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To cite this article: Luisa De Gennaro, Natale Daniele Brunetti, Nicola Locuratolo, Massimo Ruggiero, Manuela Resta, Giuseppe Diaferia, Michele Rana & Pasquale Caldarola (2016): Kounis syndrome following canned tuna fish ingestion, Acta Clinica Belgica, DOI: [10.1080/17843286.2016.1265756](https://doi.org/10.1080/17843286.2016.1265756)

To link to this article: <http://dx.doi.org/10.1080/17843286.2016.1265756>



Published online: 20 Dec 2016.



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Case Report

Kounis syndrome following canned tuna fish ingestion

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Kounis syndrome (KS) is a complex of cardiovascular symptoms and signs following either allergy or hypersensitivity and anaphylactic or anaphylactoid insults. We report the case of 57-year-old man, with hypertension and history of allergy, referred for facial rash and palpitations appeared after consumption of canned tuna fish. Suddenly, the patient collapsed: electrocardiogram showed ST-elevation in inferior leads. The patient was transferred from the spoke emergency room for coronary angio, which did not show any sign of coronary atherosclerosis. A transient coronary spasm was therefore hypothesized and the final diagnosis was KS. To the best of our knowledge, this is one of the first cases of KS following the ingestion of tuna fish. KS secondary to food allergy has also been reported, and shellfish ingestion has been considered as one of the most active KS inducer foods. Canned tuna fish too is well known as an allergy inducer. Tuna fish allergy should be considered, however, within the context of scombroid food poisoning, also called histamine fish poisoning. Fish with high levels of free histidine, the enzyme substrate converted to histamine by bacterial histidine decarboxylase, are those most often implicated in scombroid poisoning. Inflammatory mediators such as histamine constitute the pathophysiologic basis of Kounis hypersensitivity-associated acute coronary syndrome. Patients with coronary risk factors, allergic reaction after food ingestion, and suspected scombroid poisoning should be therefore carefully monitored for a prompt diagnosis of possible coronary complications.

Keywords: Kounis syndrome, acute coronary syndrome, tuna fish

Introduction

Kounis syndrome (KS) is a complex of cardiovascular symptoms and signs following either allergy or hypersensitivity and anaphylactic or anaphylactoid insults.¹ Vasospastic allergic angina, allergic myocardial infarction, and stent thrombosis with occluding thrombus infiltrated by eosinophils and/or mast cells are the three reported variants of this syndrome. The condition was firstly described by Kounis as a histamine-induced coronary artery spasm and defined as allergic angina.²

Intra-venous nitrates, calcium-antagonists, and anti-platelet therapy are generally able to manage symptoms and ischemia,^{3,4} while beta-blockers are usually contra-indicated, possibly worsening coronary vaso-spasm. Adrenaline, instead, was occasionally reported as a possible trigger of Takotsubo phenomenon.^{5,6}

Case Report

We report the case of 57-year-old man, with hypertension and history of allergy to eggs and bananas, in treatment

with olmesartan 10 mg; the patient was referred for facial rash and palpitations appeared after consumption of canned tuna fish.

Physical examination in emergency room showed angioedema, while admission electrocardiogram displayed sinus tachycardia, with diffuse mild ST-depression (Fig. 1). A bolus of betamethasone 4 mg and chlorpheniramine maleate 10 mg was therefore infused.

Suddenly, the patient collapsed: systolic blood pressure was 50 mm Hg and electrocardiogram now showed ST-elevation in inferior leads, mirrored by ST-depression in V1–V3 leads (Fig. 2). The patient was therefore transferred from the spoke emergency room for coronary angio and was admitted to the ‘hub’ cath lab after a 30-min transfer. Laboratory showed raised C-reactive protein (10.3 n.v. < 5 mg/L) and NT-pro-BNP levels (262 n.v. < 125 pg/mL); troponin levels were mildly increased (0.54 n.v. < 0.07 ng/mL).

