

Arterial Embolization of Unresectable Hepatocellular Carcinoma with Use of Microspheres, Lipiodol, and Cyanoacrylate

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The photographs in the article by Dr. Rand et al. [1] raise several problems. In their Fig. 5C hepatic arteriography after embolization using Glubran, lipiodol, and Embospheres reveals an extrahepatic arterial supply via the epicholedochal plexus with faint residual stains. These extrahepatic collaterals are commonly seen after proximal embolization and make repeated embolization for recurrent tumors in the future extremely difficult [2]. Of course, if the tumor is completely killed by the first peripheral embolization using Embospheres this does not matter. However, most hepatocellular carcinomas will recur at the same site or in another segment in the liver. Thus proximal embolization including the proper hepatic artery shown in the image may induce extrahepatic collaterals including the inferior phrenic artery [2], internal mammary artery [3], intercostal artery [4], renal capsular artery [5], or the omental branches [6], in addition to the epicholedochal plexus [2]. As the authors mentioned in the Discussion, peripheral targeted occlusion of tumor vessels by small particles might induce a more permanent occlusion with a longer steady state. I therefore think that additional proximal embolization using lipiodol-NBCA may not be necessary or should be minimal to the intrahepatic artery shown in Rand et al.'s Fig. 4G [1] when the tumor stain disappeared after distal embolization using Embospheres. In relation to extrahepatic collaterals and tumor viability after embolization, a dynamic contrast-enhanced study using multidetector row CT (MD-CT) may be required. The minor peripheral revascularization (Fig. 4E) or the disappearance of revascularization after the second embolization (Fig. 4H) mentioned by Rand et al. in their legend to Fig. 4 should be demonstrated by a dynamic series, and CT angiography using state-of-the-art MD-CT may visualize the extrahepatic collaterals [7] that are important for reinterventions.

References

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