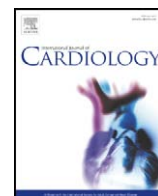




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Letter to the Editor

Kounis Syndrome secondary to cefuroxime axetil use in an asthmatic patient

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ABSTRACT

A sixty-one year old female with a past history of asthma was admitted to the emergency department because of vertigo, nausea, vomiting, chest pain and generalized erythema after taking an oral dose of cefuroxime axetil. Electrocardiography showed ST segment elevation in inferior leads. After coronary angiography, type 2 variant of Kounis Syndrome is diagnosed. We present first drug induced Kounis Syndrome in an asthmatic patient with severe anaphylactic shock. The present report also shows that atopic people expressing an amplified mast cell degranulation may have more serious hemodynamic decompensation during hypersensitivity reactions.

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1. Introduction

A special type of vasospastic myocardial ischemia or infarction which is called Kounis Syndrome is increasingly encountered in clinical practice. Main pathophysiological mechanism is vasospasm of epicardial coronary arteries due to increased inflammatory mediators that are released during a hypersensitivity reaction [1]. The trigger may be drugs [2–7], chemicals [9], foreign bodies [10–14], environmental exposures [8,24–28] or some other conditions that give rise to inflammatory mediator release [15]. Anaphylactic or anaphylactoid reactions can make clinical situation even more serious. We present first drug induced Kounis Syndrome in an asthmatic patient with anaphylactic shock.

2. Case report

Sixty-one year old female with a known history of mild asthma was admitted to our emergency department with marked fatigue, nausea, vomiting, vertigo and mild chest pain. Blood pressure and heart rate were 70/40 mm Hg and 67 bpm respectively. On physical examination there was confusion, generalized erythema, and dyspnea. She was admitted to the hospital 1 h after the onset of symptoms. In the emergency department ECG showed ST segment elevation in leads II, III, and aVF and ST segment depression in leads I, aVL, V1, V2, and V3 (Fig. 1A). While transferring her to the coronary care unit, chest pain disappeared spontaneously and ECG at that time was completely normal (Fig. 1B). Nasal oxygen, intravenous volume and 0.5 mg epinephrine were subcutaneously applied for anaphylactic shock. Twenty minutes after these applications blood pressure turned to 120/50 mm Hg and all the symptoms disappeared. She recounted that

complaints had begun as pruritus on hands and finger tip paresthesia 10 min after 250 mg oral dose of cefuroxime axetil. Transthoracic echocardiography in coronary intensive care unit revealed only minimal inferior wall hypokinesia. Peak level of troponin I level was 0.06 ng/mL (reference 0–0.06), CK-MB was 59 U/L (reference 0–24) and LDH was 314 U/L (reference 5–214). Coronary angiography is performed two days later, which revealed atherosclerotic plaques without hemodynamically significant stenosis and normal ventriculography (Fig. 2).

Repeated fasting serum glucose levels were high and she was diagnosed with type 2 diabetes mellitus. LDL cholesterol level was 135 mg/dL, HDL cholesterol level was 50 mg/dL, and total cholesterol level was 201 mg/dL.

The patient was diagnosed with Kounis syndrome (type 2 variant). Clopidogrel, low molecular weight heparin and asthma drugs were given as treatment, but neither corticosteroid nor antihistamine was administered. Cardiac enzymes returned normal after a few days. No additional symptom had occurred during hospitalization and she was discharged from the hospital after 1 week without any complaint. Clopidogrel, statin and calcium channel blocker were prescribed. She was also referred to the Department of Endocrinology and Chest Disease for diabetes and asthma control. Transthoracic echocardiography after 2 weeks was completely normal except grade 1 diastolic dysfunction.