ST-elevation after admission to cath-lab, however, gradually recovered, and, not unexpectedly, coronary angio did not show any sign of coronary atherosclerosis. A transient coronary spasm was therefore hypothesized and the final diagnosis was KS.

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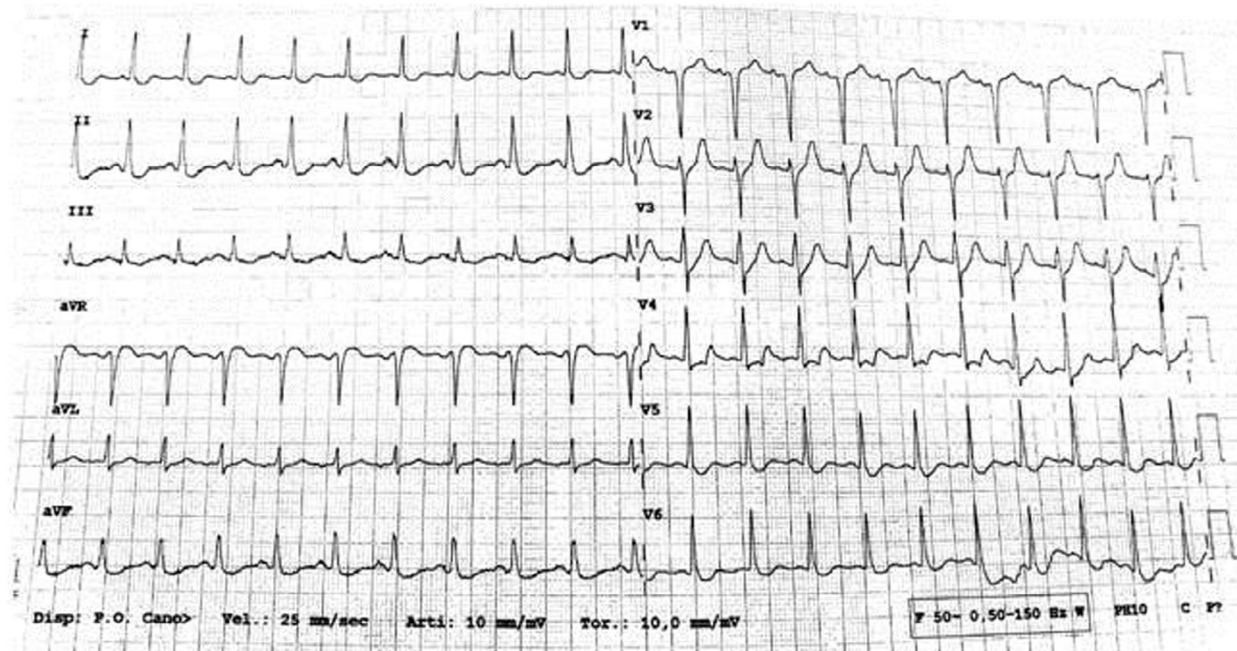


Figure 1 Electrocardiogram at admission showing diffuse ST-depression and sinus tachycardia.

