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Kounis syndrome and ziprasidone

Leonard Hamera^a, Basem F. Khishfe^{b,*}^a Ross University School of Medicine, Dominica^b Department of Emergency Medicine, Mt Sinai Hospital, United States

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ABSTRACT

Kounis syndrome (KS), described by Kounis and Zavras in 1991, is the manifestation of an allergic reaction preceding and leading to an acute coronary syndrome (ACS). There are three variants of Kounis Syndrome. Here we describe a novel case report of a type 1 variant secondary to Ziprasidone.

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1. Introduction and case presentation

A 38-year-old man with a history of bipolar disorder presented to our emergency department (ED) for suicidal ideations. The patient had a prescription for lithium but was non-compliant for several months. He denied any further past medical, surgical, or family history. Additionally, he denied tobacco, alcohol, or drug use and had a negative serum alcohol and urine drug screen. Physical examination was unremarkable. Initial vital signs were unremarkable. In the ED he became acutely psychotic and violent and was given ziprasidone (Geodon) 20 mg IM. Vitals at this time were significant for heart rate of 107 and blood pressure of 132/69. After roughly forty minutes he started having chest pain and diffuse urticaria. His vitals signs were 99.2 F, heart rate 96, respiratory rate 16, and blood pressure 141/76. ECG was done and showed ST elevations in leads V2–4. No prior EKGs were available to compare. Cardiac catheterization laboratory was activated. The patient received Benadryl 25 mg intravenously, Solumedrol 125 mg intravenously, Aspirin 325 mg orally, and Lovenox 80 mg subcutaneously. His symptoms then started to resolve slowly. His cardiac catheterization revealed clean coronaries with no evidence of myocardial infarction, thrombi, or ischemia. His laboratory workup including complete blood count and basic metabolic panel was within normal limits. The troponin level was <0.03 ng/mL (Reference: 0–0.03), the CK-MB was 1.2 ng/mL (Reference: 0–3.6) and the CPK was 89 IU/L (Reference: 29–168). The cardiologist made a diagnosis of Type 1 variant Kounis syndrome.

2. Discussion

Kounis syndrome (KS) has no official definition but the original explanation by Drs. Kounis and Zavras of an allergic reaction causing an acute coronary syndrome (ACS) and hypersensitivity reaction is widely used when describing this series of events [1]. Since then KS has been described in a wide range of ages, races, and geographic regions. While no data exists for the overall incidence and prevalence, experts believe that KS is not an uncommon occurrence; rather it is underreported due to misdiagnosis or unrecognized cases [2].

Multiple etiologies have been reported including medication, environmental factors, food, and cardiac stent placement. KS is further described by three variants. Type 1 variant includes patients without coronary artery disease who present with coronary artery spasm secondary to the acute release of inflammatory markers with or without associated myocardial infarction markers [3,4,5,6]. The Type 2 variation includes patients with known preexisting atheromatous disease. Here the acute hypersensitive insult causes plaque erosion or rupture resulting in acute myocardial infarction [3,4,5,6]. Type 3 variant consists of patients with coronary disease in addition to drug eluting coronary stent thrombosis [3,4,5,6]. This variant includes thrombus specimens that stain positive for eosinophils and mast cells on haematoxylin-eosin and Giemsa, respectively [3,4,5,6].

Early diagnosis and variant recognition is imperative since it will direct appropriate treatment. Treatment and management are based on multiple case reports and case series and while there is no definitive protocol, expert opinion recommends that treatment should follow guidelines for anaphylaxis and ACS evidence based guidelines [5,6]. A detailed history and physical examination must be rapidly conducted.

* Corresponding author at: 2701 W 68th St, Chicago, IL 60629, United States.
E-mail address: basem.khishfe@sinai.org (B.F. Khishfe).

Any report of starting a new medication(s), environmental exposure, or any recent stent placement should be explored.

While narrowing down our differential diagnosis it was important to rule out other causes of ischemia. Demand ischemia occurs with increased myocardial oxygen demand or a lack of supply [7]. Another possibility was vasospastic (Prinzmetal or variant) angina. Vasospastic angina is defined by its diagnostic criteria that include evidence of coronary spasm on angiography, response to nitrates, and transient ischemic changes on ECG [8]. Based on our initial history and physical examination there was no concern for underlying cardiac issues or anaphylaxis as compared to our follow up examination where our patient complained of new onset chest pain and diffuse urticaria. Laboratory findings did not reveal any underlying anemia, electrolyte disturbances, or cardiac enzyme elevations that could provide an explanation for the patient's symptoms.

A negative urine drug screening decreased the likelihood of illicit drug-induced ischemia. However, given the unknown nature of substances being abused and the limitations of testing, we will never be able to definitely exclude this possibility.

The combination of anaphylactic and ACS signs and symptoms in the absence of any contributing history or better defined indication for demand ischemia or vasospastic angina led to the diagnosis of Type 1 variant Kounis syndrome.

Kounis syndrome can pose a difficult scenario for physicians. Since there is no official standard of care, we rely on case reports and expert opinion for management. However, as awareness grows, we hope to help build a guideline for treatment.

Sources of support and disclaimers

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