3. Discussion

Two types of Kounis Syndrome have been defined [15,16] and our patient was diagnosed with a type 2 variant, in which myocardial spasm or thrombosis occurs in atherosclerotic coronary arteries. On the other hand, in type 1 Kounis Syndrome, myocardial ischemia or infarction occurs in normal coronary arteries due to coronary artery spasm. Although some authors classify patients relying only on

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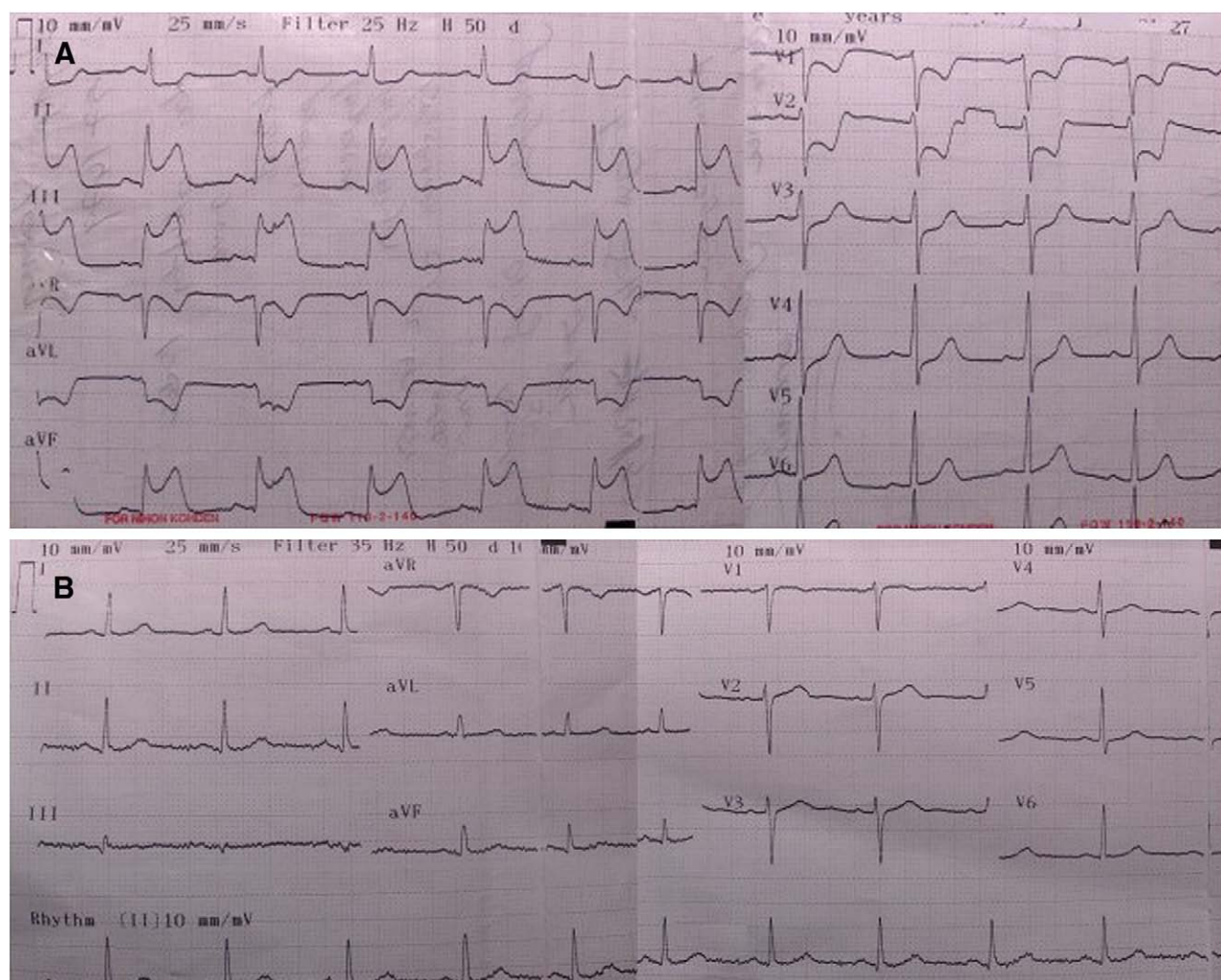


Fig. 1. Twelve-lead electrocardiography during chest pain (A) showing ST segment elevation in leads II, III, aVF and after resolution of chest pain which is completely normal (B).

coronary angiography it is impossible to exclude atherosclerosis without performing intravascular ultrasonography in high risk patients [18].

