Three-dimensional contrast echocardiography-guided alcohol septal ablation in hypertrophic obstructive cardiomyopathy

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A 58-year-old woman with hypertrophic obstructive cardiomyopathy (HOC) was referred for contrast echocardiography-guided alcohol septal ablation (ASA). Two-dimensional trans-thoracic echocardiography (TTE) showed a left ventricular outflow tract gradient of 157 mmHg and severe mitral regurgitation (Panel A; Supplementary data online, Video 1). Agitated X-ray contrast was injected in the septal artery (Panel B; arrow). Two-dimensional c-TTE study showed increased signal in the basal inferior septum (Panel C). Three-dimensional c-TTE showed that myocardial enhancement was mainly distributed at infero-septal and antero-septal basal segments (Panel D; Supplementary data online, Video 2) involving the co-apation area between the septum and mitral valve and extending to right ventricle (RV). Three-dimensional c-TTE showed the enhancement following the RV moderator band without affecting other structures (Panel E). The myocardial mass dependent on the septal artery could be calculated using the quantitative planimetry method (Panel F; 3D multi-slide study; Supplementary data online, Video 3): 10.7% of the myocardial mass. Two millilitres of ethanol was infused with good haemodynamic (Panels A and B) and clinical result, and without rhythm disturbances. The maximum troponin I value after ablation was 33 ng/dL.

Two-dimensional c-TTE requires multiple planes and make sure all segments have been analysed may be sometimes difficult. Live 3D c-TTE allows immediate confirmation of the real extension of the contrast, assures that the opacified myocardium is adjacent to the point at which the mitral valve comes into contact with the septum and allows a detailed analysis of unexpected contrast distribution. Three-dimensional c-TTE also allows the quantification of the extension (percentage) of myocardial tissue affected by the ablation. Since then, all cases in our institution are performed under 3D c-TTE guide.

Supplementary data are available at European Heart Journal – Cardiovascular Imaging online.