Preventing Kounis syndrome by stent implantation: a reciprocal process?

To the Editor,

Coronary stent implantation is a life-saving procedure that has nowadays become the most frequently performed therapeutic procedure in medicine. However, the site of stent implantation usually becomes vulnerable for endothelial damage and disturbed vasomotion that can lead to stent thrombosis.

In the very interesting report published in this journal by Terzioğlu et al. (1) entitled "Kounis syndrome not induced but prevented by the implantation of a drug eluting stent: a case report.", a 65-year-old male patient with hypertension and diabetes who underwent bypass graft surgery developed an acute allergic reaction with dyspnea, itching, hand swelling, retrosternal chest pain, and syncope following paracetamol/propyphenazone tablet administration. Type II Kounis syndrome was diagnosed, which manifested as non-STEMI. Coronary arteriography revealed a severe midportion circumflex artery stenosis, and a paclitaxel-eluting stent was implanted, which gave favorable results. However, after 10 months, the patient again inadvertently received paracetamol/propyphenazone combination and developed urticaria, angioedema, and dyspnea within 10 min. His symptoms disappeared with an antiallergic treatment. This report raises important issues concerning allergy, Kounis syndrome, stent implantation benefits, and the role of stent composition in the pathophysiology of stent thrombosis.

1. It has been proposed that a threshold level of the released mast cell mediators exists above which coronary artery spasm and/or plaque erosion or rupture occurs. The magnitude of the initial allergic response, patient's sensitivity, patient's comorbidities, site of antibody–antigen reaction, allergen concentration, route of allergen entrance, and number of mast cell receptors may constitute additional factors (2). Patients with an increased serum baseline tryptase level are at a greater risk for immediate and severe hypersensitivity reaction and Kounis syndrome. In the described patient, the authors correctly anticipated that the coronary artery disease had been effectively treated with the previous stent insertion and that the active vulnerable plaque was stabilized. In addition, desensitization-like process after the previous episode could have occurred that alleviated the clinical course of the second episode.

2. Stent implantation improves microvascular function and reduces the elevated index of microcirculatory resistance. Complete and timely restoration of myocardial perfusion is the main aim while treating patients, and coronary stenting is regarded as an optimal therapy for most patients (3). The described patient had a single 90% lesion in the midportion of the left circumflex artery, and the implanted stent completely restored the coronary circulation.

3. However, the first and second generation drug-eluting stents, particularly the bioresorbable coronary ones, need strict adherence to the special product characteristics instructions and the Food and Drug Administration recommendations before implantation (4).

The latter has issued approval letters and safety alerts that emphasize on the indications and contraindications of stent implantation and clearly state that stents are contraindicated for patients with a known hypersensitivity or allergy to materials used in the device, contrast media, aspirin, or antiplatelet agents. The described patient was probably allergic to paracetamol/propyphenazone, despite negative prick and oral provocation tests (5), and the recurrence of Kounis syndrome should be expected during the second intake of this drug.

Therefore, this report shows that hypersensitivity inflammation can induce coronary stent thrombosis, whereas coronary stenting could alleviate hypersensitivity-associated thrombotic events by reducing microcirculatory resistance and restoring coronary perfusion.

Nicholas G. Kounis, Ioanna Koniari[1], Nicholas Patsouras, George Hahalis
Department of Cardiology, University of Patras Medical School; Patras, Rion, Achaia-*Greece*
Department of [1]Electrophysiology, Royal Bromptom Hospital; London - *England, United Kingdom*

References

1. Terzioğlu K, Ediger D, Tülümen Öztürk R, Durmuş E, Alışır MF. Kounis syndrome not induced but prevented by the implantation of a drug-eluting stent: a case report. Anatol J Cardiol 2017; 17: 412-3. [CrossRef]
2. Kounis NG. Coronary hypersensitivity disorder: the Kounis syndrome. Clin Ther 2013; 35: 563-71. [CrossRef]
3. De Maria GL, Cuculi F, Patel N, Dawkins S, Fahrni G, Kassimis G, et al. How does coronary stent implantation impact on the status of the microcirculation during primary percutaneous coronary intervention in patients with ST-elevation myocardial infarction? Eur Heart J 2015; 36: 3165-77. [CrossRef]
4. Review of XIENCE V everolimus eluting coronary stent system and PROMUS everolimus eluting coronary stent system: P070015. Silver Spring, MD: Food and Drug Administration, 2008(http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cftopic/pma/pma.cfm?num=p070015)
5. Waton J, Tréchot P, Loss-Ayav C, Schmutz JL, Barbaud A. Negative predictive value of drug skin tests in investigating cutaneous adverse drug reactions. Br J Dermatol 2009; 160: 786-94. [CrossRef]

Address for Correspondence: Prof. Nicholas G. Kounis
Department of Cardiology, University of Patras Medical School
Queen Olgas Square, 7 Aratou Street
Patras 26221, Achaia-*Greece*
E-mail: ngkounis@otenet.gr

DOI:10.14744/AnatolJCardiol.2017.7963