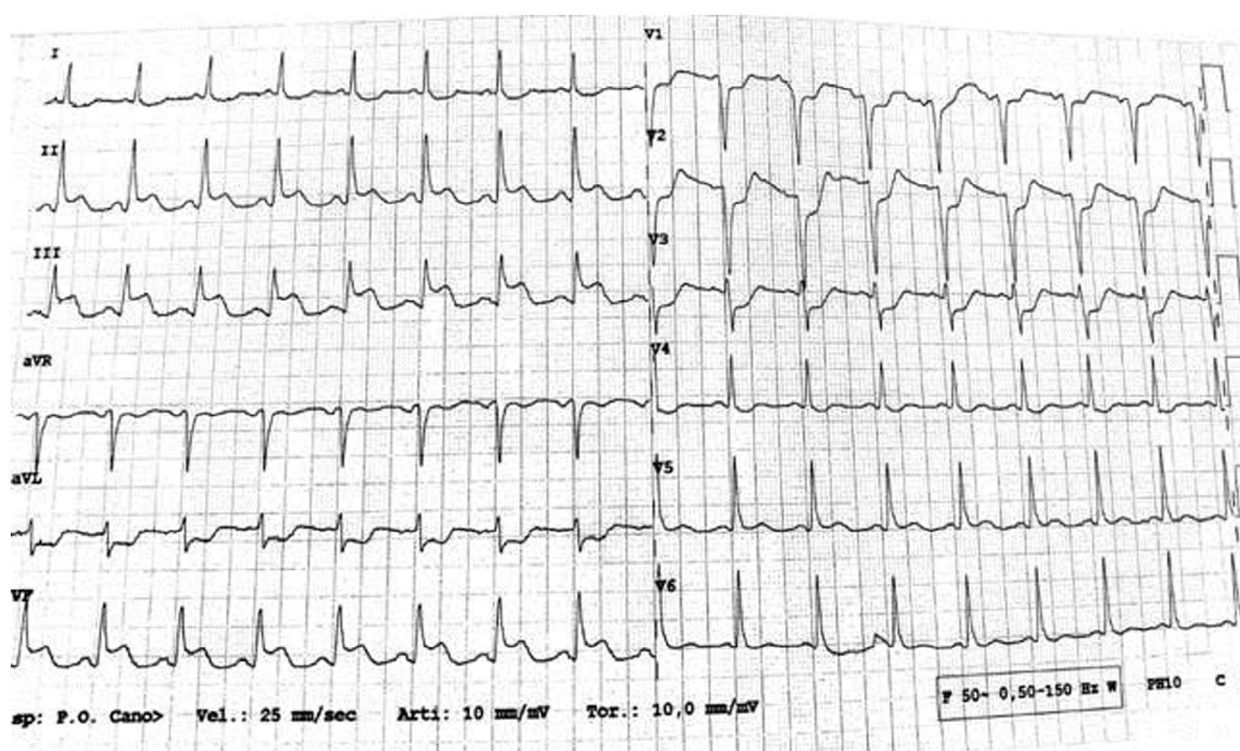


Figure 2 Electrocardiogram after admission showing ST-elevation in inferior leads mirrored by ST-depression in V1-V3 leads.

The patient gradually recovered and was discharged one week later in therapy with aspirin, nitrates, atorvastatin, and pantoprazole (Fig. 3). Six-month follow up was uneventful.

Discussion

To the best of our knowledge, this is one of the first cases of KS following the ingestion of canned tuna fish. Several

factors have been reported as possibly related with the onset of KS: drugs,⁸ antibiotics,⁹ insects' stings,^{10,11} latex,¹² metals,¹³ nickel.¹⁴

KS secondary to food allergy has also been reported,¹⁵ and shellfish ingestion has been considered as one of the most active KS inducer foods.^{16,17} Shellfish allergy is of increasing concern, as its prevalence has risen in recent

