Section: Emergency Medicine

Case Report

AN OVERLOOKED INTERSECTION OF HYPERSENSITIVITY AND ANATOMY: A CASE REPORT OF NIMESULIDE-INDUCED KOUNIS SYNDROME WORSENED BY MYOCARDIAL BRIDGING

Nagapraneeth Vankadara[1], Roja Lakshmi Poreddy[2], Irshad Ahmed[2], Srikar Yadav Botchu[2], Nishitha Nakka[2]

[1-2]Emergency Medicine, PES Institute of Medical Sciences and Research, Kuppam, India.

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Corresponding Author:
Dr. Nagapraneeth Vankadara,
Email: v.nagapraneeth99@gmail.com

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ABSTRACT

Kounis syndrome, also known as allergic myocardial infarction, is a condition that results from exposure to a variety of allergens. It is further classified into three types: allergen-induced vasospastic angina (type I), allergy-induced myocardial infarction secondary to plaque erosion or rupture (type II), and allergy-induced stent thrombosis (type III). The complexity of Kounis syndrome associated with allergen exposure can be further exacerbated by myocardial bridging, a congenital anomaly. The diagnosis is supported by both non-invasive (electrocardiography, diagnostic technique) and invasive (serial troponin levels, coronary angiography) methods. The treatment in this context poses a challenge to emergency clinicians, particularly regarding the use of nitrates after diphenhydramine administration, as it remains controversial in the context of hypotension and myocardial bridging. This report highlights the importance of recognizing the anatomical and hypersensitivity components contributing to Kounis syndrome and emphasizes the need for prompt diagnosis and treatment modalities of an under diagnosed case of Nimesulide induced vasospastic angina (Type I Kounis syndrome) worsened by congenital myocardial bridging.

INTRODUCTION

Kounis syndrome an intriguing intersection between allergic reactions and acute coronary events remains an under recognized entity in clinical practice.[1] It is characterised by coronary vasospasm, plaque rupture, stent thrombosis triggered by various allergens.[1,2] Among these, Nimesulide is rarely implicated culprit. The diagnostic challenge becomes more complex when pre-existing structural cardiac anomalies coexist, predisposing the myocardium to ischemia and amplifying the allergic vasospasm. This report describes a rare and diagnostically challenging case of Nimesulide induced Kounis syndrome compounded by congenital myocardial bridging.[3] The case highlights the importance of clinical vigilance and comprehensive management strategies in patients presenting with acute coronary manifestations following drug exposure.

Case Presentation

A 35-year-old man presented with complaints of chest pain for four hours, radiating to back, present even at rest and not associated with palpitations or sweating. The pain followed ingestion of two tablets of nimesulide 100 mg. There was no history of breathlessness, orthopnea, or paroxysmal nocturnal dyspnea. He was a known diabetic for one year, on metformin 500 mg once a day, with no prior cardiac disease or other comorbidities. His past history was significant for an appendicectomy 15 years ago.

On arrival, his heart rate was 96 beats/min, respiratory rate 16 cycles/min, and blood pressure 130/90 mm Hg. Oxygen saturation of 98% on room air. Physical examination revealed normal heart sounds, clear vesicular breath sounds, and no neurological and abdominal abnormalities. There were no signs of heart failure.

Electrocardiogram (ECG) demonstrated ST-segment elevation in leads V2, V3, V4, I and avL with reciprocal changes which is suggestive of antero-lateral wall myocardial infarction (AWMI).

[FIGURE 1: Initial electrocardiogram]

Initial cardiac markers showed serum troponin I of 27 pg/mL with normal echocardiographic findings. Subsequent testing revealed an elevated troponin I of 2436 pg/mL. Coronary angiography performed via the radial artery and revealed coronary artery disease with branch vessel involvement and significant myocardial bridging (70%) in the mid-left anterior descending artery without evidence of atheromatous plaque or significant stenosis.

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[FIGURE 2: Photo of coronary angiography]
[FIGURE 3: Photos of coronary angiography during diastole and systole respectively revealing significant myocardial bridging in left anterior descending artery during systole]
The patient was managed conservatively, as coronary artery spasm was suspected rather than atherosclerotic obstruction. Antihistamines, Proton pump inhibitors and anxiolytics were prescribed as adjuncts.
The patient was counseled to avoid further use of nimesulide. His symptoms improved, and his chest pain subsided. Serial ECGs showed gradual resolution of ST-segment elevations with normalization of cardiac biomarkers and electrolytes and monitored for further exacerbations. He was discharged after 5 days.
At 12-month follow-up, there were no recurrences or exacerbations.
[FIGURE 4: Follow up Electrocardiogram after 12 months]

