Kounis syndrome in anesthesia: The coronary arteries as the primary target of anaphylaxis

Madam,
We have read with great interest the report published by Kerai et al. concerning a 47-year-old male patient who developed anaphylactic shock and type I variant of Kounis with ventricular fibrillation following diclofenac intramuscular administration during parotid gland excision operation. The fluid administration was not helpful and the patient improved with anti-allergic treatment and inotropic support. This report brings to light the following issues. All the drugs used for induction of anesthesia namely midazolam, fentanyl, propofol, vecuronium, and sevoflurane have been incriminated for mild or severe hypersensitivity reactions.

Clinical studies have shown that patients simultaneously exposed to multiple allergens present more symptoms than monosensitized individuals. Furthermore, immunoglobulin E (IgE) antibodies with different specificities can have additive effects and small, even sub-threshold amounts might trigger mast cell degranulation and inflammatory mediator release. From the sequence of events and the lip swelling appeared after the intramuscular injection, it seems reasonable to conclude that the hypersensitivity reaction can be attributed to the last drug administered, the diclofenac. However, in the this case, the diclofenac constituted the sixth consecutive administered drug, further supporting our view that a potential sensitization should not be clinically regarded as a consequence of a single drug exposure but rather evaluated in the context of multiple drug sensitization. Anaphylactic shock is caused by systemic vasodilatation, volume loss from vascular permeability, plasma leakage, and reduced venous return, that lead to cardiac output reduction and coronary hypoperfusion with subsequent myocardial damage. However, experimental studies have revealed that left ventricular end diastolic pressure increases rapidly during anaphylactic shock and reduces cardiac output. This indicates pump failure and not coronary hypoperfusion because blood pressure declined steadily after 4 min and administration of fluids to counter a presumed peripheral vasodilatation was ineffective. Contrarily, the patient developed dynamic ischemic electrocardiographic changes and ventricular fibrillation that finally resolved with anti-allergic and inotrope medications.

The elevated tryptase levels document anaphylactic reaction while acute coronary syndrome (troponin elevation combined with ischemic changes) could be attributed to adverse effects of drug administration. Studies have shown that tryptase is elevated in acute coronary events of non-allergic etiology and that troponin could also increase in allergic reactions. This endorses the findings of Kounis of a common pathway for coronary events in both allergic and non-allergic reactions.

Therefore, the described patient seems to have suffered an anaphylactic reaction manifesting as Kounis syndrome I variant with normal coronary vasculature but with both tryptase and troponin elevation triggered by diclofenac intramuscular administration although the other anesthetic drugs could have contributed.

Keeping in mind that the coronary arteries could be the primary target for anaphylaxis, the use of fewer anesthetic agents may have a beneficial effect for patients.

Declaration of patient consent
The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have
given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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**Conflicts of interest**
There are no conflicts of interest.

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