

Kounis syndrome: Beware of bee sting!

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Abstract

The Kounis syndrome is described as acute coronary syndrome associated with allergic reaction. It can be triggered by various causes and is associated with significant morbidity and mortality. It is important for physician to recognize this syndrome and its clinical significance as it can be misdiagnosed and the management requires attention to both cardiac and anaphylactic pathophysiology. We reported a case of acute infero-posterior myocardial infarction triggered by bee sting, and discussed its possible underlying mechanism, treatments and its successful outcome.

Keywords: Kounis syndrome; Bee stings; Acute coronary syndrome; Hypersensitivity disorder

1. Introduction

Envenomation by bee stings usually trigger self-limiting local reactions, or occasionally, anaphylaxis and systemic manifestations. Kounis syndrome is defined as acute coronary syndrome secondary to hypersensitivity reactions and allergic insult [1]. It was first reported in 1991 by Kounis and Zavras, also known as allergic angina syndrome or coronary hypersensitivity disorder [1]. The myocardial ischemia is caused by the release of inflammatory cytokines and inappropriate platelet activation through mast cell activation. This will trigger coronary vasospasm, atheromatous plaque erosion or rupture. Besides coronary arteries, it can also affect the mesenteric and cerebral arteries. Clinical features include angina, shortness of breath, vomiting, syncope, urticaria, diaphoresis, bradycardia or hypotension. Cardiac enzymes can be normal or elevated. We discussed a case of a young gentleman presented with acute inferoposterior myocardial infarction after multiple bee stings.

2. Case presentation

A 28 -year-old gentleman with no past medical history presented with multiple alleged bee stings over his face in the evening. Immediately he developed facial swelling, pain and generalized body rashes. He visited a non-PCI (Percutaneous coronary intervention) district hospital for treatment. He was hypotensive, otherwise conscious and not in respiratory distress. Physical examinations showed multiple bee stings marks, facial swelling and generalized erythematous rashes. He was treated with fluid resuscitation, intramuscular dexamethasone and adrenaline. An hour later he developed severe left sided chest pain, associated with diaphoresis and shortness of breath. His electrocardiogram (ECG) showed ST-elevation over the inferior and posterior leads (Figure 1), together with raised troponin. He was successfully thrombolysed with intravenous streptokinase. ECG post-thrombolysis showed a good resolution of ST elevations and clinically he was pain free. 2-D echocardiography showed a good left ventricular ejection fraction of 50-55%, without hypokinesia and chambers size were normal. He was transferred to cardiology center for further care. Coronary angiogram showed normal and patent epicardial coronary arteries (Figure 2). He remained asymptomatic and was discharged well.

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3. Discussion

Bee sting usually causes self-limiting local reactions or occasionally systemic manifestations. Acute coronary syndrome caused by bee stings is rare and is described as Kounis syndrome. Other causes included snake venom, food allergy, drugs, serum sickness and mastocytosis [1]. This immune mediated insult is triggered by mast cell activation, release of inflammatory cytokines and inappropriate platelet activation, causing vasospasm or atheromatous plaque rupture and thrombosis [1,2]. Kounis syndrome has three variants. Type 1 is vasospastic allergic angina, caused by coronary vasospasm with underlying normal coronary arteries and without cardiovascular risk factors. Type 2 is allergic myocardial infarction, caused by plaque rupture resulting in infarction with underlying inactive pre-existing atheromatous disease. Type 3 is stent thrombosis, due to stent thrombosis secondary to platelet activation with underlying previous stenting [3]. Type I Kounis syndrome was the likely mechanism in this case as our patient had normal coronary arteries without cardiovascular risk factors. The infero-posterior myocardial infarction in this case was also suggestive of type 1 Kounis syndrome as right coronary artery with ostial muscular band is more susceptible to coronary vasospasm [4]. Besides, bee-sting induced anaphylaxis can causes hypotension and subsequently myocardial ischemia. The adrenaline given may further aggravated the vasoconstriction resulting in myocardial ischemia. Kounis syndrome's management consists of treatment to both anaphylactic and cardiac pathophysiology, which included myocardial reperfusion strategy and allergic treatment. Morphine, which is commonly used in acute coronary syndrome should be avoided as it may triggers histamine release and further aggravates the mast-cell induced vasospasm. Adrenaline should also be used with caution as it might aggravates vasospasm and worsens the myocardial ischemia [5,6].