DISCUSSION

Myocardial bridging occurs when a segment of a major coronary artery courses intramurally through a myocardium rather than epicardial surface. This intramural portion, known as "tunnelled segment" most commonly involves left anterior descending artery (LAD). During systole, the tunnelled segment is compressed, resulting in temporary narrowing of the coronary lumen and reduced blood flow leading to symptoms like chest pain.[3] Although the condition is often clinically silent and incidentally detected during coronary angiography. In rare cases, it may result in significant myocardial ischemia or even fatal outcomes.
The clinical significance of myocardial wall bridging depends upon anatomical characteristics of tunnelled segment and associated vasoconstrictive factors. Normally systolic compression of the tunnelled segment is benign.[3] However, when the compression persists into the diastole, the phase during which coronary perfusion predominantly occurs ischemia may develop. Contributing factors include increased heart rate, shortening of diastole, elevated flow velocity. These conditions can exacerbate coronary vasospasm, especially in response to triggers such as exercise, allergic reactions or certain medications.
Treatment of myocardial bridging depends on presence of objective signs of ischemia.[3] If it is incidental to coronary angiography, treatment is not needed. In the presence of signs of ischemia beta-blockers and/or calcium channel blockers are given which reduces heart rate and contractility and thereby prolonging diastole allowing adequate perfusion to myocardium.[3] Invasive or surgical options are reserved for cases with refractory ischemia even with medical therapy.[3]
In the present case, the synergistic effect of severe coronary spasm secondary to ingestion of nimesulide combined with significant myocardial bridging of LAD artery led to myocardial ischemia. The occurrence of acute coronary syndrome (ACS) following exposure to non-steroidal anti-inflammatory drugs (NSAIDs) such as nimesulide is extremely rare.[1,4] This phenomenon is often associated with Kounis syndrome first described by Kounis in 1991,[5] which represents an acute coronary event precipitated by allergic or hypersensitivity reactions. Kounis syndrome occurs due to activation of mast cells and platelets, resulting in an intense inflammatory reaction that can provoke coronary vasospasm, including ST-elevation myocardial infarction and even stent thrombosis.[2,6]
The most common triggering agents include non-steroidal anti-inflammatory drugs (NSAIDs), antibiotics, vaccinations (notably SARS-CoV-2 vaccines), contrast media, insect bites, foods, and even coronary stents.[2,4,5]
Although rare, Kounis syndrome is considered ubiquitous, as it can affect any race, sex, or age group. Its rarity is largely attributed to underdiagnoses, often due to lack of clinical recognition. According to the literature, three types of Kounis syndrome have been described, with a predominance in males.[1-4,6]

- Type I: Sudden coronary vasospasm in patients with morphologically normal coronary arteries and no conventional risk factors.[1-4]
- Type II: Occurs in patients with pre-existing atheromatous coronary artery disease, in whom allergic insults lead to plaque erosion or rupture.[1-4]
- Type III: Occurs in patients with coronary stents - subdivided into IIIa (stent thrombosis in drug-eluting stents) and IIIb (stent thrombosis in bare-metal stents).[1-4]

The first descriptions of allergic cardiac reactions date back to the 1950s, when a 49-year-old male developed symptoms secondary to penicillin administration.[4,5] These reactions were initially referred to as "allergic angina" or "serum acute carditis.".[4,5] In 1991, Kounis and Zavras expanded the understanding of this phenomenon describing the role of inflammatory mediators such as histamine, platelet-activating factor, cytokines, and chemokines in its pathophysiology.[5] Activation and degranulation of mast cells release these mediators-particularly histamine and neutral proteases-within cardiac tissue inducing coronary vasospasm or plaque destabilization.[4,5] Because histamine serves as the primary culprit, this condition has also been termed as histamine-induced angina.[5]
Kounis syndrome can affect the entire vascular system, though cerebral vessels are less commonly involved as IgE cannot cross the blood-brain barrier.[5] The syndrome is most commonly associated with the epicardial coronary arteries, presenting as cardiovascular symptoms such as chest pain, chest discomfort, dyspnea, and sometimes syncope.[1,4,5] In some cases it is accompanied by

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urticaria or other allergic manifestations prompting patients to seek emergency care.

