Is Hepatic Artery Chemotherapy for Everyone?

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The July, 1997 issue of ONCOLOGY(11:947-970, 1997) featured a discussion by Alan Venook, “Update on Hepatic Artery Chemotherapy,” with commentaries by Lawrence L. Leichman and Steven Stain and by Nancy Kemeny. While this article and the commentaries provide excellent overviews of the current status of studies of hepatic artery chemotherapy, they fail to address the major weakness in the chemotherapy trials, the selection of appropriate patients.

Hepatic artery chemotherapy (and also hepatic chemoembolization) is highly effective in the management of patients with hypervascular liver metastases and cancers (such as most neuroendocrine cancers, hepatomas and cholangiocarcinomas) but should be expected to be little more effective than systemic chemotherapy for patients with relatively hypovascular cancers. While computed tomography of the liver can guide the selection of patients, angiography best defines patients who are most likely to respond and to maintain responses for prolonged periods of time. Patients who, on angiography, show metastatic disease or inoperable primary cancers in the liver to be less vascular then the surrounding liver are much less likely to respond to this regional therapy. The advantages of regional therapy are all related to reduced toxicity due to reduction of peak drug levels after systemic high-dose therapy while maintaining a higher area under the curve, and to the hepatic metabolism of the infused agents. These are critical factors for patient selection.

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The Author’s Response:

Dr. Douglass raises an important issue regarding the selection of patients for hepatic intra-arterial chemotherapy. Clearly, the primary diagnosis, extent of cancer, and its localization in the liver are major determinants of the potential benefit of infusional chemotherapy. It is not clear, however, that the hepatic angiographic assessment of tumor vascularity is as important or accurate a prognosticator as Dr. Douglass suggests.

In general, colorectal liver metastases in the liver are grossly hypovascular, in contrast to primary hepatocellular carcinoma or metastatic carcinoid, for example. Despite this impression, these lesions may still be well-perfused by an indwelling hepatic arterial catheter. Indeed, Kemeny et al have demonstrated a correlation between perfusion of colorectal hepatic metastases, as measured by postoperative pump Tc-MAA scintigraphy, and the likelihood of a response to chemotherapy.[1] While the Tc-MAA study partially reflects tumor vascularity, it is much more a function of blood flow and the microenvironment within the liver and tumor. Put another way, there is no assurance that hypervascular tumors will be more completely perfused than will hypovascular tumors. To my knowledge, no prospective data have established the correlation that Dr. Douglass hypothesizes. Since all patients enrolled on Cancer and Leukemia Group B 9481 who receive intra-arterial chemotherapy will have preoperative angiography and postoperative Tc-MAA scans, the possible predictive value of angiography can and will be assessed. Until such a time, however, it remains unclear that it is a useful test in predicting the benefit of intra-arterial infusional chemotherapy.

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 References:

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