A case of Kounis syndrome presented with sudden cardiac death

Ani ölüm ile başvuran Kounis sendromlu bir olgu

Introduction

Kounis Syndrome (KS) was firstly described in 1991 as "the allergic angina syndrome" which could progress to acute myocardial infarction, which was named "allergic myocardial infarction" (1-3). Some drugs, various conditions and environmental exposures were accused for inducing KS (4-8). However KS due to telitromycin has never been reported before.

Case Report

A 32-year-old apparently healthy man was referred to our coronary care unit with acute anterior myocardial infarction. Patient experienced sudden cardiac death during transportation with ambulance and had successful ressuscitation. He had a history of sudden onset chest pain, dyspnea and urticarial rash 15 minutes after the ingestion of an oral dose of 400 mg telitromycin for acute sinusitis. Thirty minutes after the onset of the complaints he had cardiopulmonary arrest. On admission his blood pressure was 90/60 mmHg and tachycardia of 105 beats/min. He had no family history of any cardiac disease. Electrocardiography showed ST segment elevation in anterolateral derivations. On transthoracic echocardiography left ventricle was globally hypokinetic with an ejection fraction of 30%. Than patient was transferred to catheter laboratory and normal coronary arteries were revealed in the coronary angiography (Fig. 1, Video 1, 2. See corresponding video/movie images at www.anakarder.com). His troponin-I and CK-MB levels were 10 ng/mL and 50 u/L on arrival and increased up to 45 ng/mL and 356 u/L consecutively. Complete blood count, D-dimer, antithrombin III, lipoprotein a, serum cholesterol levels were normal. The serologic tests for viral etiology were negative for hepatitis B and C virus, human immunodeficiency virus, Coxsackievirus B, adenovirus and parvovirus B19. Cytomegalovirus IgM and IgG, Epstein-Barr virus capsid antigen IgM and IgG, EBV nuclear antigen IgM and IgG tests were also negative. Total IgE was 210 IU/ml (reference: 0-100) and serum tryptase was 31 µg/L (Reference: 5.6-13.5 µg/L). Subsequent daily estimations of serum tryptase were within normal limits. Histamine was 0.4 ng/mL (reference: 0-0.2 ng/mL).

The ST segment elevation in precordial leads at presentation was sustained and on follow up patient had sustained ventricular tachycardia attacks which were successfully treated with electrical cardioversion (Fig. 2a, b). He was diagnosed to have KS type I variant, secondary to telitromycin. Oral antihistaminics and 8 mg intravenous prednisolone every 6 h for 5 days with standart congestive heart failure medications including sprinolactone 25 mg, ramipril 10 mg, carvedilol 12.5 mg were given to the patient. Although repeated cardiac markers were within normal limits with resolution of electrocardiographic abnormalities (Fig. 2c) after six days, left ventricular functions did not recover. He was discharged from hospital with medication and intracardiac defibrillator device implantation was planned.

Discussion

Kounis Syndrome is characterized by the concurrence of acute coronary syndrome with mast cell (MC) activation induced by inflammatory mediators released during allergic reaction (2-7). Three variants of

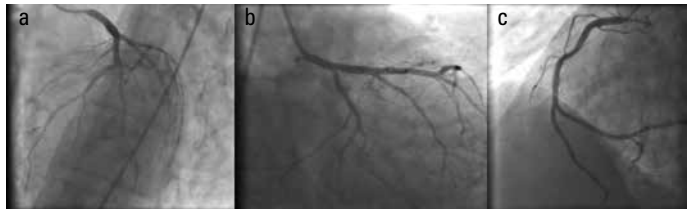

Figure 1. Coronary angiography views of normal left (a, b) and right coronary arteries (c)

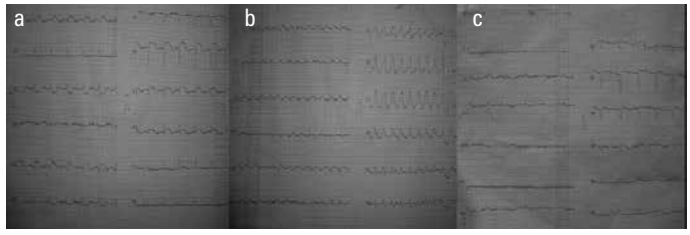

Figure 2. Twelve-lead electrocardiography showing: a) ST segment elevation on DI, aVL, V1, V2, V3 and V4 at presentation; b) Successfully treated ventricular tachycardia c) Resolution of ST elevation six days after the presentation electrocardiography

