Simultaneous Coronary and Pulmonary Angiography to Diagnose Critical Left Main Coronary Artery Stenosis Secondary to Dilated Pulmonary Artery

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A 68-year-old woman with long-standing severe pulmonary arterial hypertension was referred for coronary catheterization for investigation of worsening exertional dyspnea associated with angina.

Coronary angiography revealed critical ostial left main coronary artery (LMCA) stenosis. Given the history of severe pulmonary arterial hypertension, simultaneous angiography of the LMCA and main pulmonary artery (MPA) was performed, which suggested a severely dilated MPA compressing the ostial to mid-LMCA, causing a critical stenosis (Figure 1A). This correlated well with coronary computed tomography, which confirmed a severely dilated MPA with a diameter of 60 mm compressing the LMCA against the sinus of Valsalva (Figure 1B). No atheromatous plaque was seen in this region.

The patient underwent percutaneous coronary intervention with stenting to the LMCA using a 3.5 × 16 mm Promus Premier drug-eluting stent (Boston Scientific, Natick, Massachusetts) (Figure 1C). Adequate stent expansion and ostial coverage was confirmed with intravascular ultrasound. Repeat computed tomographic coronary angiography 1 week post-procedure revealed a widely patent LMCA stent with good ostial coverage in the proximity of the...
dilated MPA (Figure 1D). At 1-month follow-up, the patient’s symptoms of angina had resolved.

Extrinsic compression of the LMCA should be considered as a cause of angina in patients with pulmonary hypertension. Simultaneous angiography of the LMCA and MPA was performed to diagnose our case, which correlated well with computed tomographic coronary angiographic findings. Treatment with percutaneous coronary intervention is safe and feasible.

**FIGURE 1** Simultaneous Coronary Angiography of the Left Main Coronary Artery and Main Pulmonary Artery

(A) Simultaneous angiography showing a severely dilated main pulmonary artery (PA) compressing and causing a severe stenosis of left main coronary artery (LMCA) as indicated by arrow. (B) Coronary computed tomography (CTCA) showing similar findings of PA compressing LMCA (arrow). (C) Post-successful stenting to LMCA (3.5 × 16 mm Promus Premier). (D) CTCA 1 week post-procedure showing a widely patent stent with ostial coverage. Ao – aorta; LV – left ventricle.

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