Biomedical Research 2017; 28 (9): 4092-4095

ISSN 0970-938X
www.biomedres.info

Clinical effects of interventional embolization and surgical resection on patients with postoperative recurrence of primary hepatic carcinoma.

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Abstract

Objective: This study aims to compare the clinical effects of interventional embolization and surgical resection on patients with postoperative recurrence of primary hepatic carcinoma.
Methods: Seventy-two patients with postoperative recurrence of primary hepatic carcinoma in our hospital from January, 2008 to June, 2011 were selected randomly. The patients were divided according to therapies into an intervention (n=30) and resection group (n=32). Patients of the intervention group were given interventional embolization, whereas patients of the resection group were given surgical resection treatment. The one-year, three-year and five-year survival rates, recurrence rates, incidence of adverse effect and hepatitis fibrosis indices of the two groups were compared.
Results: The resection group has significantly higher one-year, three-year and five-year survival rates than the intervention group (P<0.05). No statistical significance (P>0.05) was observed in the differences in the one-year, three-year and five-year recurrence rates of the two groups.
Conclusions: Compared with surgical resection, interventional embolization gave patients with postoperative recurrence of primary hepatic carcinoma significantly longer long-term survival rate and lower recurrence rate, but could also effectively improve the hepatitis fibrosis indices of patients. Interventional embolization can be widely promoted in clinical use.

Keywords: Primary hepatic carcinoma, Recurrence, Interventional embolization, Surgical resection.

Accepted on February 6, 2017

Introduction

Primary hepatic carcinoma is one of the common malignant tumors, ranking second in malignant tumors with respect to fatality rate. Surgical treatment is the first choice or primary hepatic carcinoma. However, surgical treatment cannot eliminate hepatoma carcinoma cells and can easily cause postoperative recurrence. At present surgical resection and interventional embolization are the main therapies against postoperative recurrence of primary hepatic carcinoma [1]. For this reason, the clinical effects of interventional embolization and surgical resection on patients with postoperative recurrence of primary hepatic carcinoma were compared to provide references for clinical treatment. Research results are provided in the following text.

General Data and Methods

General data

Seventy-two patients with postoperative recurrence of primary hepatic carcinoma in our hospital from January, 2008 to June, 2011 were randomly selected. Pathological examination indicated that all patients conformed to the diagnostic standard of recurrence of liver cancer. This study was conducted with the consents of the medical ethics committee of the hospital and patients. Patients were asked to sign the informed consent. Respondents were divided into the intervention (n=30) and the resection groups (n=32) according to therapies. The intervention group comprised 17 males and 13 females, ranging in age from 31 to 78 years, (55.41 ± 10.36 in average). The resection group included 18 males and 14 females, ranging in age from 32 to 79 years, (54.38 ± 11.98 in average). The differences in general data (e.g. gender and age) between the two groups did not present statistical significance (P>0.05), indicating that these two groups were comparable.

Therapy

The intervention group was given interventional embolization: that is, the femoral artery was punctured using percutaneous Seldinger method. The common hepatic artery was cannulated to produce arteriography with iodinated oil. . After determining the feeding artery feeding the tumor, the left and right arteries of the liver, were cannulated, and 100 mg cis-platinum, 60 mg pharmorubicin and 20 ml 40% iodinated oil were injected into the recurrence nidus. The resection group underwent surgical resection: that is conventional laparotomy was conducted under general anesthesia and trachea cannula to cut tissues into 1 cm range outside the nidus. Irregular hepatic lobectomy was performed when too many nidi, were found [2].

Observation indices

The one-year, three-year and five-year survival rates, recurrence rates, incidence of adverse effect, and hepatitis fibrosis indices of the two groups were observed [3]. Adverse effects included pain, hemorrhage, abdominal infection, pulmonary infection, and sustained low-grade fever. Hepatitis fibrosis indices included Laminin (LN), Hyaluronic Acid (HA), Human Pro-Collagen type III (HPC- III) and collagen type IV (IV-C).

Statistical analysis

Data were processed by SPSS22.0 and "$\bar{x} \pm S$" denoted the measurement data. T-test between the two groups was conducted and "%" represented the enumeration data. χ^2 test between the two groups was implemented, and $P<0.05$ indicated statistically significant difference.

Results

Comparison of hepatitis fibrosis indices

The resection group had significantly lower HA, HPC-III, LN and IV-C levels than the intervention group ($P<0.05$) (Table 1).

Table 1. Comparison of hepatitis fibrosis indices.

Groups	HA (μg/L)	LN (μg/L)	HPC- III (μg/L)	IV-C (μg/L)
Resection group (32)	278.32 ± 75.24	219.61 ± 64.21	112.17 ± 32.08	119.46 ± 19.21
Intervention group (30)	353.31 ± 82.18	279.27 ± 65.34	161.43 ± 38.29	154.67 ± 33.14
t	11.254	3.625	5.504	5.518
P	0.000	0.000	0.000	0.000

Comparison of one-year, three-year and five-year survival rates

The one-year, three-year and five-year survival rates of the resection group after surgical treatment are 81.25%, 43.75% and 28.13%, respectively, which are significantly higher than those of the intervention group (53.33%, 16.67%, and 10%) ($P<0.05$). The results are listed in Table 2.

