

Coexistence of acute myocardial infarction with normal coronary arteries and migraine with aura in a female patient

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Received: March 12, 2011 Revised: May 2, 2011

Accepted: May 9, 2011

Published online: July 26, 2011

Abstract

Acute myocardial infarction with normal coronary arteries is a well known condition, which is typically diagnosed in young patients. Coronary vasospasm, inherited, acquired or malignancy-induced hypercoagulable state, collagen vascular disease and coronary arterial embolism have been considered as underlying etiologic factors. An association between migraine with aura and increased risk of ischemic stroke, angina and myocardial infarction has been demonstrated in studies. Patients with migraine and especially with aura should be followed closely against cardiovascular events even if they are young and do not have traditional risk factors.

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Key words: Acute myocardial infarction; Aura; Migraine; Normal coronary arteries

Peer reviewers: Giuseppe Biondi-Zoccai, MD, Division of Cardiology, University of Turin, Corso Bramante 88-90, 10126 Turin, Italy; Hiroyasu Ueda, MD, PhD, Department of Cardiology, Sumitomo Hospital, 5-3-20, Nakanoshima, Kita-ku, Osaka 530-0005, Japan

Celikyurt U, Kahraman G, Emre E. Coexistence of acute myocardial infarction with normal coronary arteries and migraine with aura in a female patient. *World J Cardiol* 2011; 3(7): 260-262 Available from: URL: <http://www.wjgnet.com/1949-8462/full/v3/i7/260.htm> DOI: <http://dx.doi.org/10.4330/wjc.v3.i7.260>

INTRODUCTION

Acute myocardial infarction (AMI) with normal coronary arteries is a well known condition, which has been described in the literature for many years. A number of hypotheses have been suggested to explain this condition. Coronary vasospasm, hypercoagulable state, collagen vascular disease and coronary arterial embolism have been considered as possible explanations. Migraine with aura (MWA) has been associated with an increased risk of ischemic stroke, angina and myocardial infarction. We report AMI with normal coronary arteries in a 50-year-old woman with a history of MWA who does not have traditional risk factors.

CASE REPORT

A 50-year-old woman was admitted to the hospital with complaints of retrosternal, squeezing chest pain lasting for 2 d. The patient had no known coronary artery risk factors. Her past medical history was significant for migraine headaches with nausea treated with a β -blocker for 5 years. Her electrocardiography (ECG) showed sinus rhythm without any ST-T wave abnormalities. Her blood chemistry was in the normal range except the troponin level, which was slightly elevated (0.65 ng/mL). Echocardiography showed normal left ventricular systolic function without any wall motion abnormality. Coronary angiography revealed normal coronary arteries (Figure 1A and B). The patient was discharged after 1 d with the diagnosis of Prinzmetal's angina. The patient was subsequently admitted to hospital with complaints of aggravated chest pain

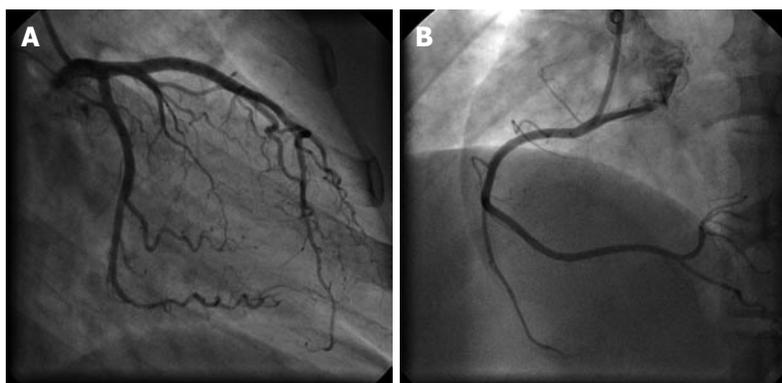


Figure 1 Coronary angiography. A: Normal left anterior descending artery and left circumflex artery; B: Normal right coronary artery.