Coronary involvement in hypersensitivity reactions is probably secondary to increased circulatory inflammatory mediators mainly histamine, proteases such as tryptase and chymase or products of

arachidonic acid metabolism [1,16,17]. Mast cell which is also found in the coronary artery wall plays a central role [16]. Mast cell degranulation and anaphylaxis or anaphylactoid reactions can occur after drug exposure. Anaphylactic shock does not accompany all Kounis Syndrome patients. Atopy history may increase this probability which is the case in our asthmatic patient [15]. Although there are few

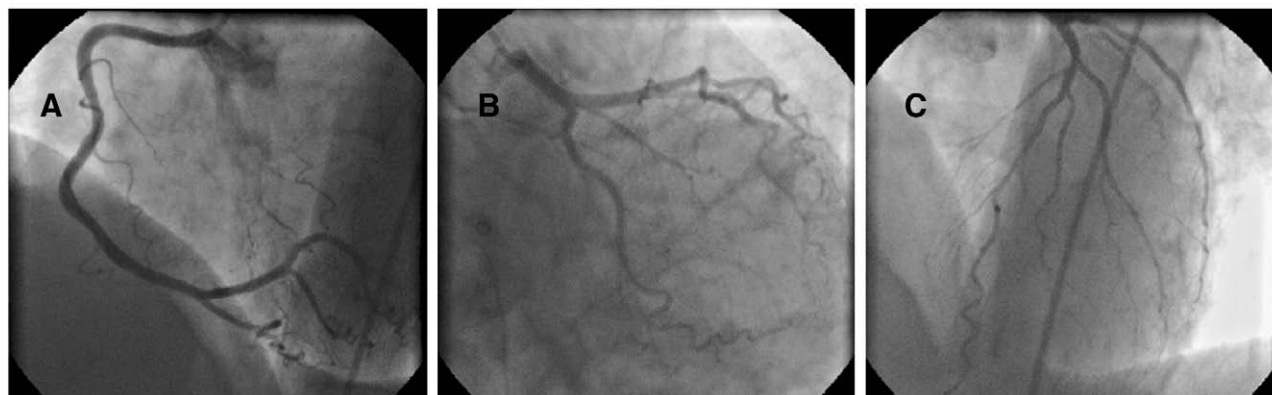


Fig. 2. Right (A) and left coronary arteries (B and C) without hemodynamically significant stenosis.

reports in literature defining Kounis Syndrome in asthmatic patients during acute paroxysm [18,15] we define first drug induced Kounis Syndrome in an asthmatic patient.

Cefuroxime axetil is increasingly encountered as a reason of Kounis Syndrome. Although, Kounis Syndrome after intravenous and intramuscular administration has been described in [19] and [20] we define first Kounis Syndrome after an oral dose of cefuroxime.

In anaphylactic shock, the first choice of treatment should be epinephrine (subcutaneously or intramuscularly), supplemental oxygen and intravenous fluids. Although corticosteroids are not life saving in acute situation, they can be used as potential therapeutic strategy in asthmatic patients to prevent Kounis Syndrome or other coronary artery spasms [21,22].

Kounis syndrome is increasingly encountered in clinical practice. Myocardial ischemia or infarction may be more common than suspected in hypersensitivity, anaphylactic or anaphylactoid reactions and can explain some unexpected cardiac arrests or mortalities in these situations [18,23].

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The authors of this manuscript have certified that they comply with the Principles of Ethical Publishing in the International Journal of Cardiology [29].

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