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INTRODUCTION

Coronary artery spasm is an important factor in the pathogenesis of ischemic heart disease, including myocardial infarction regardless of underlying coronary artery stenosis.[1] Ischemic episodes caused by coronary spasm may induce arrhythmias, tachycardia and heart block.[2]

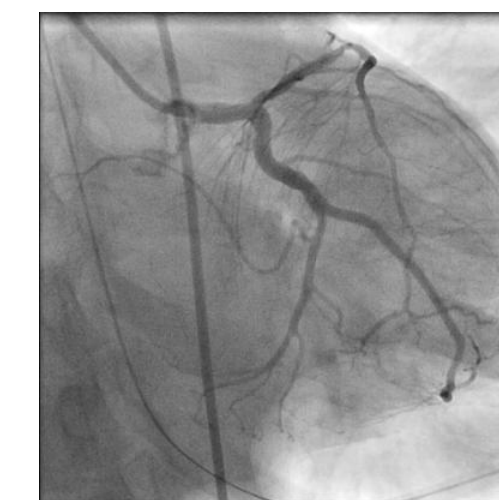
DISCLOSURES

Dr. C. Hadadi – none; Dr. F. Elmi – none

CASE DESCRIPTION

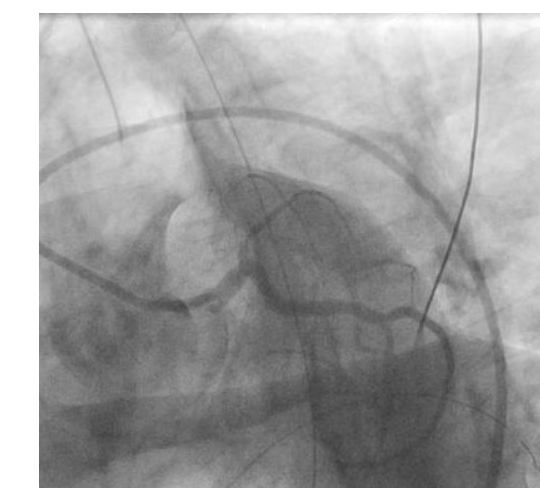
A 53-year old man with a history of chronic tobacco abuse presented after a witnessed sudden cardiac death. He was found in ventricular fibrillation and underwent successful resuscitation. On arrival to the emergency department he was noted to have ST elevation in the anterolateral ECG leads V2 – V6. The patient was started on heparin, amiodarone, aspirin and clopidogrel. On physical examination, the patient was afebrile with normal vital signs. Cardiac examination revealed regular rate and rhythm with S1 and S2 without additional heart sounds, murmurs, rubs or gallops. Laboratory testing was significant for cardiac troponin I peak at 6.25 ng/mL. Urine toxicology was negative for cocaine. Echocardiogram revealed decreased left ventricular systolic function with an ejection fraction of 30%. Coronary angiography revealed no significant disease of the left anterior descending coronary artery (Figure 1). After repeat injection of dye, the left-sided coronary vasculature demonstrated complete occlusion concerning for coronary artery spasm that was associated with tachycardia to 178 beats per minute and severe hypertension to 200/133 mmHg (Figure 2). The spasm and associated symptoms resolved with intracoronary nitroglycerin administration (Figure 3).

FIGURE 1



Initial coronary angiography of the LMCA in the LAO caudal view with no significant proximal disease.

FIGURE 2



Coronary angiography of the LMCA in the LAO caudal view demonstrating proximal LAD spasm with patent LCx.

FIGURE 3



Coronary angiography of the LMCA in the LAO caudal view demonstrating resolution of LAD spasm status post administration of intracoronary nitrates.

DISCUSSION

This patient presented with ST-elevation myocardial infarction (STEMI) in the absence of obstructive coronary artery disease. Coronary angiography images confirmed that the patient's symptoms were induced by coronary artery spasm. The patient was treated with calcium channel blockers (CCBs) and long-acting nitrates, as well as aspirin and a statin. The patient underwent implantation of a cardioverter-defibrillator for secondary prevention. Potential mechanisms of coronary spasm include endothelial dysfunction and vascular smooth muscle cell hyperreactivity.[3,4] Treatment options besides CCBs and long-acting nitrates include magnesium, statins, antioxidants, angiotensin antagonists and anti-inflammatories. In the acute catheterization setting, intracoronary nitrates and atropine have also been demonstrated to reverse coronary spasm.[5]

REFERENCES

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