Diagnosis of Kounis syndrome requires a high index of suspicion. A thorough clinical history and physical examination are essential but not sufficient. Bedside investigations such as electrocardiogram (ECG) and cardiac biomarkers play a critical role in early identification.[2,4] Typical ECG findings may demonstrate ST-segment elevation or depression, as well as reciprocal changes indicative of acute ischemia. Laboratory studies such as troponin and creatine kinase can be supportive, while coronary angiography remains the definitive diagnostic and therapeutic tool, distinguishing vasospasm or allergic-mediated thrombosis from atherosclerotic causes.[2,4] Additional imaging modalities, such as CT coronary angiography and cardiac MRI, can provide further insights regarding coronary anatomy and myocardial ischemia.[2]

Management of Kounis syndrome is complex because it involves addressing both the allergic reaction and the acute coronary syndrome simultaneously. Treatment strategies include antihistamines, corticosteroids, and antiplatelet agents, along with invasive coronary evaluation when indicated.[2,4-5] Epinephrine remains the drug of choice for anaphylaxis, but its use is limited in patients on cardio selective drugs (e.g., beta-blockers, digoxin) as it may aggravate coronary vasospasm. In such situations, intravenous glucagon (1-5 mg over 5-7 minutes followed by infusion at 5-15 mcg/min) can be considered.[5]

In Type I Kounis syndrome, mild to moderate allergic reactions may be managed with antihistamines and corticosteroids, while intramuscular adrenaline reserved for severe reactions. In contrast, management of Type II and Type III, management requires a combination of anti-allergic treatment (antihistamines, corticosteroids, adrenaline if necessary) along with guideline-directed therapy for acute coronary syndrome (ACS).[2-4] Morphine should be avoided, as it may induce mast cell activation, and nitrates should be used with cautiously due to the potential risk of worsening hypotension.[5]

In our case, the patient developed signs of myocardial ischemia following ingestion of nimesulide tablets, which is suggestive of "allergic angina". The mechanistic interaction between allergic angina and myocardial bridging contributed to significant ischemia, as the bridged segment can constrict easily, particularly under conditions of endothelial dysfunction and vasoactive mediator release. This anatomical feature serve as vulnerable site for exaggerated coronary spasm.

Following the administration of intravenous diphenhydramine and proton pump inhibitors, the patient demonstrated marked clinical improvement.[2]

CONCLUSION

This case underscores the importance of maintaining a high index of suspicion for Kounis syndrome in young patients presenting with acute coronary syndromes following allergen exposure. The co-existence of allergic responses and coronary vasospasm along with structural factors like myocardial bridging synergistically amplified ischemic risk during an acute event. Incorporating the allergic panel, particularly serum tryptase estimation, plays a pivotal role in differentiating allergic angina from conventional coronary syndromes. Early recognition and appropriate management particularly with anti-histamines, corticosteroids and avoidance of allergic stimuli are essential to prevent amplified ischemic risk during an acute event. Heightened clinical awareness, patient education regarding allergen avoidance and the use of less invasive procedures whenever possible can significantly improve patient outcomes.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Nagapraneeth Vankadara, Roja Lakshmi Poreddy, Irshad ahmed, srikar yadav botchu

Acquisition, analysis, or interpretation of data: Nagapraneeth Vankadara, Roja Lakshmi Poreddy, nishitha nakka

Drafting of the manuscript: Nagapraneeth Vankadara, Roja Lakshmi Poreddy, Irshad ahmed, srikar yadav botchu, nishitha nakka

Critical review of the manuscript for important intellectual content: Nagapraneeth Vankadara, Roja Lakshmi Poreddy, Irshad ahmed

Supervision: Irshad ahmed, srikar yadav botchu, nishitha nakka

Disclosures

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REFERENCES

1. Almegbel M, Alshamardl K, Aleshaiwi L, Almutairi F: Kounis Syndrome: A Case Report and a Review of Recent Literature. Cureus. 2024, 16:16.
2. Borkar SK, Hande P, Bankar NJ: Kounis Syndrome: Bee Sting-Induced Acute Myocardial Infarction. Cureus. 2023, 23:15.
3. Rochel-Perez, E., Santaularia-Tomas, M., Martin-Dorantes: M., "et al." Triggers, Types, and Treatments for Kounis Syndrome: A Systematic Review. Clinics and Practice. 15:59.
4. Yuan SM. Myocardial Bridging: Braz J Cardiovasc Surg. 2016, 31:60-2. 10.5935/1678-9741.20150082
5. Poggiali E, Benedetti I, Vertemati V: "et al." Kounis syndrome: from an unexpected case in the Emergency Room to a review of the literature. Acta Biomed. 2022, 14:2022002. 10.23750/abm.v93i1.11862
6. Shrimanth YS, Vemuri KS, Gawalkar AA, Ghosh S, Vijay J, Prarthana T, Sihag BK: Kounis syndrome secondary to nimesulide ingestion: a case report. Egypt Heart J. 2021, 20:106. 10.1186/s43044-021-00233.x.

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