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Treatment of Hepatocellular Carcinoma (HCC)

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ABSTRACT
Hepatocellular carcinoma (HCC) or hepatoma is the most common type of primary liver cancer, followed by malignant lymphoma, fibrosarcoma, and hemangioendothelioma. In high-incidence areas, the most common cause is HBV transmitted at birth, and HCC is diagnosed about a decade earlier than in North America and Europe, where the most common etiology is HCV acquired later in life. This research uses the contrast review method, meaning the journal review method by finding differences between several research journals and then drawing conclusions, by taking several research journals that use the same sample but different research methods, different reagents used or different data applications used. In this study it was concluded that Hepatocellular carcinoma (HCC) or hepatoma is the most common type of primary malignant tumor of the liver. Hepatitis B and C infection, alcohol, aflatoxin B1, illicit drugs, cirrhosis, obesity, and diabetes mellitus are all risk factors for HCC.

Introduction

Hepatocellular carcinoma (HCC) or hepatoma is the most common form of primary liver cancer, followed by malignant lymphoma, fibrosarcoma and hemangioendotelioma. The prevalence of HCC varies geographically (Asafo-Agyei & Samant, 2022). The disease burden is highest in areas with endemic HBV (Hepatitis B Virus), this is the case in sub-Saharan Africa and East Asia, where the prevalence of HBsAg is 8% or more, the incidence is over 20 per 100,000 people. Countries that are located in the Mediterranean region, such as Italy, Spain, and Greece, have rates between 10-20 per 100,000 individuals, while North and South America have relatively low rates (less than 5 per 100,000 individuals) (Wee, 2011). The worldwide distribution of HCC cases is attributed to the predominant viral hepatitis in the underlying population and the age at which the disease was first contracted. In areas with a high incidence, the most common cause is HBV transmitted during birth, the diagnosis of HCC is 10 years earlier than in America or Europe, where the most common cause is

HCV acquired later in life. HCC is more common in men than women because of the higher prevalence of HBV, HCV, and alcohol consumption, these factors may have a more carcinogenic effect in men. In 80 to 90% of cases, HCC is caused by chronic liver disease (Tseng et al., 2012). Over 80% of patients with hepatocellular carcinoma have liver cirrhosis. Hepatoma is common and frequent in patients with cirrhosis of the liver, which is a result of chronic viral hepatitis (Mittal & El-Serag, 2013).

Chronic viral hepatitis is an important risk factor for hepatoma, the virus that causes it is hepatitis B and C viruses. Hepatoma patients are 88% infected with hepatitis B or C. This virus is closely related to the onset of hepatoma. Hepatoma often goes undiagnosed because the symptoms of carcinoma are covered by the underlying disease of liver cirrhosis or chronic hepatitis (Waller et al., 2015). If symptoms appear, it is usually advanced and life expectancy is about a few weeks to months. The most frequent complaints are reduced appetite, weight loss, pain in the upper right abdomen and yellow looking eyes (Bosman et al., 2010). Alpha Feto Protein (AFP) examination is very useful for establishing the diagnosis of this hepatoma disease (Tortora & Derrickson, 2012).

The use of ultrasound, Computed Tomographic Scanning (CT Scan), Magnetic Resonance Imaging (MRI) is important for establishing the diagnosis and knowing the size of the tumor (Tunissiolli et al., 2017). Frequent complications of cirrhosis are ascites, upper gastrointestinal bleeding, hepatic encephalopathy, and hepatoronal syndrome. Hepatorenal syndrome is a state in patients with chronic hepatitis, liver malfunction, portal hypertension, which is characterized by impaired renal function and blood circulation (Coppola et al., 2018). This syndrome has a high risk of death.

Research Methods

This research uses the contrast review method, meaning the journal review method by finding differences between several research journals and then drawing conclusions. The Contrast method is one of the favorite methods of some students and is used as a mass method that must be used in the final project preparation guide. This method is the opposite of the compare method, so it can take several research journals that use the same sample but different research methods, different reagents used or different data applications used.

Results and Discussions

1. Advances in Minimally Invasive Surgery for Hepatocellular Carcinoma

In his studies, it was found that the volume of bleeding in patients undergoing robotic hepatectomy is significantly lower. No significant differences in complications following surgery are presented; however, there are some notable exceptions. However, patients who underwent robotic liver resections had lower rehospitalization rates than those who underwent traditional open surgery. Minimally invasive surgeries (robotic and laparoscopic) are more expensive (Di Tommaso et al., 2007). It can significantly reduce the volume of blood lost during surgery and shorten the duration of treatment;

the volume of the tumor of patients undergoing laparoscopic liver resection was significantly smaller than that of patients in the open surgery group. Minimally invasive surgery for HCC is not a simple form of minimally invasive technology, but instead a comprehensive concept that involves multiple procedures (Hennedige & Venkatesh, 2013).

