Anaphylaxis and Kounis syndrome after using amoxicillin and clavulanic acid

Gokhan Eyupoglu, Mehmet Tatli, Kerem Dost Bilmez, Ozlem Guneyssel

ABSTRACT

Introduction: Kounis syndrome is the fortuitous occurrence of acute coronary syndrome consisting of hypersensitivity reactions related to allergic or hypersensitivity activation of inflammatory cells.

Case Report: An 84-year-old male admitted to our emergency department with anaphylaxis symptoms after his intake of a 1000 mg amoxicillin and clavulanic acid (ACA) tablet. Diabetes, coronary artery disease and hypertension had been encountered in the patient's medical history. During the physical examination, uvula edema, wheezing, rales and rhonchi were present. Adrenaline, pheniramine and methylprednisolone were given to the patient with a diagnosis of anaphylaxis. During his observation, ECG changes and troponin elevation were detected and he was diagnosed as type 2 Kounis syndrome. After 24 hours follow-up, he was discharged without any complication.

Conclusion: A single dose of ACA can cause anaphylaxis and may result in Kounis syndrome. It should be taken into consideration in all types of allergic reactions which treated by adrenaline.

International Journal of Case Reports and Images (IJCRI)

International Journal of Case Reports and Images (IJCRI) is an international, peer reviewed, monthly, open access, online journal, publishing high-quality, articles in all areas of basic medical sciences and clinical specialties.

Aim of IJCRI is to encourage the publication of new information by providing a platform for reporting of unique, unusual and rare cases which enhance understanding of disease process, its diagnosis, management and clinico-pathologic correlations.

IJCRI publishes Review Articles, Case Series, Case Reports, Case in Images, Clinical Images and Letters to Editor.

Website: www.ijcasereportsandimages.com

CASE REPORT

PEER REVIEWED | OPEN ACCESS

Anaphylaxis and Kounis syndrome after using amoxicillin and clavulanic acid

Gokhan Eyupoglu, Mehmet Tatli, Kerem Dost Bilmez, Ozlem Guneyssel

ABSTRACT

Introduction: Kounis syndrome is the fortuitous occurrence of acute coronary syndrome consisting of hypersensitivity reactions related to allergic or hypersensitivity activation of inflammatory cells. **Case Report:** An 84-year-old male admitted to our emergency department with anaphylaxis symptoms after his intake of a 1000 mg amoxicillin and clavulanic acid (ACA) tablet. Diabetes, coronary artery disease and hypertension had been encountered in the patient's medical history. During the physical examination, uvula edema, wheezing, rales and rhonchi were present. Adrenaline, pheniramine and methylprednisolone were given to the patient with a diagnosis of anaphylaxis. During his observation, ECG changes and troponin elevation were detected and he was diagnosed as type 2 Kounis syndrome. After 24 hours follow-up, he was discharged without any complication. **Conclusion:** A single dose of ACA can cause anaphylaxis and may result in Kounis syndrome. It should be taken into consideration in all types of allergic reactions which treated by adrenaline.

Keywords: Anaphylaxis, Clavulanic acid, Coronary syndrome, Drug allergy, Kounis syndrome

How to cite this article

Eyupoglu G, Tatli M, Bilmez KD, Guneyssel O. Anaphylaxis and Kounis syndrome after using amoxicillin and clavulanic acid. Int J Case Rep Images 2015;6(4):207–210.

doi:10.5348/ijcri-201535-CR-10496

INTRODUCTION

Allergic reactions due to use of drugs may be seen as situations ranging from simple urticaria to severe angioedema. The admission rate to the emergency service because of anaphylaxis comprise 0.4–1% in various studies. Medications comprise 7.7–34.6% of anaphylaxis. Amoxicillin has the highest proportion (40%) in those drugs that cause severe anaphylaxis [1, 2].

Kounis syndrome is the coincidental occurrence of acute coronary syndromes with hypersensitivity reactions involving activation of interrelated and interacting inflammatory cells and including allergic or hypersensitivity and anaphylactic or anaphylactoid insults [3]. To date, three types Kounis syndrome have been described. Type 1 includes allergic mediators-induced coronary vasospasm in patients without coronary artery disease or atherosclerotic risk factors. Type 2 includes vasospasm, plaque erosion or rupture in patients with coronary artery disease. After the investigation of thrombi on drug-eluting stents demonstrate the presence of eosinophils and mast cells, this situation is referred to type 3 [4].