Kounis Syndrome have been described (8, 9). The type I variant includes patients with normal coronary arteries without predisposing factors for coronary artery disease in whom the acute release of inflammatory mediators induce either coronary artery spasm without increase of cardiac enzymes and troponins or coronary artery spasm progressing to acute myocardial infarction with raised cardiac enzymes and troponins as in our case (8, 9). All of the markers of myocarditis were negative and risk factors for coronary artery disease were absent in our patient. His symptoms had started 15 min after the ingestion of an oral dose of 400 mg of telitromycin. Specific IgE to telitromycin was not studied in our patient as MC degranulization with specific antigen antibody stimulation is not always necessary. MC is involved in allergic and anaphylactic reactions (10). Tyrptase and histamin levels were elevated in our patient. The increased levels of tryptase suggest an acute allergic reaction, where tryptase has been incriminated to induce coronary artery spasm and/ or plaque erosion or rupture (10). Based on the above-mentioned findings the diagnosis of type I variant of KS induced by telitromycin ingestion was made. Although KS was reported to be benign in the majority of the cases it may cause catastrophic consequences like congestive heart failure, ventricular arrhythmias, cardiopulmonary arrest and even death.

Conclusion

This case is unique in the literature which was complicated with devastating complications of KS like congestive heart failure, ventricular arrhythmias and sudden cardiac death. This case highlights the fact that physicians should be aware of the allergic myocardial infarction and it is not always a benign condition.

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Video 1, 2. Normal coronary arteries were revelaed in coronary angiography

References

1. Kounis NG, Zavras GM. Histamine-induced coronary artery spasm: the concept of allergic angina. Br J Clin Pract 1991; 45: 121-8.
2. Kounis NG, Grapsas ND, Goudevenos JA. Unstable angina, allergic angina and allergic myocardial infarction. Circulation 1999; 100:e156. [CrossRef]
3. Kounis NG. Kounis syndrome (allergic angina and allergic myocardial infarction): A natural paradigm. Int J Cardiol 2006; 7: 7-14. [CrossRef]
4. Biteker M, Duran NE, Biteker FS, Ertürk E, Aykan AC, Civan HA, et al. Kounis Syndrome secondary to amoxicillin/clavulanic acid use in a child. Int J Cardiol 2009; 24: 3-5. [CrossRef]
5. Biteker M, Duran NE, Biteker FS, Civan HA, Kaya H, Gökdeniz T, et al. Allergic myocardial infarction in childhood: Kounis syndrome. Eur J Pediatr 2010; 169: 27-9. [CrossRef]
6. Karabay CY, Geçmen C, Aung SM, Güler A, Candan O, Batgerel U, et al. Is 5 fluorouracil-induced vasospasm a Kounis syndrome? A diagnostic challenge. Perfusion 2011; 26: 542-5. [CrossRef]
7. Biteker M, Duran NE, Biteker F, Civan HA, Gündüz S, Gökdeniz T, et al. Kounis syndrome: first series in Turkish patients. Anadolu Kardiyol Derg 2009; 91: 59-60.
8. Biteker M. A new classification of Kounis syndrome. Int J Cardiol 2010; 145: 553. [CrossRef]
9. Biteker M.. Current understanding of Kounis syndrome. Expert Rev Clin Immunol 2010; 6: 777-88. [CrossRef]
10. Galli SJ, Nakae S, Tsai M. Mast cells in the development of adaptive immune responses. Nat Immunol 2005; 6: 135-42. [CrossRef]

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Refractory hemolytic anemia due to severe swirling flow pattern in chronic mitral regurgitation after myxoma surgery

Miksoma cerrahisi sonrası gelişen kronik mitral yetersizliğine bağlı şiddetli "swirling"e bağlı refrakter hemolitik anemi

Introduction

While hemolytic anemia due to the paravalvular leaks is common in prosthetic valves, hemolytic anemia due to native mitral jet flow has not been described yet. It is generally believed that acceleration of regurgitation jet flow or red blood cell hitting to prosthetic valve causes fragmentation of blood cells and leads to hemolytic anemia in prosthetic valves. We thought that similar mechanisms may be responsible in our case who had unexplained refractory hemolytic anemia for about 7 years.

