Hyperventilation test as a provocation test in catheterization laboratory

Dragana Adamović[1] , Vladimir Mitov[1], Aleksandar Jolić[1], Milan Nikolić[1], Marko Dimitrijević[1],

Tomislav Kostić[2], Milan A. Nedeljković[3], Branko Beleslin[3]

[1]Department for invasive cardiology, Medical centre Zaječar, [2]Cardiology clinic, Clinical centre Niš, [3] Cardiology clinic, Clinical centre of Serbia; Medical faculty, University of Belgrade

We present a patient in whom hyperventilation test disclosed a culprit lesion on the coronary arteries in the Cath lab. A paient, 41-years of age, was treated at the Department of Invasive Cardiology in Medical center Zajecar due to the newly developed inferolateral STEMI. Coronary angiography revealed mild-to-intermiadate LAD stenosis, OM1 was medially occluded, OM2 branch ostial stenosis of 60%, and right coronary artery was minor, without significant angiographic changes. In the same session, primary percutaneous coronary intervention (PCI) was successfully performed on OM1 with Resolute Integrity 2.5x12 mm stent implanted. Due to repeated anginal pain exercise stress test was performed, which was evaluated as positive, and the stress echocardiographic test confirmed hypokinesia of the apical and medial segments of the inferior and lateral wall. A new coronary angiography showed similar stenoses up to 50% in medial LAD and ostial OM2 have been described, but a new 70% stenosis on first diagonal branch which was treated by PCI by another 2.5x16 mm CRE8 stent implantation. One month after discharge, the patient again complained of chest pain again on moderate exertion, occasionally occurring at rest, and resolving after nitroglycerin. Repeated coronary angiography disclosed the same angiographic findings as earlier without progression or in-stent restenosis, and the operator decided to perform a hyperventilation test for 2 minutes, as an additional test to assess the culprit lesion. Immediately following hyperventilation, the patient complained of chest pain with sweating, accompanied with ECG ST elevation in precordial leads. Control angiography demonstrated TIMI 0 flow at the site of the lesion on the medial segment of the LAD. In the same act, PCI was performed on LAD with implantation of CRE8 3x31 mm stent. The hyperventilation test is a simple diagnostic test that may be useful in some patients during coronary angiography to identify patophysiologic mechanism of myocardial ischemia and “culprit” lesion.

Key words: hyperventilation test, coronary vasospasm, angina pectoris