Herein, diagnosis and treatment of a patient related to allergic reaction and type 2 Kounis syndrome after single dose of amoxicillin and clavulanic acid (ACA) are discussed.

CASE REPORT

An 84-year-old male admitted to emergency department after intake of a 1000 mg ACA tablet,

Gokhan Eyupoglu¹, Mehmet Tatli¹, Kerem Dost Bilmez¹, Ozlem Guneyssel²

Affiliations: ¹MD, Emergency Medicine, Dr. Lutfi Kirdar Kartal Education and Research Hospital, Istanbul, Turkey; ²MD, Associate Professor, Emergency Medicine, Dr. Lutfi Kirdar Kartal Education and Research Hospital, Istanbul, Turkey.

Corresponding Author: Gokhan Eyupoglu, Dr. Lutfi Kirdar Kartal Education and Research Hospital, Emergency Medicine Clinic, Semsi Denizler Cad. E-5 Karayolu Cevizli Mevkii 34890 Kartal / Istanbul, Turkey; GSM : +90 555 422 34 83; Email: dr.gokhaneyupoglu@yahoo.com.tr

Received: 29 October 2014

Accepted: 27 November 2014

Published: 01 April 2015

which had been recommended for upper respiratory infection, with shortness of breath and numbness in the throat complaints ongoing for 30 minutes. Past medical history revealed diabetes, coronary artery disease and hypertension. On admission, TA 110/50 mmHg, pulse rate : 105/min, fever 38.9°C and blood glucose 224 mg/dL. On physical examination, uvula edema, wheezing, rales and rhonchi were present and other systematical examinations were normal. The 12-lead electrocardiogram (ECG) revealed sinus tachycardia and negative T wave on lead aVL (Figure 1).

We administered 0.5 mg adrenaline intramuscularly, 45.5 mg pheniramine, 80 mg methylprednisolone intravenously to the patient, concerning the diagnosis of anaphylaxis. Paracetamol 1 g used for fever management.

Figure 1: Patients first electrocardiogram. Sinus tachycardia and negative T wave on lead aVL.

Figure 2: Negative T wave on leads DI, aVL and V6 on 4th hour control electrocardiogram.

Table 1: Laboratory findings

Hours	0.	60.	12.	15.	Normal ranges
CK-MB	4.5 ng/mL			6.2 ng/mL	0.6 - 6.3 ng/mL
Troponin- I	0.43 ng/mL	1.36 ng/mL	1.37 ng/mL	1.24 ng/mL	0 - 0.04 ng/mL
Glucose	235 mg/dl				74 - 106 mg/dl
Ph	7.38				7.35 - 7.45
PCO ₂	40.3 mmHg				35 - 48 mmHg
PO ₂	43.8 mmHg				83 - 108 mmHg
HCO ₃	23.4 mmol/L				22.5 - 26.9 mmol/L
Base Excess	-1.5 mmol/L				-2.7 - +2.5 mmol/L

Abbreviations: CK-MB: KreatinKinaz-MB, PCO₂: Partial pressure of carbon dioxide, PO₂: Partial pressure of oxygen, HCO₃: Bicarbonate

For bronchoconstriction, 2.5 mg salbutamol was given to him via nebulizer. Laboratory findings are given in Table 1.

During follow-up, increase in troponin levels and changes in ECG (Figure 2) were observed and the patient was consulted to cardiologist with a pre-diagnosis of Kounis syndrome. Echocardiographic examination revealed normal left ventricular systolic function, diastolic dysfunction grade 1 and EF %60. Troponin levels were lower at follow-up, was not planned coronary angiographic intervention. Uvula edema regressed, no fever or ECG changes detected and Troponin levels decreased and patient was discharged after a 24-hour follow-up without any complication.

DISCUSSION

In developed countries, cardiovascular diseases are the central cause of death. And this situation is not expected to change significantly by 2020 [5]. Acute coronary syndromes (ACS) are the acute manifestation of cardiovascular diseases that can lead to death. Kounis syndrome is one of the rare causes of ACS. Kounis syndrome is also called and known Allergic angina or Allergic myocardial infarction in different sources. The main pathophysiology of Kounis syndrome is the activation of mast cells by allergic stimulation and release of biological amines, neutral proteases, arachidonic acid derivatives and platelet activating factor. Histamine increase thrombocyte activation, coronary vasoconstriction and tissue factor synthesis. Neutral proteases cause plaque erosion and rupture as a result of matrix metalloproteinase activation. And also they increase vasoconstriction by raising angiotensin-2 levels [3].

