CONTRAST ECHOCARDIOGRAPHIC PERFUSION IMAGING CAN INDIRECTLY DEMONSTRATE THE EXISTENCE of local vascularization. This property allows for the differentiation between tumoral processes and thrombi. A quantitative approach is useful to demonstrate the uptake of contrast when the visual assessment is difficult. This method has already been used for the evaluation of cardiac masses with good results even for inexperienced observers (1). It consists of drawing a region of interest within the mass and comparing the evolution of the mean echo intensity with a similar region, generally situated in the adjacent normally perfused...
myocardium. Another potential approach is the use of parametric maps (2) (color coding of signal intensity). Ultrasound contrast quantification was performed using manufacturer-designed software (Qlab 9, Philips Healthcare, Best, the Netherlands) in typical clinical scenarios (Figures 1 to 4, Online Videos 1, 2, 3, 4, 5, and 6). The time taken to generate the curves of signal intensity for 2 pre-defined 5-mm square regions of interest was about 15 s. A color-coded static image could be computed in 16 s, and a virtual parametric movie in 10 to 20 min.

This iPIX illustrates the use of ultrasound contrast imaging quantification both in transthoracic or transesophageal application, and its role in the decision and disease management. The quantification of contrast intensity could be a reliable and fast diagnostic tool in the evaluation of intracardiac masses.

FIGURE 2 Cardiac Metastasis
An 83-year-old female patient was admitted for dyspnea. She had a history of severe chronic obstructive pulmonary disease and was still smoking. On echocardiography there was an important mid-ventricular inferolateral mass, hypermobile and slightly hyperechoic (A), attached to a normocontractile wall (Online Video 2). (B) Pulmonary imaging led to the discovery of a right pulmonary apical nodule, highly suspect of neoplasia (blue arrow). The uptake of echocardiographic contrast inside the cardiac mass was similar to the normal septal wall (D to F), but with higher intensity, confirmed by tomodensitometry (E) and the parametric map of echo intensity (G, Online Video 3). There was an involvement of subcarinal lymph nodes and another focal lesion of the spleen. The pulmonary mass and the cardiac nodule were hypermetabolic on 18F-fluorodeoxyglucose (18-FDG) positron-emission tomography (C). The age of the patient, the presence of metastasis, the lack of embolic events, and the advanced pulmonary disease required a palliative approach.
An 82-year-old female patient came to the outpatient clinic exhibiting symptoms of exertion dyspnea. The transthoracic echocardiography led to the discovery of a significant aortic valve insufficiency, left ventricle dysfunction, and a mass situated on the interatrial septum at the level of the foramen ovale. The transesophageal study revealed an irregular mass, without a visible color Doppler signal (A and B). The adjunction of a left ventricular contrast agent, with a flash-replenishment cycle, showed a significant uptake of contrast inside the tumor (C), but no change in the fibrous interatrial septum (Online Video 4). This could be demonstrated on a parametric map (F, Online Video 5), where the mass (arrow) displays a high intensity signal. Cardiac magnetic resonance imaging was suggestive of a myxoma (D). Previous embolic occurrences were demonstrated on cerebral magnetic resonance image. The patient underwent surgery for aortic valve replacement and resection of the mass. The pathology specimen confirmed a myxoma (E).
A 90-year-old female patient was admitted for cognitive impairment and dyspnea. The transthoracic echocardiography demonstrated the presence of a giant tumor occupying practically all the right atrium and a second one at the apex of a normokinetic right ventricle (A). The use of myocardial contrast demonstrated an important uptake inside the atrial mass, closely resembling the filling of the interventricular septum (B). The right ventricular hypermobile mass displayed a much lower uptake (B, Online Video 6), with a significantly lower signal intensity visualized on the parametric map (C and D). Unfortunately, the patient deceased before any other investigation could be performed. On pathology, the right ventricular mass was not found, but a thrombus existed in the right pulmonary artery. The atrial mass was a highly vascularized tumor (E) that occupied the entire right atrium (RA), without infiltrating its walls (F). A primary tumor was found in the pancreas.