Multimodality imaging of coronary artery dissection and cardiac contusion after blunt chest trauma

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A 77-year-old male presented with chest pain, 3 weeks after a blunt chest trauma caused by a horse kick. Three months earlier, he underwent aortic valve replacement and a single arterial coronary bypass graft on the circumflex artery. Physical examination was normal, except for a large haematoma on the chest (Panel E). Coronary angiography revealed a 90% stenosis on the proximal part of the left anterior descending artery (LAD) (Panel A). Of note, the LAD was only mildly diseased on the pre-operative coronary angiogram 3 months earlier (Panel B). Intravascular ultrasound imaging showed dissection and intramural haematoma in the proximal segment of the LAD (Panel C). Optical coherence tomography (OCT) imaging clearly delineated the entry port of the dissection, showing an intimal flap in a calcified atherosclerotic plaque (Panel F). Percutaneous coronary intervention with implantation of a drug-eluting stent, covering the dissection and the entire diseased segment, was performed. Mild spotty delayed enhancement was seen on T1-weighted magnetic resonance imaging after administration of gadolinium, compatible with a myocardial contusion (Panel F, Supplementary data online, Videos S1–S3). The subsequent clinical course was uneventful.

Differentiation between minor cardiac contusion and significant cardiac injury after blunt chest trauma is challenging and coronary angiography is indicated if coronary artery involvement is suspected. Intravascular imaging modalities can be useful to make an exact diagnosis. OCT, in particular, is an extremely powerful tool to detect and characterize an intracoronary dissection.

(Panel A) Coronary angiogram, performed on admission, shows a high-grade stenosis on the proximal LAD (arrow), 3 weeks after blunt chest trauma. (Panel B) The LAD (arrow) shows only mild stenosis on a coronary angiogram performed 3 months prior to the current admission. (Panel C) IVUS image of the proximal LAD demonstrates a dissection flap (arrow) and an intramural haematoma from 11 o’clock to 6 o’clock (asterisks). (Panel F) OCT image of the proximal LAD reveals a dissection flap (arrow) in an underlying calcified plaque (asterisk). (Panel C) Clinical picture of a large haematoma on the chest wall after blunt, high-impact chest trauma 3 weeks before. (Panel D) T1-weighted magnetic resonance image after gadolinium injection shows spotty delayed enhancement in the anteroseptal wall (arrows), compatible with a myocardial contusion.

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