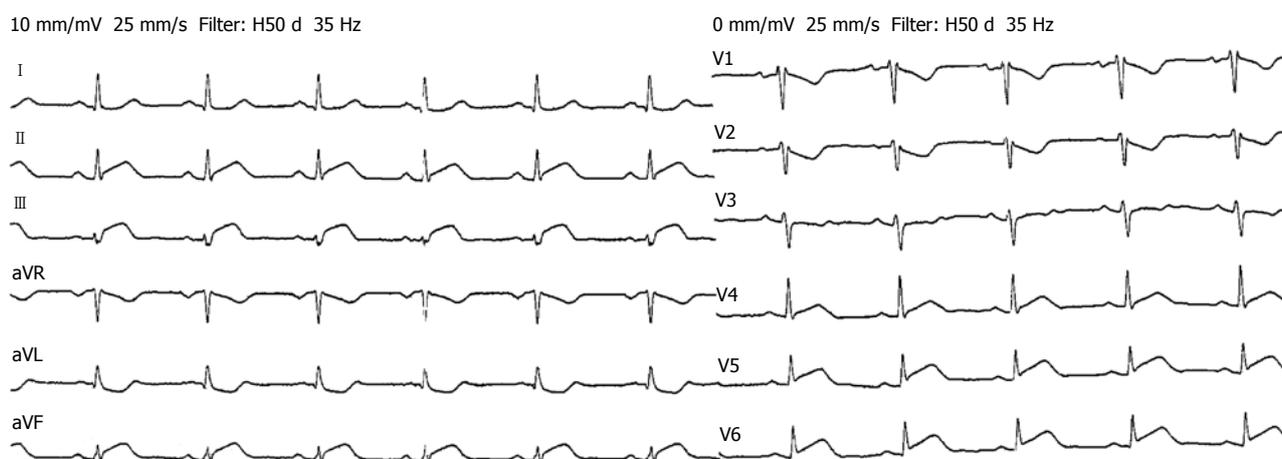


Figure 2 Electrocardiography showing acute inferolateral myocardial infarction.

compared to the first admission, accompanied by headache and nausea 20 h after the original discharge. ECG showed ST segment elevation in leads II, III, aVF and V4-6 with ST depression in leads I, aVL and V1-2, which confirmed acute inferolateral myocardial infarction (Figure 2). There was no ST elevation in the right precordial leads. Thrombolytic therapy was not given as the coronary angiography 1 d before was normal and portable echocardiography revealed normal wall motion. Intravenous calcium channel blocker and nitrate treatment was started. 1 d after hospitalization troponin I level was 4.6 ng/mL. ECG revealed biphasic T waves in leads II, III and V4-6. Her control transthoracic echocardiography revealed mild hypokinesia in anterolateral and inferolateral walls with normal ejection fraction. The patient was discharged with calcium channel blocker and nitrate treatment.

DISCUSSION

AMI with normal coronary arteries is a well known condition, which is typically diagnosed in young patients. The prevalence of patients having AMI with normal coronary arteries has been reported as 2.8% in a recent study but there are differences in the prevalence between the published series^[1,2]. This may relate to the various definitions

of “normal” coronary arteries. Coronary vasospasm, inherited, acquired or malignancy-induced hypercoagulable state, collagen vascular disease and coronary arterial embolism were considered as the underlying etiologic factors^[1,2]. However, an exact etiology could not be detected in a significant proportion of patients. There is no sex predilection and coronary artery risk factors are usually absent^[1,3].

AMI with normal coronary arteries in young women who were under the hormonal influence of pregnancy or contraceptive pill usage has been reported in previous articles^[4-6]. However, there was no pregnancy or history of contraceptive pill usage in our patient.

Migraine is a common neurologic disorder characterized by severe headache accompanied by autonomic dysfunction, nausea and vomiting. Transient neurologic symptoms before or during the headache attacks are known as migraine aura and they are most often visual^[7]. An association between MWA and increased risk of ischemic stroke, angina and myocardial infarction has been demonstrated in a prospective cohort study. The age adjusted hazard ratios for ischemic stroke were 3.88 in the lowest risk score group and 1.00 for the highest. For myocardial infarction, these ratios were 1.29 and 3.34, respectively^[7]. However the effects of migraine on the coronary arteries are still unknown.

Studies reported a high prevalence of patent foramen ovale (PFO) in patients with MWA^[8,9]. Although PFO has been reported to be present in 40% to 60% of patients with MWA^[10], there was no PFO in our patient.

A survey reported that migraine and coronary heart disease have a nonoverlapping age- and gender-specific prevalence^[11]. Migraine is more prevalent in women than men throughout the lifespan and the peak prevalence of migraine occurs between ages of 30 and 49 years^[11]. In a study, patients with migraine had lower blood pressure measured than those without migraine^[12]. Antihypertensive drugs that are used in the treatment of migraine may control hypertension, which is a modifiable risk factor of coronary artery disease. The effects of antihypertensive drugs together with the nonoverlapping age- and gender-specific prevalence may result in a few patients with migraine experiencing myocardial ischemia.

Although the prognosis of patients with AMI and normal coronary arteries were reported as excellent in early reports, similar outcomes and prognosis in patients with normal coronary angiography and AMI compared with one- or two-vessel disease were reported in recent studies^[1,13]. Also, similar mortality rates were reported in AMI patients with normal coronary arteries compared with patients with coronary artery stenosis^[14].

Patients with migraine and especially with aura may have increased risk of myocardial infarction even with normal coronary arteries. They should be followed closely against cardiovascular events even if they are young and do not have traditional risk factors.

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S- Editor Cheng JX L- Editor O'Neill M E- Editor Zheng XM