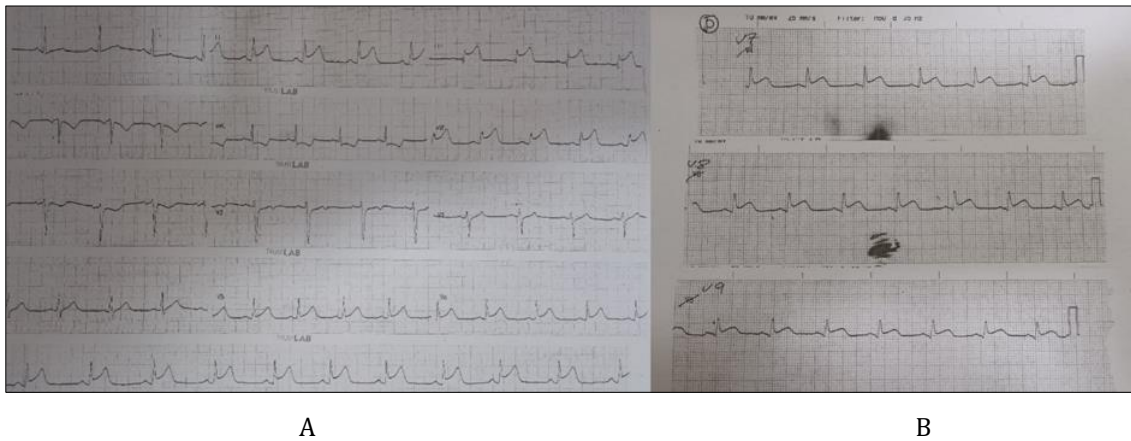


Figure 1 ECG A showed ST elevation in leads II, III, AVF and ECG B showed posterior involvement in leads V7, V8, V9

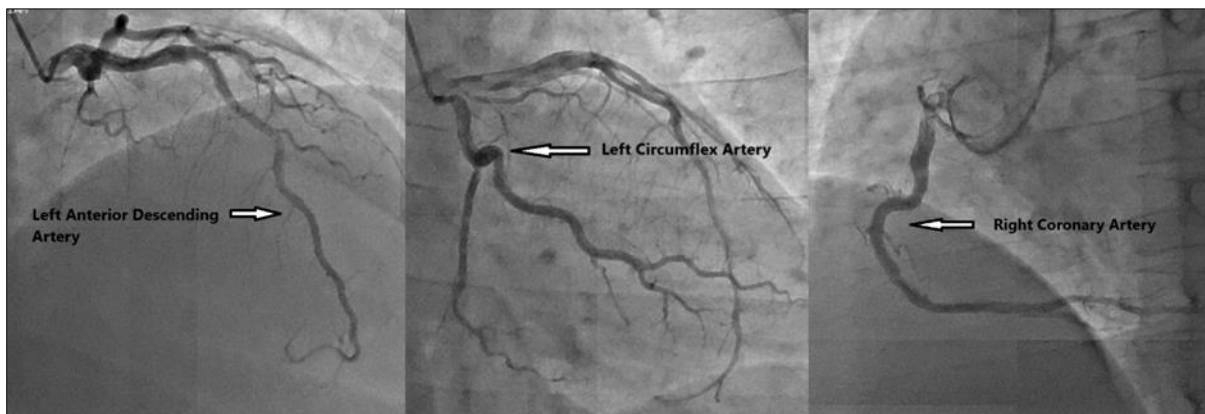


Figure 2 Coronary angiogram showed patent left anterior descending artery, left circumflex artery and right coronary artery

4. Conclusion

Our aim of presenting this case is to highlight the importance of recognizing this rare phenomenon, which can result in significant morbidity and mortality. ECG should be performed immediately in patient with bee sting presented with chest pain. High index of suspicion, early detection, effective multidisciplinary team communication, appropriate management are all important in optimizing patient care.

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest

No conflict of interests declared.

Statement of ethical approval

The present research work does not contain any studies performed on animals/humans subjects by any of the authors.

Statement of informed consent

Written consent for the paper publication was obtained.

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