Case Report

A 74-year-old male applied to our clinic with the complaints of dyspnea, early fatigue and palpitation. He had previous history of repeated blood transfusions for last 7 years reaching up to 54 units in total. He underwent left atrial myxoma and atrial septal defect operation 27 years ago. At the physical examination, the following findings were determined: pale skin, irregular and tachycardia heart rhythm, jugular venous distension and pretibial 2+edema. Four years ago, bone marrow aspiration was performed for anemia etiology with the prediagnosis of myelodysplasic syndrome but it did not reveal any pathological findings. Blood smear examination demonstrated red blood cell fragmentation, a few schistocytes and polychromasia. The count of thrombocyte was slightly reduced. Number of reticulocyte was 3%. Laboratory test results were low hematocrit 28.2% (42-52) hemoglobin 8.6 g/dL (range13.5-18), white bood cell 10.5 (4-10.5)10^3 uL, Platelets 145 (150-450) 10^3 uL normal hemoglobin electrophoresis, low serum haptoglobulin level 0.1g/L (30-200 g/L) and negative direct Coombs' test, high serum total bilirubin level (2.2 mg/dL range 0.2-1.1), indirect bilirubin 1.67 mg/dL (normal value<1), low serum iron level (29 µg/dL range for normal values 45-182), normal iron binding capacity (266 µg/dL range 110-370), normal ferritin level 41.1 ng/mL (22-322), normal B12 and folic acid levels (200 pg/mL and 6.8 ng/mL respectively). Glucose-6-phosphate dehydrogenase enzyme level was found to be within normal reference values: 16.75 U/HGB (4.6-13.5). But serum LDH was high 535 IU/L (98-192) and alanin aminotransferase 40 mg/dL, aspartat aminotransferase levels 34 mg/dL, BUN 29 mg/dL, (8-25) creatinin 0.9. (0.8-1.2). Spleen was determined to be normal in abdominal ultrasonography. There was atrial fibrillation at electrocardiography. Cardiothoracic ratio increased in favor of heart at telecardiography. Transthoracic echocardiography revealed eccentric moderate degree mitral regurgitation. Because of its eccentricity, we had suspicion of severe mitral regurgitation thus we decided to perform transesophageal echocardiography (Philips Envisor C-HD, IPx-1 S6-2mpt Bothell WA, USA). At TEE, it was noted that left atrium was markedly dilated and there was eccentric severe mitral regurgitation towards left atrial lateral wall with swirling motion (Fig. 1, 2). We also detected a 3 mm small interatrial septal defect. Left

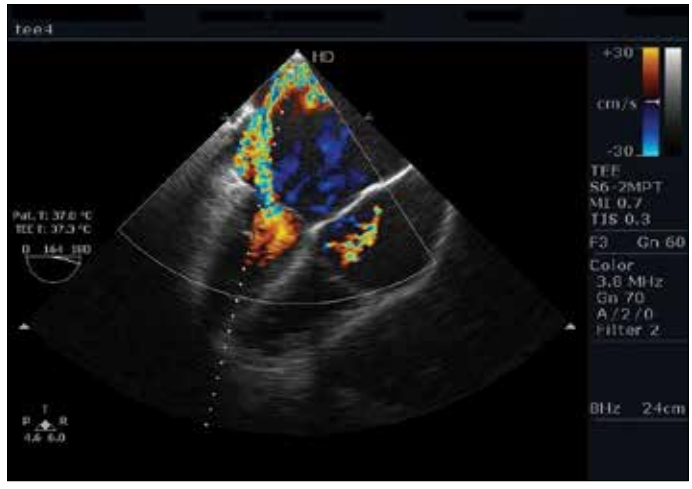

Figure 1. Transesophageal echocardiography view of the severe dilated left atrium and jet flow beginning from posterior mitral leaflet toward the septum