

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

Umut Celikyurt, Goksel Kahraman, Ender Emre

Umut Celikyurt, Goksel Kahraman, Ender Emre, Department of Cardiology, Kocaeli University Medical Faculty, Umuttepe Yerleskesi 41380, Kocaeli, Turkey

Author contributions: Celikyurt U wrote the paper; Kahraman G performed the coronary angiography; Emre E performed trans-thoracic echocardiography.

Correspondence to: Umut Celikyurt, MD, Assistant Professor, Department of Cardiology, Kocaeli University Medical Faculty, Umuttepe Yerleskesi, 41380, Kocaeli, Turkey. ycelikyurt@gmail.com

Telephone: +90-262-3038747 Fax: +90-262-3038003

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.

© 2011 Baishideng. All rights reserved.

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

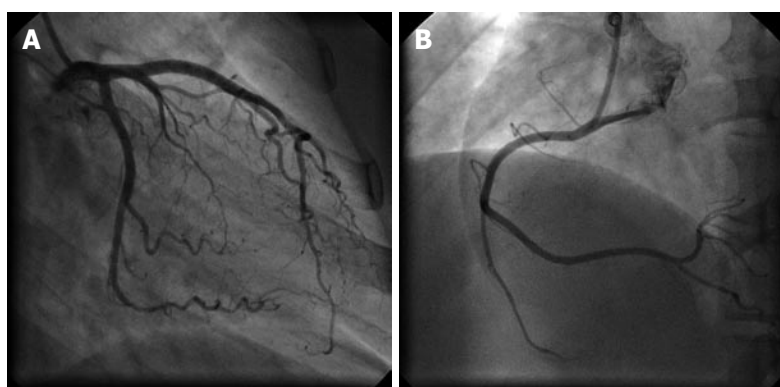


Figure 1 Coronary angiography. A: Normal left anterior descending artery and left circumflex artery; B: Normal right coronary artery.

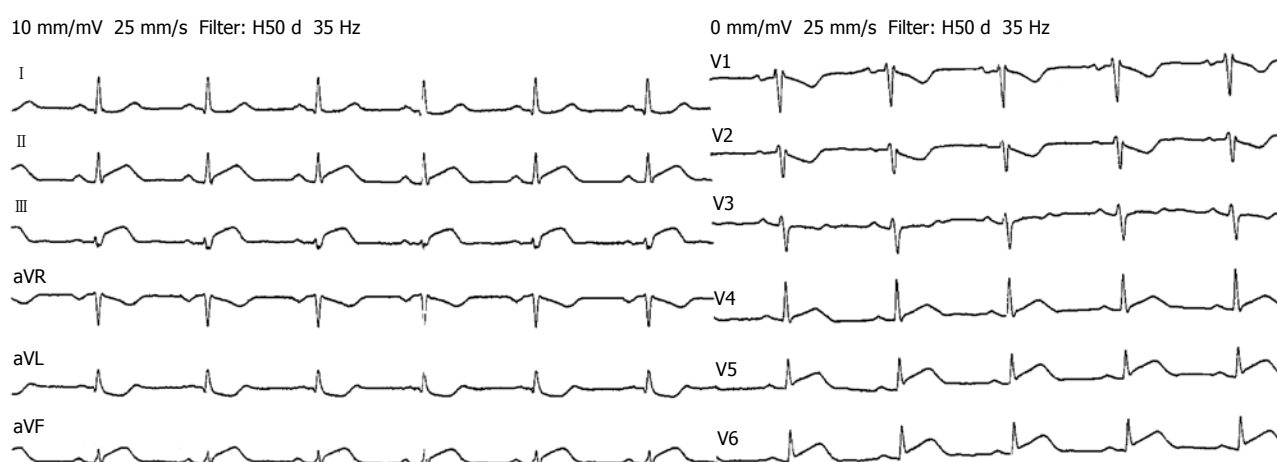


Figure 2 Electrocardiography showing acute inferolateral myocardial infarction.

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.

REFERENCES

- 1 **Kardasz I**, De Caterina R. Myocardial infarction with normal coronary arteries: a conundrum with multiple aetiologies and variable prognosis: an update. *J Intern Med* 2007; **261**: 330-348
- 2 **Larsen AI**, Galbraith PD, Ghali WA, Norris CM, Graham MM, Knudtson ML. Characteristics and outcomes of patients with acute myocardial infarction and angiographically nor-

- mal coronary arteries. *Am J Cardiol* 2005; **95**: 261-263
- 3 **Raymond R**, Lynch J, Underwood D, Leatherman J, Razavi M. Myocardial infarction and normal coronary arteriography: a 10 year clinical and risk analysis of 74 patients. *J Am Coll Cardiol* 1988; **11**: 471-477
- 4 **Erlebacher JA**. Transmural myocardial infarction with "normal" coronary arteries. *Am Heart J* 1979; **98**: 421-430
- 5 **Ciraulo DA**, Bresnahan GF, Frankel PS, Isely PE, Zimmerman WR, Chesne RB. Transmural myocardial infarction with normal coronary angiograms and with single vessel coronary obstruction. Clinical-angiographic features and five-year follow-up. *Chest* 1983; **83**: 196-202
- 6 **Bounhoure JP**, Ouldzen H, Carrié D, Alibelli MJ, Puel J. [Myocardial infarction with "angiographically normal coronary arteries" myth or reality?]. *Bull Acad Natl Med* 2007; **191**: 815-824; discussion 824-825
- 7 **Kurth T**, Schürks M, Logroscino G, Gaziano JM, Buring JE. Migraine, vascular risk, and cardiovascular events in women: prospective cohort study. *BMJ* 2008; **337**: a636
- 8 **Ferrarini G**, Malferrari G, Zucco R, Gaddi O, Norina M, Pini LA. High prevalence of patent foramen ovale in migraine with aura. *J Headache Pain* 2005; **6**: 71-76
- 9 **Schwerzmann M**, Nedeltchev K, Lager F, Mattle HP, Windecker S, Meier B, Seiler C. Prevalence and size of directly detected patent foramen ovale in migraine with aura. *Neurology* 2005; **65**: 1415-1418
- 10 **Schwedt TJ**, Dodick DW. Patent foramen ovale and migraine-bringing closure to the subject. *Headache* 2006; **46**: 663-671
- 11 **Rosamond W**. Are migraine and coronary heart disease associated? An epidemiologic review. *Headache* 2004; **44 Suppl 1**: S5-S12
- 12 **Scher AI**, Terwindt GM, Picavet HS, Verschuren WM, Ferrari MD, Launer LJ. Cardiovascular risk factors and migraine: the GEM population-based study. *Neurology* 2005; **64**: 614-620
- 13 **Kang WY**, Jeong MH, Ahn YK, Kim JH, Chae SC, Kim YJ, Hur SH, Seong IW, Hong TJ, Choi DH, Cho MC, Kim CJ, Seung KB, Chung WS, Jang YS, Rha SW, Bae JH, Cho JG, Park SJ. Are patients with angiographically near-normal coronary arteries who present as acute myocardial infarction actually safe? *Int J Cardiol* 2011; **146**: 207-212
- 14 **Da Costa A**, Isaaz K, Faure E, Mourot S, Cerisier A, Lamaud M. Clinical characteristics, aetiological factors and long-term prognosis of myocardial infarction with an absolutely normal coronary angiogram; a 3-year follow-up study of 91 patients. *Eur Heart J* 2001; **22**: 1459-1465

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