

Clinical evaluation of percutaneous transhepatic portal embolization using foam ethanolamine oleate and carbon dioxide (CO₂) (オレイン酸モノエタノールアミンおよび二酸化炭素のフォームを用いた肝切除術前経皮経肝門脈塞栓術の臨床的検討)

Background and Purpose: In order to increase the resectability of malignant hepatic tumors, portal vein embolization before major hepatectomy is an established method. Although ethanolamine oleate is used as an embolic material for percutaneous transhepatic portal vein embolization (PTPE), renal failure secondary to hemolysis can occur if any substance from the agent applied is released into the systemic circulation. Thus, the prophylactic administration of haptoglobin is considered necessary to decrease the risk of renal failure. Ethanolamine oleate iopamidol (EOI) can be used as a foam with carbon dioxide (CO₂), and the amount of ethanolamine oleate needed can be lessened due to the increased contact of the foam with the venous endothelium in the balloon occluded retrograde obliteration (B-RTO) method in the management of gastric varices. The purpose of this study was to evaluate the safety and effectiveness of using foamed EOI and CO₂ when performing PTPE before hepatectomy.

Methods: PTPE was performed in 15 patients using the foamed EOI and CO₂. The subjects consisted of 9 patients with hepatocellular carcinoma (HCC), 5 with bile duct carcinoma, and 1 with metastatic liver tumor due to colon cancer. The foam was made by mixing one part consisting of 5% ethanolamine oleate with two parts of CO₂. We assessed the hypertrophy to compare the future liver volume (FLR) before and after PTPE, and the % FLR volume increase was calculated after PTPE had been completed.

Results: The amount of 5% EOI was based on the volume of the target portal vein, and the mean amount was 16.8 ml (range, 14-20 mL). Technical success was achieved in 93% (14 of 15) of patients. Computed tomographic images taken one week after PTPE showed one patient as requiring a recanalized portal vein. The FLR volume before and after PTPE was 599 ± 342 and 691 ± 318 cm³, respectively (P < 0.01). The mean % FLR volume increase was 29.5%. There was no significant difference in total creatine tests before and after PTPE.

Conclusions: The technique of using foamed EOI and CO₂ is clinically safe and effective for PTPE before major hepatectomy.