A wide variety of allergens was reported in the course of Kounis syndrome. Drugs that have been reported to induce Kounis syndrome were antibiotics, contrast media, antineoplastics, intravenous anesthetics, NSAIDs, thrombolytics and anticoagulants, skin disinfectants and some other drugs including allopurinol, enalapril, esmolol, insulin. Antibiotics have been reported to date are ampicillin, amoxicillin, amikacin, cefazolin, cefoxitin, cefuroxime, cephadrine, cinoxacin, lincomycin, penicillin, sulbactam/cefoperazone, sulperazone, trimetophrim/sulfamethoxazole and vancomycin. Almost all of the cases related with ACA have been reported as type 1 Kounis syndrome (rarely type 2 or type 3) [3].

The contribution of assays for serum histamine, specific IgE antibodies, tryptase, complement proteins (C4- and C1- esterase inhibitor) and evaluation of eosinophilia to diagnosis is not certain. Negativity does not exclude diagnosis because of the short half-life of these mediators, [6]. There are no certain information and guide regarding the treatment of Kounis syndrome coming from case reports and case series [7]. Kounis [6], Cevik [7], Biteker [4] and Ridella [8] make offers treatment for Kounis syndrome. The review by Ridella et al. demonstrated that steroid, H1 blocker, nitroglycerin, adrenaline and acetyl salicylic acid were administered [8]. We got a very positive response after use of adrenaline, H1 blocker, steroid and hydration. Troponin levels decreased and symptoms of anaphylaxis improved after this treatment. So, this treatment method can be used at similar conditions. Cevik et al. emphasized whether or not all medications may be useful. Nevertheless pharmacological management should be considered individually [6].

CONCLUSION

Even if typical chest pain or coronary artery disease history does not exist, yet anaphylaxis and Kounis syndrome should be taken into account.

Author Contributions

Gokhan Eyupoglu – Conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Critical revision of the article, Final approval of the version to be published

Mehmet Tatli – Conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Final approval of the version to be published

Kerem Dost Bilmez – Conception and design, Drafting the article, Critical revision of the article, Final approval of the version to be published

Ozlem Guneyssel – Conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Critical revision of the article, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

Copyright

© 2015 Gokhan Eyupoglu et al. This article is distributed under the terms of Creative Commons Attribution License which permits unrestricted use, distribution and reproduction in any medium provided the original author(s) and original publisher are properly credited. Please see the copyright policy on the journal website for more information.

REFERENCES

1. Moneret-Vautrin DA, Morisset M, Flabbee J, Beaudouin E, Kanny G. Epidemiology of life-threatening and lethal anaphylaxis: A review. *Allergy* 2005 Apr;60(4):443–51.
2. Oguz BA, Bahadır S, Hayrettin S, Hüseyin A, Oguz CM, Yasemin D. Non ST Elevation Myocardial Infarction after an Allergic Reaction: Type II Kounis Syndrome. *JAEMCR* 2014;5:1–4.
3. Nicholas G. Kounis GH, Akrivi Manola, Taxiarchis Kourelis, Theoharis C. Theoharides. Kounis Syndrome (Allergic Angina and Allergic Myocardial Infarction). In: Alice P. Gallos MLJ, editor. *Angina Pectoris: Etiology, Pathogenesis and Treatment*: Nova Science 2008. pp. 77–150.
4. Biteker M. A new classification of Kounis syndrome. *Int J Cardiol*. 2010 Dec 3;145(3):553.
5. Murray CJ, Lopez AD. Alternative projections of mortality and disability by cause 1990-2020: Global Burden of Disease Study. *Lancet* 1997 May 24;349(9064):1498–504.
6. Cevik C, Nugent K, Shome GP, Kounis NG. Treatment of Kounis syndrome. *Int J Cardiol* 2010 Sep 3;143(3):223–6.
7. Kounis GN, Soufras GD, Kouni SA, Kounis NG. Hypersensitivity myocarditis and hypersensitivity coronary syndrome (Kounis syndrome). *Am J Emerg Med* 2009 May;27(4):506–8.
8. Ridella M, Bagdure S, Nugent K, Cevik C. Kounis syndrome following beta-lactam antibiotic use: Review of literature. *Inflamm Allergy Drug Targets* 2009 Mar;8(1):11–6.

