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Does a Widely Adopted Approach Need Reconsideration: Embolization of Parasitized Extrahepatic Tumor Feeders in Patients Undergoing Transarterial Liver-Directed Therapy?

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To the Editor,

With great interest, we have read the article ‘The efficacy of coil embolization to obtain intrahepatic redistribution in radioembolization: qualitative and quantitative analyses’ [1]. The study raises concern on a technical approach that has become common practice in many centers performing transarterial liver-directed therapy. Coil embolization of extrahepatic feeders is generally considered to be an effective strategy to establish redistribution of flow to liver tumors through the hepatic arteries. It may simplify the infusion of radioactive particles or chemotherapeutic drugs while reducing the risk of injury to extrahepatic organs. Previous studies have demonstrated that embolization of extrahepatic feeders is feasible and is an effective approach to establish flow redistribution, as assessed by medical imaging as well a treatment response during follow-up [2–5].

In the study by Alsultan et al., flow redistribution by coil embolization of parasitized arteries was deemed to be unsuccessful in the majority of patients undergoing radioembolization. This is contradictory to earlier reports, such as the study of Abdelmaksoud et al. [5]. In this retrospective study, 73 parasitized extrahepatic arteries were embolized in 35 patients, and intrahepatic supply to hepatic tumors was successfully established in 94% of cases. The

opposing results may have been the result of differences in technique. In the study by Abdelmaksoud et al., coil embolization was preceded by embolization with large particles (500–700 of 700–900 μm). Particles were used to minimize the potential for subsequent recruitment of other extrahepatic arteries that could reestablish parasitized extrahepatic supply. For example, the right inferior phrenic artery (RIPA), which is the most common extrahepatic feeder, may be interconnected with the internal thoracic artery (ITA) or intercostal arteries (ICA). Placement of coils proximally in the RIPA may not be sufficient to reestablish intrahepatic vascularization of liver tumors as the distal RIPA branches may recruit blood through the ITA and/or ICA. We routinely perform large-particle embolization prior to coil embolization and use cone-beam CT and SPECT-CT to confirm successful intrahepatic flow redistribution. In patients scheduled to undergo radioembolization, this should preferably be performed at the time of pre-treatment angiography to allow time for redistribution and confirm technical success prior to ordering of radioactive microspheres. Embolization with particles may cause complications. For example, particle embolization of the RIPA may result in ischemic pain and reactive pleural fluid and atelectasis. In general, complications are mild and well manageable.

Another option is direct infusion of chemotherapeutics or microspheres into extrahepatic feeders. The feasibility and safety of TACE through extrahepatic collaterals has been described in many different reports. We have previously published on the feasibility and safety of infusion of Yttrium-90 microspheres into the RIPA [6].

In conclusion, coil embolization of extrahepatic feeders may fail to establish redistribution of intrahepatic tumor supply in some patients, as reported by Alsultan et al. [1]. It

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is of importance to consider other options, such as direct infusion of drugs or spheres into extrahepatic collaterals. Nevertheless, it is an approach that should not be abandoned as the efficacy of flow redistribution has been demonstrated in various other reports [2–5]. To increase technical success, coil embolization should be preceded by large-particle embolization, and it is recommended to confirm successful redistribution with cone-beam CT and SPECT/CT.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

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