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Û çY—ßÞãYÞ YTœcãompare the antitumor effect and survival between transcatheter arterial chemoembolization (TAE) and transcatheter arterial infusion chemotherapy (TAI) in patients with hepatocellular carcinoma (HCC). 9ãYJs254 patients with unresectable HCC were retrospectively examined. Among these, 161 patients were treated with TAE, and the remaining 93 patients were treated with TAI. tãçé YçComplete tumor response (CR) and partial tumor response (PR) were achieved in 92 patients (57%) in the TAE group and in 28 patients (30%) in the TAI group (P<0.05). Median survival time was 1.3 years and survival rate of 1 year was 62% in the TAE group, and they were 1.1 years and 56% in the TAI group respectively (P>0.05). ÷s¥Þ éYTÆ¥ has a higher antitumor effect than TAI, but does not significantly improve the survival of patients with HCC.

Þãe és—Hepatocellular carcinoma; Transcatheter arterial chemoembolization; Transcatheter arterial infusion chemotherapy; Survival

Hepatocellular carcinoma (HCC) is one of the most common malignancies in the world, especially in Asia and Africa. However, the frequent association of this malignant tumor with cirrhosis results in many patients being unable to treat by surgical resection. Transcatheter arterial chemoembolization (TAE) and transcatheter arterial infusion chemotherapy (TAI) have been widely performed and are currently the mainstay of non-surgical treatment of HCC[1–5]. However, the survival benefit of TAE in patients with advanced HCC remains to be accurately determined[6,7]. In this study, to evaluate the efficacy of additional embolization on TAI, we compared the antitumor effect and survival between TAE and TAI in patients with advance HCC.

MATERIALS AND METHODS

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254 consecutive patients (196 mals, 58 females; age range 22-82 years old; mean 47.1±11.6 years old) with previously untreated advanced HCC recieved treatment with TAE or TAI from June 1994 to December 1998 and were enrolled in this study. The clinical profiles of 254 patients on initial admission are shown in Table 1. Patients with extrahepatic metastasis were excluded. The diagnosis of HCC was based upon results of radiological investigations [ultrasound, computed tomography (CT), magnetic resonance imaging (MRI), hepatic angiography and so on] together with elevated levels of serum α-fetoprotein (AFP). The proportions of patients in the TAI group categorized as child-push stage B and C and mutiple tumor were higher than in the TAE group (P<0.05), but there were no significant differences in the other baseline characteristics.

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Following conventional celiac angiography, the catheter was superselectively inserted into the proper hepatic artery or its distal braches supplying the target tumor. TAI was performed by injecting mitomycin and epirubicin. In the patients treated with TAE, TAI was performed followed by administration of a mixture of Lipiodol and anticancer

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drugs. The dosages of anticancer drugs and Lipiodol were administrated based on tumor size or liver function, follow-up examinations induding CT and AFP were performed after 1 month and every 3~4 months. Patients received additional TAE for TAE group, and TAI for TAI group during the follow-up period.

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Contrast-enhanced CT was performed in all patients 1 month following TAE or TAI, we regard Lipiodol accumulation in tumor as being necrotic[8] . We defined complete response (CR) as disappearance or 100% necrosis of all tumor, partial response (PR) as ⩾50% reduction and/or necrosis, and minor response (MR) as <50% but ⩾25% reduction and/or necrosis, progressive disease (PD) was defined as more than 25% enlargement and/or the appearance of any new lesions. No change (NC) was considered as disease not quanlifying for classification as CR, PR, MR, or PD. Survival time was defined as the time from the date of the first treatment to the date of death or the last date of follow-up.

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The continuoas variable was compared by student´s test and differences in survival were evaluated by log-rank tests. $P<0.05$ was considered significant in all analyses.

RESULTS

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The tumor response of the patients in both groups are shown in the table 2. In the TAE group, 21 Patients (13%) showed CR, and 71 patients (44%) had PR, the overall response rate was 57%. In the TAI group, 3 patients (3%) showed PR, and 25 patients (27%) had PR, giving an overall response rate of 30%. The overall response rate was significantly higher in the TAE group than in the TAI group ($P<0.05$).

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The median survival time and survival rate at 1 year were 1.3 years and 62% in the TAE group, and 1.1years and 56% in the TAI group. There were no significant differences in the overall survival rate between TAE group and TAI group ($P>0.05$) though these was a trend favoring the TAE group.

ô9 ã. ÓThe characteristics of 254 patients with advanced HCC

Parameters	specifications	TAE group(n=161)	TAI group(n=93)	*P* Value
Gender	Male	127	69	>0.05
Age	Median	45.5	48.1	>0.05
HbsAg	+	132	71	>0.05
HCV Ab	+	56	29	>0.05
Child-Push stage	A/B/C	73/80/8	12/61/20	<0.05
Number of tumor	Mutiple	32	53	<0.05
Size of tumor nodule	>5cm	145	75	>0.05
Vascular invasion	+	132	70	>0.05

HbsAg=hepatitis B surface antigen; HCV Ab=hepatitis C antibody

ô9 ã #The response of 254 patients treated with TAE or TAI

	TAE group (n=161)	TAI group (n=93)	*P* value
CR	21(13%)	3(3%)	
PR	71(44%)	25(27%)	
MR	46(29%)	30(32%)	
NC	15(9%)	20(22%)	
PD	8(5%)	15(16%)	
CR+PR	92(57%)	28(30%)	<0.05

DISCUSSION

The efficacy of therapies for HCC is poor. HCC is a hypervascular tumor. TAI which may increase the local concentration of anti-cancer drugs and reduce systemic side effects, has been used as palliative treatment. TAE that mixed anticancer drugs with Lipiodol, an iodized oily agent which remains selectively in tumors for long periods, may cause ischemic necrosis of tumor and enhauce the anticancer effect. In our study, complete or partial tumor response was achieved in 92 patients (57%) in the TAE group and 28 patients (30%) in the TAI group. The overall response rate was significantly higher in the TAE group than in the TAI group (P<0.05). Thus, TAE has a more marked antitumor effect than TAI because of the additional embolization. This finding is consistent with those of previous studies[9,10].

We found that the effect of TAE inhibiting tumor growth is more significant than that of TAI. But, this benefit may have been offset by worsened liver function, particularly in patients with cirrhosis [11]. Liver failure is a frequet cause of death in patients with cirrhosis and HCC. In this study, median survival time and survival rate at 1 year were 1.3 years and 62% in the TAE group, and 1.1 years and 56% in the TAI group. These were no significant differences in survival between TAE group and TAI group (P>0.05). TAE did not show a better improvement in the survival of patients with HCC compared with TAI, although there was a trend favoring the TAE group. Therefore, it is questionable whether TAE is really superior to TAI in survival.

In conculusion, TAE has a higher antitumor effect than TAI, but does not significantly improve the survival of patients with HCC. To elucidate this problem, randomized controlled trials comparing TAE with TAI for advanced HCC are required.

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