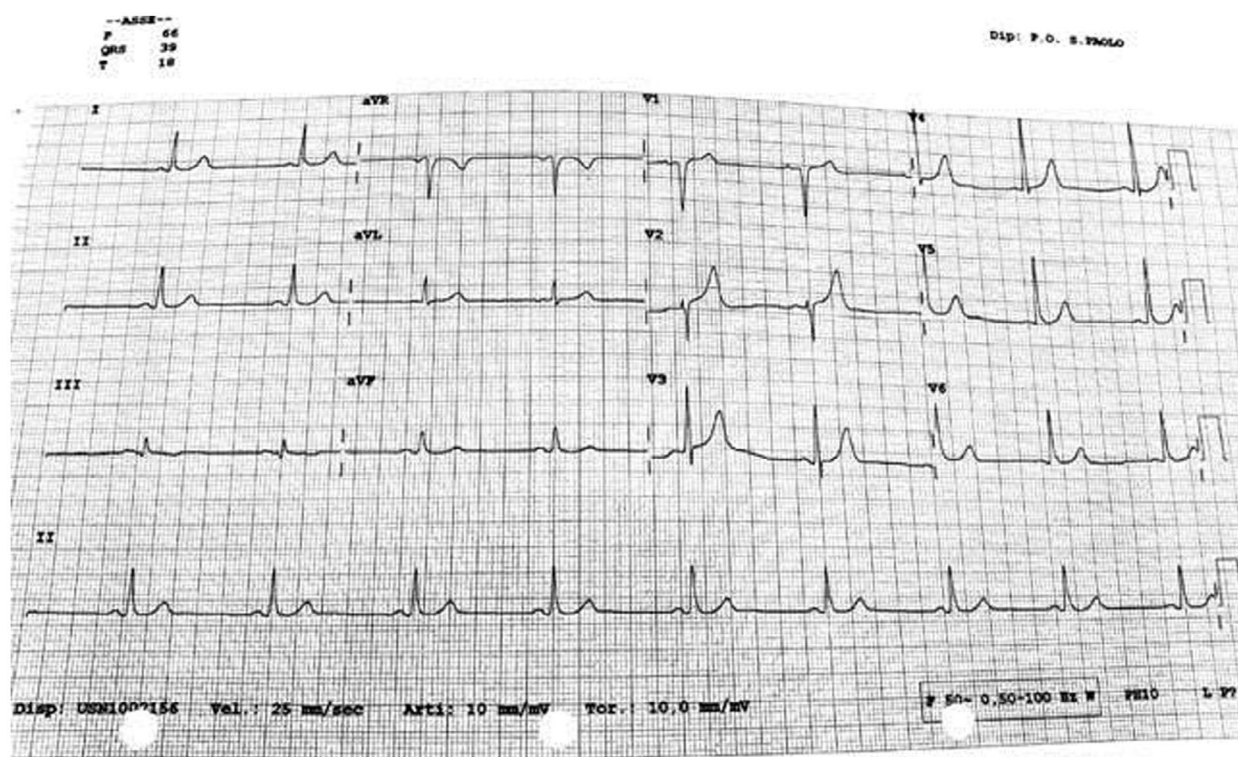


Figure 3 Electrocardiogram at discharge showing absence of signs of myocardial necrosis.

years.¹⁸ Allergic reaction following shellfish consumption, however, can result from exposure to the seafood itself or various non-seafood components in the product.¹⁹ Non-immunological reactions to seafood can be triggered by contaminants such as parasites, bacteria, viruses, marine toxins, and biogenic amines. Ingredients added during processing and canning of seafood can also cause adverse reactions.

Canned tuna fish too is well known as an allergy inducer.²⁰ Tuna fish allergy should be considered, however, within the context of scombroid food poisoning. Scombroid poisoning, also called histamine fish poisoning, is an allergy-like form of food poisoning²¹: inadequate cooling following harvest promotes bacterial histamine production, and can result in outbreaks of scombroid poisoning. Fish with high levels of free histidine, the enzyme substrate converted to histamine by bacterial histidine decarboxylase, are those most often implicated in scombroid poisoning.

Cases of acute coronary syndrome as clinical presentation of scombroid poisoning have been already reported.^{22,23} Inflammatory mediators such as histamine (also with neutral proteases, arachidonic acid products, platelet-activating factor, and a variety of cytokines and chemokines) constitute the pathophysiologic basis of Kounis hypersensitivity-associated acute coronary syndrome.²⁴ KS has been associated with scombroid syndrome on several occasions following raw, undercooked, spoiled, inadequately preserved, or refrigerated fish tuna meat consumption.²⁵ Scombroid syndrome from consumption of canned tuna fish, however, is extremely rare and

has been described in 1973 as an outbreak affecting 232 persons.²⁶

Patients with coronary risk factors and allergic reaction after food ingestion should be therefore carefully monitored for a prompt diagnosis of possible coronary complications.

Disclosure statement

No potential conflict of interest was reported by the authors.

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