Left main stem pulsation: easily missed angiographic phenomenon in acute aortic dissection

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A 65-year-old man was transferred to the intensive cardiac care unit with the diagnosis of acute coronary syndrome following resuscitated out-of-hospital cardiac arrest. The arrest was preceded by anginal chest pain with prominent ST-segment depression in I, II, aVL, V4–V6, and elevation in aVR leads. On admission, the patient was intubated and in cardiogenic shock (blood pressure 90/55 mmHg, thready but symmetrical peripheral pulses), ECG showed sinus tachycardia 140 b.p.m. and new-onset left bundle branch block (LBBB). Transthoracic echocardiography (TTE) revealed normal dimensions of heart chambers and aorta, no valvular dysfunction, no pericardial effusion, akinesis of anterior wall, and interventricular septum, resulting in significant left ventricular systolic dysfunction.

Urgent coronary angiography documented critical proximal stenosis of left main stem (LMS) and mild stenoses of left anterior descending, right coronary artery, and intermediate branch (Panels A and B). We performed angioplasty of LMS with a drug-eluting stent achieving an excellent angiographic result (Panel E) and resolution of LBBB. Repeated TTE remained unchanged. The patient died few hours later due to multiorgan failure. The autopsy identified DeBakey type I aortic dissection (AD).

On review of the angiogram, we noticed unusual pulsation of LMS with diastolic dynamic obstruction (Panels C and D, Supplementary material online, Video 1) that initially was not appreciated. Various mechanisms of coronary ostia involvement during AD have been described including retrograde extension of the dissection and/or bulging of the dissected false lumen.

In conclusion, LMS pulsation is a subtle angiographic finding. It can be caused by AD and easily missed, especially in emergency.

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