LETTER TO THE EDITOR

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Contrast Harmonic-Enhanced Endoscopic Ultrasound (EUS) Is the Perfect Companion of EUS-Guided Tumor Ablation

Gianmarco Marocchi, Andrea Lisotti, and Pietro Fusaroli

Gastrointestinal Unit, Department of Medical and Surgical Sciences, Hospital of Imola, University of Bologna, Imola, Italy

To the Editor:

We read with great interest the article by Choi *et al.*,[1] published online in February 2020, describing the use of contrast-enhanced harmonic endoscopic ultrasound (CH-EUS) for guidance and monitoring of EUS-guided radiofrequency ablation (RFA) of solid abdominal tumors. The authors reported good results using CH-EUS in guiding the treatment of 19 patients with pancreatic neuroendocrine tumors (n=13), pancreatic solid pseudopapillary neoplasm (n=2), pancreatic insulinoma (n=1), adrenal adenomas (n=2) and adrenal metastasis from hepatocellular carcinoma (n=1). At the 1-year follow-up, a complete response was achieved in 68.4% of cases, with a moderate complication rate (two cases of acute pancreatitis, one mild and one moderate). In particular, CH-EUS proved useful in assessing early therapeutic responses and in targeting residual viable lesions susceptible to additional RFA sessions.

In our experience, CH-EUS was successfully used to guide ablation with ethanol injection of a 14-mm hepatocellular carcinoma.[2] The lesion was located in the deep subcapsular portion of hepatic segment 2 in a 76-year-old female patient with contraindications to surgery, in whom percutaneous ablation was considered unfeasible due to the interposition of vascular structures. The procedure was well tolerated without adverse events. Forty days later, follow-up with CH-EUS showed a tiny 3 mm residual vascularization component at the periphery of the previously treated area. In the same session, it was possible to ablate the residual area with an additional ethanol injection under CH-EUS guidance. Follow-up at 20 months with computed tomography showed neither local nor distant recurrence.

Recently, Jiang and Chai[3] reported EUS-guided laser ablation of adrenal metastasis from pancreatic cancer, and Mangiavillano *et al.*[4] reported EUS-guided RFA for colon cancer recurrence around the anastomotic site. In both cases, CH-EUS was used for identifying remnant tumor after ablation.

CH-EUS has also been used to guide EUS tissue acquisition. A large retrospective study showed that adequate specimens in the CH-EUS-guided fine needle aspiration group (96.6%) was greater than that in the conventional EUS group (97% vs 87%, respectively).[5] Kamata *et al.*[6] demonstrated that avascular areas seen by CH-EUS were a predictor of inadequate specimens after EUS-fine needle acquisition in up to 27% of cases. Additionally, Yamashita *et al.*[7] found that CH-EUS could be used for predicting the efficacy of chemotherapy in patients with advanced pancreatic cancer. The patients were divided into two groups according to the intratumoral vessel flow observed with CH-EUS, showing that the greater the vascularization of the tumors, the better were the response to chemotherapy and overall survival.

CH-EUS has increasingly gained acceptance in clinical practice,[8] ranging from the diagnosis of pancreatic cancer[9-12] to the differential diagnosis of lymphadenopathy[13,14] and gastric subepithelial tumors.[15-21] As far as EUS-guided tumor treatment is concerned,[22,23] we believe that CH-EUS offers a unique advantage by allowing for the analysis of intratumoral vessels that are not detected with B-mode. In this respect, the arterial phase is crucial for evaluation, as viable tumor tissue will be visible a few seconds after contrast agent injection. When CH-EUS is performed after EUS-guided ablation, it may show either complete absence of vascular areas, compatible with effective treatment, or residual enhanced areas suggestive of persistent tumor that needs further ablation.

CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

Correspondence to: Gianmarco Marocchi
Gastrointestinal Unit, Department of Medical and Surgical Sciences, Hospital of Imola, University of Bologna, Ospedale di Imola, Via Montericco 4, 40026 Imola, Italy
Tel: +39-542-662407, Fax: +39-542-662409, E-mail: gianmarco.marocchi@libero.it
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ORCID

Gianmarco Marocchi https://orcid.org/0000-0001-9925-3486
Andrea Lisotti https://orcid.org/0000-0002-7724-7402
Pietro Fusaroli https://orcid.org/0000-0002-4397-9314

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