneration ability is due to the remaining liver will grow back, and in patients with good liver function, as long as the proportion of liver resection does not exceed 70% to 80%, the remaining liver tissue will be enough to supply the body with the energy needed for metabolism, and will grow back to its original size and weight. The tumor part of the liver is removed from one or more lobes of the liver [32]. Liver surgery to remove part of the liver in elderly cancer patients, postoperative cognitive dysfunction, and dementia. Certain anesthetics cause inflammation of nerve tissue, which can lead to the appearance of precursors to Alzheimer's disease, including the formation of amyloid plaques and the entanglement of nerve fibers into a state of mental decline. Surgical anesthetics for liver cancer in NAFLD can render a person unconscious by blocking the transmission of information between different areas of the cerebral cortex [33]. Alzheimer's disease is a progressive neurodegenerative dementia disease. The time of disease degeneration is not certain, the nerve cells in the brain are destroyed, the most obvious early symptoms are memory loss, and there are problems in the recognition of time, place and person, mainly because of the invasion of the hippocampal gyrus, and abnormal nerve fiber entanglement. In the course of dementia, there is a transition zone between the normal aging of mild cognitive impairment and the onset of signs of dementia [34]. Facing more complex work tasks or social environments may cause problems, but simple daily life will not be affected. The neurodegenerative dementia disease of Alzheimer's disease is different from the vascular dementia disease after liver resection surgery for liver cancer.

To Assess the Risk of Developing Dementia After the Surgery Performed

During the 3-year follow-up period after liver cancer resection surgery, the association between liver cancer resection surgery and dementia is currently to be studied, according to the 2019 NCCN Liver Cancer Patient Diagnosis Guidelines from 2009 to 2019 The statistical analysis database collected data on the risk of dementia in patients with Alzheimer's disease after liver cancer resection in patients with non-alcoholic fatty liver cancer undergoing liver cancer resection for anesthesia assessment [35]. In nonalcoholic fatty liver disease, insulin resistance causes fatty acids to be released from the adipose tissue of extrahepatic tissues, causing inflammation of the cranial nerves, and dementia is different from degenerative dementia caused by the inability of brain tissue to perform its clearing function and the accumulation of type B starch protein A [36]. A study on the surgical transfer of liver cancer in elderly patients with Alzheimer's disease caused by nonalcoholic fatty liver disease is based on the proposed liver regeneration mechanism for liver cancer resection in patients with Alzheimer's disease liver

cancer caused by nonalcoholic fatty liver disease. We used the Cox proportional hazards model to estimate the association between patients with Alzheimer's disease liver cancer after liver cancer resection surgery and patients with dementia [37], and based on gender, age, ethnicity, eligibility, income, Body Mass Index (BMI), physical activity, alcohol status, smoking status, dietary patterns, consumption of sugar-sweetened beverages, High-Density Lipoprotein (HDL), Low-Density Lipoprotein (LDL), history of cancer, history of diabetes, history of Cardiovascular Disease (CAD), and hypertension. To assess the risk values between patients with dementia after resection surgery for liver cancer and dementia at baseline. Number and percentage of dementia disease due to neurodegenerative Alzheimer's disease or vascular dementia disease after surgery [38]. The risk of dementia was higher in women than in men, with 39.9% of men and 60.7% of women. And with the increase of age, there is a tendency to gradually increase. Dementia between the ages of 65 and 89 is mostly associated with Alzheimer's disease, and non-Alzheimer's disease is different from dementia caused by liver cancer resection.

