

T-4

Lipiodol Deposition in NET Liver Metastases during TACE using Pressure-Enabled versus Endhole Catheters: Pilot Data from a Randomized, Internally-Controlled Trial

Julia C. D'Souza¹, Leening P. Liu², Peter B. Noel², Daniel M. DePietro¹, Gregory J. Nadolski¹, Michael C. Soulen¹.

¹Interventional Radiology, University of Pennsylvania; ²Department of Radiology, University of Pennsylvania.

BACKGROUND

Intratumoral lipiodol deposition during transarterial chemoembolization (TACE) is an imaging biomarker for response and survival in hepatocellular carcinoma. Improving delivery of liquid therapeutics during TACE may also help improve neuroendocrine tumors (NETs) outcomes. Pressure-enabled delivery catheters (PED) overcome the high resistance and interstitial pressure within the tumor microvasculature compared to endhole catheters (EH). PED have been shown to increase deposition of solid particles in tumors. Enhanced delivery of a liquid agent such as emulsified lipiodol in TACE has yet to be investigated.

METHODS

Single-center, randomized, internally controlled comparison of endhole versus PED catheter for TACE of NET liver metastases. Patients with bilobar metastases planned for staged TACE were eligible starting February 2024. Patients were randomized for which catheter would be used for their first TACE, with the other catheter used in the second TACE. Pre-embolization CTA of the treated distribution was performed to delineate tumors. After TACE, a dual energy CT scan was performed at tube voltage 100/Sn150 kVp, and reconstructions of 40, 70, and 190 keV virtual mono-energetic images and iodine maps were created. Lipiodol deposition in tumors was analyzed using iodine maps.

		PED	Endhole
# of tumors treated		10	9
Mean diameter (cm)		3.5	3.2
Mean (max) iodine deposition density	Overall	84 (404)	94 (536)
	Patient 1	39 (126)	35 (94)
	Patient 2	39 (126)	86 (297)
	Patient 5	192 (890)	111 (768)

RESULTS

Five patients are enrolled and three have completed bilobar TACE. Ten lesions were treated with PED and 9 with EH among 6 chemoembolizations in the completed patients. All patients had bowel NETs (2 jejunum, 1 rectal) with Ki-67 of <2%, 5%, and 26%. Mean tumor diameter was 3.5cm (range 1.3-5.4cm) in PED and 3.2cm (1.2-5.8cm) in EH ($p=0.64$). Mean density of lipiodol deposited per PED-tumor was 84 mg/cm³ versus 94 mg/cm³ in EH-tumors ($p=0.71$). When assessing with intra-patient control (PED to EH for each patient), the patient with hypervascular tumors on CTA (Patient 5) showed greater lipiodol deposition with PED, whereas patients 1 and 2 with tumor enhancement similar or less than background liver showed equivalent and decreased lipiodol tumor deposition with PED, respectively. No difference in adverse events was observed between catheters

CONCLUSIONS

Pilot data show no difference in lipiodol deposition from TACE in NET liver metastases when treated with PED or EH catheter when assessed on a per-tumor basis. Intrapatient analysis suggests a difference that may relate to underlying vascularity of metastases.

ABSTRACT ID 28621

