ASSESSMENT OF THE RESULTS OF ULTRASELECTIVE TRANSATERIAL CHEMOEMBOLIZATION IN PATIENTS WITH HEPATOCELLULAR CARCINOMA

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Introduction

Hepatocellular carcinoma (HCC) stands as one of the most prevalent malignant tumors globally. Traditional transarterial chemoembolization (cTACE), primarily advanced in Asian nations, proves to be a secure and effective treatment method.

However, various studies indicate that cTACE may impose hypoxic and chemotherapeutic stress on HCC tumors. The hypoxia-induced by TACE also triggers the production of vascular endothelial growth factors by remaining tumor cells, potentially contributing to disease recurrence. Surviving tumors often transform a sarcomatous appearance or exhibit a mixed hepatocellular- cholangiocarcinoma phenotype, demonstrating heightened aggressiveness and resistance to TACE. Additionally, some surviving tumors may derive sustenance from portal blood in cases of severe damage to arterial branches, including extrahepatic collaterals. Ultraselective cTACE, characterized by its application at the utmost distal part of the tumor-feeding sub-subsegmental hepatic artery, demonstrates robust therapeutic efficacy against HCCs. This study seeks to assess the safety and efficacy of ultraselective cTACE in the treatment of patients diagnosed with hepatocellular carcinoma (HCC).

Methods and Materials

From November 2020 to June 2023, 27 patients who had 30 HCC tumors performed ultraselective TACE by using Lipiodol combined chembolization. Portal vein visualization at spot radiography during TACE was divided into three grades, as follows: 0: not visualized, 1: limited near the tumor, and 2: whole or extended to the embolized area. The patients were followed after treatment for 1 week for the clinical symptom and at 1-3 months, 12 months, and 24 months after the initial intervention, contrast-enhanced multi-slide computed tomography (MSCT) or magnetic resonance image (MRI) or DSA was performed to assess treatment efficacy and tumor response by mRECIST and tumor markers (AFP or PIVKA-II). The primary safety endpoint was liver toxicity at 2-5 days and 1 month, 3 months after intervention.

Results

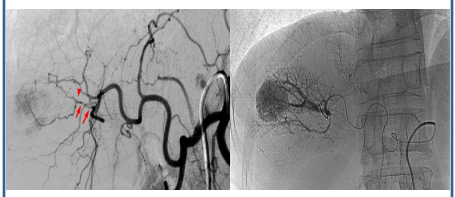
All interventional procedures were successful without any procedure-relevant complications. Of the 30 HCC tumors, 15 (50%) were classified as grade 2, 13 (43.3%) were classified as grade 1, 2 (6.7%) were classified as grade 0. The immediate HCC response rate was 100%. Overall local recurrence rates at 12, and 24 months were 7.9% and 24.8% respectively. The local recurrence rates for the grades 0, 1, and 2 groups were 50%, 23%, and 6.5%, respectively, at 12 months and 100%, 30.7%, and 13% at 24 months.

Table 1. Grades of Portal Vein Visualization, Size of Tumors Treated and Local recurrence rates with Ultraselective TACE

Grades of Portal Vein Visualization	Number tumors (N=30)	Mean Tumor Diameter (mm)	local recurrence rate at 12 months	local recurrene rate at 24 months
Grade 2	15 (50)	30±9.16	1 (6.5)	2 (13)
Grade 1	13 (43.3)	25±8.2	3 (23)	4 (30.7)
Grade 0	2 (6.7)	17.5±7.8	1 (50)	2 (100)

Note: Numbers in parentheses are percentages

Case



Images in a 66-year-old man with newly developed HCC. (a) Hepatic arteriogram shows the tumor stain and tumor-feeding branchs (arrows). (b) Spot radiograph obtained immediately after TACE shows marked portal vein visualization extending to the embolized area (grade 2 visualization). This tumor did not recur during a 12-month follow-up period.

Conclusions

Ultraselective transarterial chemoembolization (TACE) is safe and has efficacy in the treatment of hepatocellular carcinoma. In particular, local recurrence was significantly lower when a greater degree of portal vein visualization was demonstrated during TACE.

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