ABOUT THE AUTHORS

Article citation: Eyupoglu G, Tatli M, Bilmez KD, Guneyssel O. Anaphylaxis and Kounis syndrome after using Amoxicillin and Clavulanic acid. Int J Case Rep Images 2015;6(4):207–210.

Gokhan Eyupoglu is Medicine Doctor at Emergency Department, Dr. Lutfi Kirdar Kartal Education and Research Hospital, Istanbul, Turkey. He earned the undergraduate degree medicine doctor from Faculty of Medicine at Eskisehir Osmangazi University, Eskisehir, Turkey. His research interests include diagnosis and treatment of Kounis syndrome. He intends to pursue cardiac emergencies in future. Email: dr.gokhaneyupoglu@yahoo.com.tr

Mehmet Tatli is Medicine Doctor at Emergency Department, Dr. Lutfi Kirdar Kartal Education and Research Hospital, Istanbul, Turkey. He earned the undergraduate degree medicine doctor from Cerrahpasa faculty of medicine, Istanbul University, Istanbul, Turkey. His research interests include toxicology, emergency ultrasound, electrocardiography. He intends to pursue critical care in emergency in future. Email: drmehmettatli@gmail.com

Kerem Dost Bilmez is Medical Doctor at Emergency Department, Dr. Lutfi Kirdar Kartal Education and Research Hospital, Istanbul, Turkey. He earned the undergraduate degree medicine doctor from Cerrahpasa faculty of medicine, Istanbul University, Istanbul, Turkey. His research interests include experimental animal studies and orthopedic emergencies. He intends to pursue trauma care in future. Email: keremdost7@hotmail.com

Ozlem Guneyssel is Associate Professor and CMO at Emergency Department, Dr. Lutfi Kirdar Kartal Education and Research Hospital, Istanbul, Turkey. He earned the undergraduate degree medicine doctor from Dokuz Eylul University, Izmir, Turkey and postgraduate degree from emergency medicine physician from Emergency Department of Marmara University, Istanbul, Turkey. Email: guneyssel@gmail.com

Access full text article on
other devices

Access PDF of article on
other devices

Edorium Journals: An introduction

Edorium Journals Team

About Edorium Journals

Edorium Journals is a publisher of high-quality, open access, international scholarly journals covering subjects in basic sciences and clinical specialties and subspecialties.

Invitation for article submission

We sincerely invite you to submit your valuable research for publication to Edorium Journals.

But why should you publish with Edorium Journals?

In less than 10 words - we give you what no one does.

Vision of being the best

We have the vision of making our journals the best and the most authoritative journals in their respective specialties. We are working towards this goal every day of every week of every month of every year.

Exceptional services

We care for you, your work and your time. Our efficient, personalized and courteous services are a testimony to this.

Editorial Review

All manuscripts submitted to Edorium Journals undergo pre-processing review, first editorial review, peer review, second editorial review and finally third editorial review.

Peer Review

All manuscripts submitted to Edorium Journals undergo anonymous, double-blind, external peer review.

Early View version

Early View version of your manuscript will be published in the journal within 72 hours of final acceptance.

Manuscript status

From submission to publication of your article you will get regular updates (minimum six times) about status of your manuscripts directly in your email.

Our Commitment

Six weeks

You will get first decision on your manuscript within six weeks (42 days) of submission. If we fail to honor this by even one day, we will publish your manuscript free of charge.

Four weeks

After we receive page proofs, your manuscript will be published in the journal within four weeks (31 days). If we fail to honor this by even one day, we will publish your manuscript free of charge and refund you the full article publication charges you paid for your manuscript.

Mentored Review Articles (MRA)

Our academic program "Mentored Review Article" (MRA) gives you a unique opportunity to publish papers under mentorship of international faculty. These articles are published free of charges.

Favored Author program

One email is all it takes to become our favored author. You will not only get fee waivers but also get information and insights about scholarly publishing.

Institutional Membership program

Join our Institutional Memberships program and help scholars from your institute make their research accessible to all and save thousands of dollars in fees make their research accessible to all.

Our presence

We have some of the best designed publication formats. Our websites are very user friendly and enable you to do your work very easily with no hassle.

Something more...

We request you to have a look at our website to know more about us and our services.

We welcome you to interact with us, share with us, join us and of course publish with us.

Edorium Journals: On Web

Browse Journals

CONNECT WITH US