2D strain imaging in the setting of acute myocardial infarction

2D strain à la phase aiguë d’un infarctus du myocarde

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An 85-year-old man presented with pre-cordial pain of 3 days duration. Three years previously a DDD-pacemaker had been inserted for advanced atrio-ventricular block. His ECG could not be assessed for ischemia due to paced ventricular beats only.

Echocardiography (Vivid 7; GE, Horten, Norway) showed wall motion abnormalities in the anterior septum and apex, which were difficult to interpret due to abnormal septal motion caused by pacing (Figure 1). Two-dimensional strain imaging (Figure 2), a new technique measuring myocardial deformation based on gray-scale speckle tracking, revealed global reduction of peak systolic strain (PSS -11.4%, reference -20). Analysis of regional function showed markedly decreased PSS in the anterior septum and apical wall (Figure 3; bull’s-eye view, global and regional systolic strain). The strain curves depicted delayed peaks of systolic strain (post-systolic index, PSI) in the anterior, septal and lateral regions (Figure 4).

These observations not only suggested reduced regional systolic function in the anteroseptal region...
(PSS), but the presence of post-systolic contraction (PSI) also indicated acute ischemia. Interestingly, the area of ischemia was larger than expected, extending into the lateral regions, by visual assessment of wall motion or regional PSS.

Elevated TnT (1.0 ng/mL) and CK/MB (340/57 U/L) confirmed acute ischemia. Acute angiography revealed subtotal occlusion of the proximal left descending artery and 80% stenosis of the circumflex artery.

This vignette emphasises the validity of 2D strain imaging and its potential in the setting of ischemia if ECG and 2D-echocardiography are difficult to interpret. PSI imaging allows regional assessment of acute ischemia, which could be superior to conventional echocardiography.