Value of Contrast-Enhanced Ultrasound Quantification Criteria for Identifying Patients not Responding to Bevacizumab-Based Therapy for Colorectal Liver Metastases

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Résumé en anglais	PURPOSE: To evaluate changes in tumor vascularization parameters based on contrast-enhanced ultrasound (CEUS) quantification criteria of at least one visible liver metastasis as an early predictor of non-response to chemotherapy, including bevacizumab for colorectal cancer (CRC) liver metastases. MATERIALS AND METHODS: This multicenter prospective study included patients who received first-line bevacizumab-based chemotherapy. Tumor enhancement measured using CEUS within one liver metastasis and in relation to the surrounding healthy liver was quantified within 8 days before the first infusion of bevacizumab (E0), 24 hours after the end of the first infusion of bevacizumab (E1), in the 24 hours before the 2nd and 3rd infusion of bevacizumab on day 15 (E2) and day 30 (E3), respectively, and after 2 months of treatment (E4). Endpoints were tumor response using RECIST criteria at 2 months, progression-free survival (PFS) and overall survival (OS). RESULTS: Among the 137 patients included in this study, 109 were analyzed. Only CEUS parameters calculated in relation to healthy liver were significant. High wash-in and wash-out rates at baseline were significantly associated with a better tumor response. Increases over time E2-E0 and E3-E0 for peak enhancement were significantly associated with shorter progression-free survival. Increases over time E2-E0 and E3-E0 for peak enhancement and wash-in area under the curve were significantly associated with a shorter overall survival. CONCLUSION: This large study demonstrated that early dynamic changes in the vascularity of liver metastases evaluated by quantified CEUS are associated with outcome in patients receiving first-line bevacizumab-based treatment for metastatic CRC.
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