Table 2. Comparison of one-year, three-year and five-year survival rates.

Groups	one-year survival rate	three-year survival rate	five-year survival rate
Resection group (32)	26 (81.25%)	14 (43.75%)	9 (28.13%)
Intervention group (30)	16 (53.33%)	5 (16.67%)	3 (10.00%)
χ^2	17.708	17.391	10.651
P	0.000	0.000	0.001

Comparison of one-year, three-year and five-year recurrence rates

The one-year, three-year and five-year recurrence rates of the resection group after surgical treatment are 15.63%, 34.38% and 50%, whereas those of the intervention group are 20%, 30%, and 56.67%, respectively. The differences of one-year, three-year and five-year recurrence rates between the two groups are not statistical ly significant ($P>0.05$). The results are shown in Table 3.

Comparison of incidence of adverse effects

In the resection group, there are three cases of pain, two cases of hemorrhage, two cases of abdominal infection, one case of lung pain and 1 case of poor wound healing were observed, representing 25% incidence of adverse effects. In the intervention group, there are four cases of pain, two cases of sustained low-grade fever and one case of pain at puncture were identified, representing 23.33% incidence of adverse effects. No statistically significant difference was observed

between the two groups in the incidence of adverse effects (P>0.05).

Table 3. *Comparison of one-year, three-year and five-year recurrence rates.*

Groups	one-year recurrence rate	three-year recurrence rate	five-year recurrence rate
Resection group (32)	5 (15.63%)	11 (34.38%)	16 (50%)
Intervention group (30)	6 (20%)	9 (30%)	17 (56.67%)
χ^2	0.652	0.439	0.894
P	0.419	0.507	0.344

Discussion

Primary hepatic carcinoma has atypical clinical features. Approximately 70% of small liver cancers (<5 cm) have no symptoms and approximately 70% of subclinical liver cancers without symptoms are small liver cancers [4]. Liver cancer with symptoms indicates that the carcinoma has grown to a large size and can be rapidly exacerbated. Within several weeks, patients will suffer from cachexia and die within several months, typically within one year. Large liver cancers mainly have two clinical lesions: liver cirrhosis, such as occurrence of ascites and collateral circulation, haematemesis and limb dropsy [5]; and tumor symptoms, such as loss of weight, malaise, hepatalgia and hepatomegaly. Chronic liver diseases caused by any reasons may play an important role in the incidence and development of liver cancer [6]. Epidemiological and experimental studies have demonstrated that viral hepatitis has a specific relationship with the incidence of primary hepatic carcinoma. Hepatitis B, C and D are determined as viral hepatitis related to liver cancer. Among them, hepatitis B has the closest relationship with liver cancer. The increasing HBsAg negative liver cancers in the past years are related to hepatitis D [7]. In China, approximately 90% of patients with liver cancer have been infected by hepatitis B virus. Other risk factors of liver cancer include alcoholic cirrhosis, hepatic adenoma, long-term intake of aflatoxin, other types of chronic active hepatitis, Wilson disease, tyrosinemia and glycogenosis [8].

Interventional embolization is a non-radical therapy that embolizes blood vessels through the intervention technique. This therapy is one of the main comprehensive treatments or advanced tumors [9]. Interventional embolization features definitive therapeutic effect, simple operation, low trauma to patients and repeated use, safety, reliability and low cost. Nevertheless, this treatment still has obvious side effects, such as mistaken embolization, bypass and micrometastasis, damage to normal liver cells and poor therapeutic effect to large tumors [10]. Therefore, clinical effects of interventional embolization and surgical resection on patients with postoperative recurrence of primary hepatic carcinoma were analysed. The results demonstrated that the one-year, three-year and five-year survival rates of the resection group are significantly higher than those of the intervention group (P<0.05). The differences of one-year, three-year and five-year recurrence rates between the two groups do not exhibit statistical significance (P>0.05). The resection group has significantly better hepatitis fibrosis indices than the intervention group (P<0.05). The two groups do not present statistically significant differences with respect to incidence of adverse effects (P>0.05). In summary, surgical resection can increase the long-term survival rate of patients with postoperative recurrence of primary hepatic carcinoma. Interventional embolization is inferior to surgical resection in terms of therapeutic effect, because it cannot block blood supply to tumor completely thereby failing to kill all cancer cells. The interventional group has higher hepatitis indices which could be due to the reach of chemotherapeutics in normal tissues damaging the normal hepatic cells and affecting the metabolism of hepatic cells of patients.

Conclusion

Compared with surgical resection, interventional embolization can increase long-term survival rate, reduce recurrence rate, and effectively improve the hepatitis fibrosis indices of patients with postoperative recurrence of primary hepatic carcinoma. Interventional embolization has promising prospects in the clinical treatment of liver cancers.

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