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Kounis Syndrome - A Retrospective Post-Mortem Study

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Research Article

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Abstract

Kounis syndrome is defined as acute coronary syndrome caused by an allergic reaction or a strong immune reaction to a drug or any other substance. Mast cell activation and release of inflammatory cytokines from the reaction leads to spasm of the artery leading to the heart muscle or a plaque breaking free and blocking that artery. In this study, all the suspected cases of drug anaphylaxis which are autopsied during the period January 2011 to December 2014 were analyzed at the Department of Forensic Medicine & Toxicology, AIMS, BG Nagar, and Karnataka. The incidence, age and sex wise distribution of cases and histopathology reports were analyzed. In 6 cases histo-pathology report shows 80 to 90% block in coronaries with ruptured atheromatous plaques, cardiac muscle hypertrophy in heart, atheromatous plaques in aorta and hemorrhagic infarct, areas of intra-alveolar hemorrhage, pulmonary edema, focal areas shows histiocytes, cholesterol bodies. On examination of skin in and around the injection site using color tests, thin layer chromatography, high performance thin layer chromatographic methods at regional forensic science laboratory, 2 cases have responded for diclofenac compound and 3 cases have responded for traces of ceftriaxone compound and nothing was detected in remaining 2 cases.

Keywords: Kounis syndrome; Acute coronary syndrome; Anaphylaxis; Drugs

Introduction

Kounis syndrome is defined as acute coronary syndrome caused by an allergic reaction or a strong immune reaction to a drug or any other substance. Mast cell activation and release of inflammatory cytokines from the reaction leads to spasm of the artery leading to the heart muscle or a plaque breaking free and blocking that artery [1].

Three types of Kounis syndrome are:

1. Type I occurs in people without underlying coronary artery disease who have allergic ACS secondary to coronary artery spasm. This may lead to myocardial infarction.
2. Type II occurs in people with underlying asymptomatic coronary artery disease where an allergic reaction leads to either coronary artery spasm or plaque erosion.
3. Type III occurs in the setting of coronary thrombosis (including stent thrombosis) where aspirated thrombus stained with hematoxylin-eosin and Giemsa demonstrate the presence of eosinophils and mast cells respectively. It also includes those with people who have died suddenly after previous coronary stent insertion, where evidence of an allergic reaction to the stent is found on post-mortem examination

Material and Methods

In this study, all the suspected cases of drug anaphylaxis which are autopsied during the period January 2011 to December 2014 were analyzed at the Department of Forensic Medicine & Toxicology, AIMS, BG Nagar, and Karnataka. The incidence, age and sex wise distribution of cases and histopathology reports were analyzed.

In all the cases heart and both lungs were subjected to histopathology examination and skin, tissue in and around the injection site were subjected to color tests, thin layer chromatography, high performance thin layer chromatographic methods at regional forensic science laboratory.

Results

Total Number Autospied Cases	Total Number Of Suspected Cases Of Drug Anaphylaxis
453	7

Table 1: Incidence of Mandibular Fracture Cases.

Si.45o.	Age Group	Number of Cases	Male	Female	Total
1	<10 YEARS	0	0	0	0
2	11-20 YEARS	01	01	0	01
3	21-30 YEARS	0	0	0	0
4	31-40 YEARS	0	0	0	0
5	41-50 YEARS	03	02	01	03
6	>50 YEARS	03	03	0	03

Table 2: Age and Sex Wise Distribution of Cases.

Discussion

In our study total numbers of autopsied cases during 2011 to 2014 are 453. In that, seven suspected cases of drug anaphylaxis were autopsied. Maximum number of victims belongs to 41-50 years (06 cases) age group with male dominance. In 6 cases histo-pathology report shows 80 to 90% block in coronaries with ruptured atheromatous plaques, cardiac muscle hypertrophy in heart, atheromatous plaques in aorta and hemorrhagic infarct, areas of intra-alveolar hemorrhage, pulmonary edema, focal areas shows histiocytes, cholesterol bodies. On examination of skin in and around the injection site with color tests, thin layer chromatography, high performance thin layer chromatographic methods at regional forensic science laboratory, 2 cases have responded for diclofenac compound and 3 cases have responded for traces of ceftriaxone compound and nothing was detected in remaining 2 cases.

Abdelghany M reviewed 175 patients who fulfilled the definition of one of the three types of KS [1]. Kounis syndrome, it is a hypersensitivity coronary disorder caused by exposure to drugs, food, environmental and other substances [2]. Vasospastic allergic angina, allergic myocardial infarction and stent thrombosis with occluding thrombus infiltrated by eosinophils and mast cells constitute the three main types of this syndrome. Cevik have summarized recommendations concerning the treatment of KS from available data, since most information about KS comes from case reports [3].

According to a study done in South Africa, they report the case of an HIV-negative 39-year-old man with no coronary risk factors or family history of premature coronary artery disease, who developed Kounis syndrome after the administration of fluoroquinolone for dysuria [4]. Tajda present a case of male who suffered attacks of dyspnoea, hypoxemia, hypotension, purple-red skin, and

chest pain over several years. He was diagnosed with idiopathic anaphylaxis. Based on the pattern of chest pain of ischemic origin during the attacks he was retrospectively diagnosed with Kounis syndrome [5].

Venkataramanan G states that, their patient in addition to acute coronary thrombosis his hospital course was also complicated by acute venous thrombosis and heparin induced thrombocytopenia which may suggest a disorder of inherent coagulopathy behind Kounis syndrome. Kounis syndrome is a complicated condition that results in significant cardiovascular manifestations such as an acute myocardial infarction. Increasing reports of this entity in literature warrant paying more attention to prevention rather than cure in known atopic individuals [6].

According to Sarfaraz M**,** Anaphylaxis rarely manifests as a vasospastic acute coronary syndrome with or without the presence of underlying coronary artery disease. The variability in the underlying pathogenesis produces a wide clinical spectrum of this syndrome. They emphasized on three cases of anaphylactic acute coronary syndrome that display different clinical variants of this phenomenon. The main patho-physiological mechanism of the allergic anginal syndromes is the inflammatory mediators released during a hypersensitivity reaction triggered by food, insect bites, or drugs. It is important to appropriately recognize and treat Kounis syndrome in patients with exposure to a documented allergen [7].

Conclusion

The anaphylaxis induced deaths with or without underlying coronary artery disease carries immense medico-legal importance in current times of medical negligence cases. KS presents one of the more important clinical syndromes where sudden deaths occur in a seemingly normal patient on exposure to various allergens particularly antibiotic and painkiller injections where the treating doctor will be put to great deal of medico-legal problems in-spite of taking all the precautions. So the important conclusion to be inferred from such scenarios is that the treating doctor should always be reasonably careful before giving any injectables to susceptible patients to avoid unnecessary litigations and harassment from patient's attenders.

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