A 64-year-old man with chronic liver disease presented with dyspnoea, and a chest contrast computed tomography (CT) was performed to evaluate the suspect of pulmonary embolism (Panel A).

A mass occupying the right atrium, of the same density of the myocardium at early-phase scan, was diagnosed as thrombus by CT findings. Echocardiography (Panel B) was performed with a continuous infusion of contrast and flash-replenishment assessment to dynamically evaluate whether the mass was filled by microbubbles (an intravascular tracer), vascularization raising the possibility of malignancy.

The mass filled with contrast at a similar rate compared with the myocardium (Panel B, lower panel, Supplementary material online, Video S1) confirming vascularization.

[18F]FDG positron emission tomography showed hyperaccumulation of the radioactive marker in the right atrium and liver (Panels C and D), confirming the malignancy. The general conditions quickly worsened and the patient died. The autopsy confirmed liver lesions and the mass filled with contrast at a similar rate compared with the myocardium and atrial (Panel F, lower) lesions showed features of poorly differentiated adenocarcinoma; haematoxylin–eosin staining (left) and immunohistochemistry positivity for Citytokeratin 7 (mid) and cytoplasmic pCEA (right) were consistent for cholangiocarcinoma, rather than hepatocellular carcinoma.

Supplementary material is available at European Heart Journal online.