The ALPPS procedure was proposed by Schnitzbauer et al. in 2015. The primary goal of ALPPS is to block the blood supply to tumors, promote the growth of remnant liver, and avoid postoperative liver failure. However, PVE can assume the same role in clinical practice. Currently, there is no empirical evidence that supports the overall course of ALPPS. With the advancement of technology and the improvement of surgical techniques, patients will have a greater opportunity to benefit from minimally invasive surgical procedures for the treatment of liver diseases (Hafez et al., 2022).

2. Advances in Resection and Transplantation for Hepatocellular Carcinoma

From the study's results and discussion, it can be learned that the recurrence of HCC following transplantation is between 10-20% and may be higher because the criteria are expanded. The treatment of recurrences following OLT can lead to prolonged survival, however, this is a challenge and is dependent on the location of the recurrence, the number and duration. Many centers have protocols for monitoring tumor recurrence that involve imaging serially and measuring tumor markers, such as AFP, for several years following transplantation. The majority of relapses occur in the first two years, but later occurrences are mostly extrahepatic metastases. Any new tumors that are identified should be biopsied in order to confirm them as HCC and to assist with decisions regarding their management (Jasirwan et al., 2020). Treatment methods may include surgical excision, local ablation, radiation therapy, or chemotherapy. TACE is avoided for recurrent tumors in the transplanted liver due to the concern of arterial thrombosis (Balogh et al., 2016).

The greatest benefit of multiple treatments for HCC is that resection or ablation can be attempted. It is possible that the specific immunosuppression has a negative or positive effect on recurrent HCC. Mammalian targets of rapamycin inhibitors have been shown to have antitumor activity, and encouraging preliminary studies have been conducted with these compounds. Patients who took mTOR inhibitors had longer RFS and OS at 5 years. Additionally, subgroup analysis demonstrated that inhibitors of mTOR led to greater survival benefits and reductions in tumor-related deaths in low-risk patients, patients aged <60 also benefitted. This suggests that the utilization of sirolimus is linked to a lower probability of recurrence. The utilization of immunotherapy has shown some promise, but has not been recommended in transplant patients due to reports of rejection (Jemal et al., 2017). The process of rejection is still unknown, but it is believed to be caused by the activation of immune cells that are CD8+ and are associated with the effector cells, this results in the downregulation of helper cells (Ogunwobi et al., 2019).

3. **Case Report: Transarterial Chemoembolization (Tace) As Therapy of Choice in Hepatocellular Carcinoma48**

From the results and discussion of the study, it can be concluded that TACE is the locoregional therapy of choice in treating intermediate to advanced stage KSH. Currently, many studies have examined the use of TACE therapy in the early stage and even the most late stage in KSH patients, where TACE provides better results in KSH patients. TACE evaluation using the expansion of the necrosis area is an optimal indicator in accordance with the modified criteria, namely mRECIST and EASL.

4. **Management of Ruptured Hepatocellular Carcinoma Invading The Gastrointestinal Tract: A Case Report**

From the study's results and discussion, it can be learned that GIT invasion is an uncommon complication of HCC that was documented in only a handful of publications. Many cases have bleeding as their primary presentation. Despite the poor prognosis, complete surgical removal of the tumor can be a reassuring and life-extending treatment for these patients (Singal et al., 2020).

Conclusion

Based on the research and discussion, it can be learned that hepatocellular carcinoma (HCC) or hepatoma is the primary malignant tumor in the liver that is most commonly observed. Risk factors for HCC include hepatitis B infection, hepatitis C infection, alcohol, aflatoxin B1, illegal drugs, cirrhosis, obesity, and diabetes mellitus. Liver cancer is the sixth most common cancer, and the fourth leading cause of death from cancer worldwide, HCC is most commonly diagnosed in men, with a male-to-female ratio of 2:1 to 4:1 (Lotfollahzadeh et al., 2017). Clinical signs of HCC include upper abdominal pain, weight loss, a fasting sensation, a feeling of fullness, swelling in the right side of the abdomen, a decreased appetite and a feeling of weakness (Ferlay et al., 2015).

The diagnosis of HCC is made when two or more than five criteria are present, or only one of the four or five criteria of PPHI, the HCC consensus developed by the Japan Society of Hepatology can be utilized in the diagnosis of HCC. HCC can be categorized based on the American Joint Commission on Cancer (AJCC), the Barcelona Clinic Liver Cancer (BCLC), the Eastern Cooperative Oncology Group (ECOG), and Child-Pugh (Waghray et al., 2015; Kamarajah et al., 2018). The examination of HCC includes laboratory, biopsy, imaging by ultrasound, CT, angiography, MRI, and PET. Prevention of HCC can be accomplished through hepatitis vaccination and administration of antiviral drugs in hepatitis. The treatment of HCC includes both surgical removal of the liver and radiotherapy, as well as non-surgical therapies for the liver and liver transplantation. The outlook of patients with HCC is dependent on the size of the tumor, the degree of malignancy on histopathology, the severity of the underlying liver disease, the presence or absence of metastases, and the extent to which the tumor has spread to adjacent structures.

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