Discussion

Dementia is more common in older people. Dementia is a combination of symptoms that can be broadly divided into degenerative and vascular, as well as both. Degenerative dementia is the most common form of dementia in patients with Alzheimer's disease, mainly due to the degeneration or lesion of nerve cells in the brain, resulting in memory loss and cognitive problems in the brain [39]. The other is vascular dementia, which is mainly caused by problems with the blood vessels in the brain, resulting in problems in the supply of oxygen to the brain, and the death of brain cells causing mental decline in patients. Alzheimer's disease is an irreversible form of degenerative dementia. In recent years, the latest studies have found that non-alcoholic fatty liver disease is the most common liver disease in the world, not only United States, but also in many countries in the world, including Brazil, Japan, Australia, Germany, etc., with an incidence of 15~45%, and it is also necessary to pay attention to its prevalence and related complications in Asian countries [40]. The association between NAFLD and liver cancer has been established from the National Comprehensive Cancer Network (NCCN) Clinical Practice Guidelines in Oncology in the United States, and the risk of surgical anesthesia has been established, allowing patients to choose the type and form of surgery [41]. Nonalcoholic fatty liver disease occurs in obese people or diabetic patients, with an incidence of 54%. The incidence of NAFLD is also as high as 82% in non-diabetic obese patients, suggesting that it is related to metabolic syndrome. The removal of Chronic Hepatitis B (HBV) and Hepatitis C Virus (HCV) infections and NAFLD over 10 years between 2009 and 2019 led to the current incidence of liver cancer, which has tripled over the past decade [42], while the 5-year survival rate is still below 12%. At present, the number of people suffering from liver cancer in the world is as high as 1 million every year. Liver cancer is a major global health problem. Risk factors for liver cancer patients include chronic hepatitis B or hepatitis C, alcoholic hepatitis, and non-alcoholic fatty liver disease, and the main risk factors are non-alcoholic fatty liver disease

[43]. Patients who wake up after surgery have cognitive decline or memory loss. Liver cancer surgical anesthetics can not only cause temporary Alzheimer's symptoms but also worsen the condition of patients with Alzheimer's disease. Anesthetics for liver cancer surgery tend to detect the phenomenon of dementia rather than normal aging, and many people think that people have normal Alzheimer's disease aging, but it is often easy to detect delayed treatment [44]. With an aging global population, younger liver disease, and modern lifestyles, there is no effective solution for NAFLD. But it is also true that it faces the effects of modern diseases. It may be necessary to face the suffering of diseases, so the concept of health and respect for nature has gradually strengthened, integrating online and physical channels. Through the combination of virtual and real, the original concept of saving people and saving the world is jointly realized, and reasonable feedback is created. In addition, the combination of high-tech, advanced medicine, genomic personalized medicine, and preventive medicine will become the focus of the future development of the biotechnology industry [45].

It also insists on improving people's health and quality of life and providing a consultant model to assist in healthcare. Advocate personalized anti-aging programs, preventive medicine health management, and awaken the body's original anti-fatty liver self-healing ability, so everyone can live a healthy and healthy life. The management consultant of the integrated medical clinic, if the benefit is significant, will be extended to other medical clinics in the future to achieve integrated development [46]. It may be difficult to collect patient data, and the current solution is to classify and model the symptoms of the patients, and the results of the more anticipated results have been confirmed. The global population of Alzheimer's disease is aging, the younger age of liver cancer disease in NAFLD disease, and the risk impact of modern lifestyles of dementia, due to factors such as NAFLD, Alzheimer's disease, dementia, hepatitis B and C in the NCCN Patient Guidelines for high-risk liver cancer disease analysis, which are effective in finding reasonable solutions today, but also do face the impact of modern diseases [47]. It may be necessary to face the suffering of diseases in advance, and the combination of high-tech advanced medicine, genomic personalized medicine, and preventive medicine will become the focus of the future development of the biotechnology industry. Therefore, the concept of health and respect for nature is gradually strengthened, and it also insists on cross-disciplinary integration and development to improve people's health and quality of life and provides a consultant model to assist in health care [48]. The Institute of NAFLD advocates a personalized anti-Alzheimer's disease dementia risk plan, medical health management for the prevention of liver cancer disease, awakens the body's original anti-dementia risk self-healing ability, and reverses the impact of NAFLD on the dementia risk of Alzheimer's patients in the analysis of high-risk liver cancer diseases [49]. The management consultant of the integrated academic research and national development medical clinic will be expanded to other medical hospitals in the future to achieve cross-field integration and development.

Acknowledgement

None.

Conflict of Interest

None.

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