

Letter to the Editor

Kounis syndrome: Optical coherence tomography findings



Javier Cuesta^a, Teresa Bastante^a, Fernando Rivero^a, Amparo Benedicto^a, Inés Torrejón Pérez^b,
Nuria Tur^b, Fernando Alfonso^{a,*}

^a Hospital Universitario de La Princesa, Madrid, Spain

^b Hospital Universitario del Henares, Madrid, Spain

ARTICLE INFO

Article history:

Received 17 December 2014

Accepted 21 December 2014

Available online 24 December 2014

Keywords:

Kounis syndrome

Optical coherence tomography

To the Editor:

A 59-year-old man, smoker and with a past history of hypertension, was admitted to the emergency department because of a generalized erythema and hypotension after taking an oral dose of amoxicillin/clavulanic acid for a toe cellulitis. At first medical contact, the patient presented with hypotension (70/40 mm Hg), excessive sweating and a striking rash with urticaria on this back. The electrocardiogram showed ST-segment depression in leads III, aVF and V3–V6. After saline and aspirin administration the symptomatology was gradually relieved and the ST-segment changes normalized. A mild elevation of myocardial necrosis markers (maximum high-sensitivity cardiac troponin 169 ng/L) was detected. Urgent coronary angiography demonstrated a normal left coronary artery and a severe hazy lesion in the proximal segment of the right coronary artery that persisted after nitroglycerine administration (Fig. 1A). Embolization of a small distal branch was also noticed. Optical coherence tomography (OCT) disclosed a thin-cap fibroatheroma with a clear fibrous-cap rupture and a deep cavity (Fig. 2A). A large intracoronary thrombus was also detected (Fig. 2B–C). A bare metal stent was implanted successfully (Fig. 1B–C). The patient was discharged three days later with the diagnosis of variant II Kounis syndrome and at three months of follow-up he remains asymptomatic.

Kounis syndrome is the concurrence of acute coronary syndrome (ACS) with conditions associated with hypersensitivity and anaphylactic reactions [1]. This rare clinical entity is caused by severe mast cell and other interacting inflammatory cell activations. There are three variants of Kounis syndrome. Type I is observed in patients without cardiovascular risk factors and healthy coronary arteries, in whom myocardial ischemia or infarction develops due to a coronary artery spasm. Type II, however, occurs in patients with underlying coronary atherosclerosis. In these patients, adjunct coronary artery spasm or plaque complication associated with intracoronary thrombosis has been previously described, but only by angiography [2]. Finally, Type III includes patients with stent thrombosis in whom the aspirated thrombus demonstrates the presence of eosinophils and mast cells [3].

Our patient suffered a non-ST-segment elevation myocardial infarction and had a severe lesion in the proximal segment of the right coronary artery unrelieved by nitroglycerine. This presentation in the setting of a clear-cut anaphylactic reaction is the hallmark of Kounis syndrome. Nowadays, OCT is frequently used to clarify the underlying substrate of complex culprit coronary lesions. Due to its ultra-high spatial resolution (10–15 μm) OCT provides a unique opportunity to assess and better understand the underlying cause of ACS. To our knowledge, this report represents the first description of OCT findings in a patient with Type II Kounis syndrome. Interestingly, OCT disclosed the rupture of a thin-cap fibroatheroma with associated coronary thrombus formation. We also detected that the cavity caused by the plaque rupture was not facing the coronary flow. This is also of interest as previous OCT studies suggested that this morphological pattern favors a non-ST-segment elevation ACS presentation, as occurred in our patient [4].

Our findings provide unique novel information about the pathophysiologic mechanism of ACS in patients with Type II Kounis syndrome. However, we also believe that OCT might be of value in patients with Type I of Kounis syndrome to rule out angiographically silent atherosclerotic coronary artery disease. Interestingly, the value of this technique in patients with coronary spasm has been recently suggested. Finally, the value of OCT in patients with stent thrombosis (that may be a result of Type III Kounis syndrome) has also been demonstrated.

Conflicts of interest

Nothing to disclose.

* Corresponding author at: Cardiac Department, Hospital Universitario de La Princesa, Diego de León 62, IIS-IP, Universidad Autónoma de Madrid, Madrid 28006, Spain.
E-mail address: falf@hotmail.com (F. Alfonso).

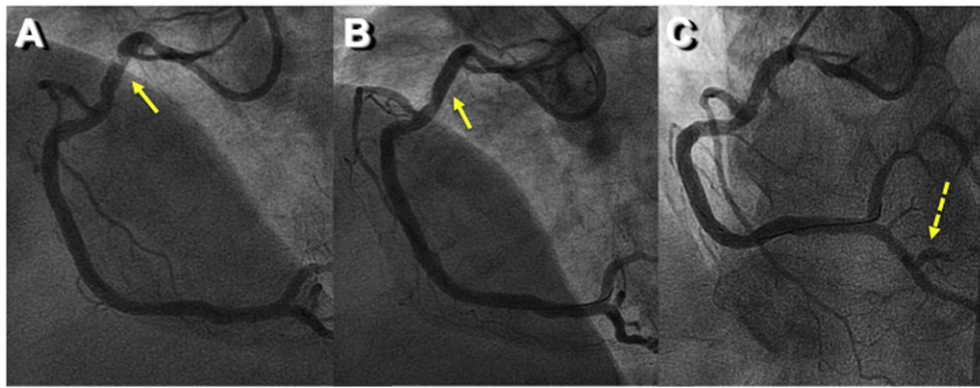


Fig. 1. Coronary angiography of the right coronary artery. A) A severe and complex lesion was detected in its proximal segment (arrow). B) A bare metal stent was successfully implanted. Embolization of a distal branch (dotted arrow) was also observed.

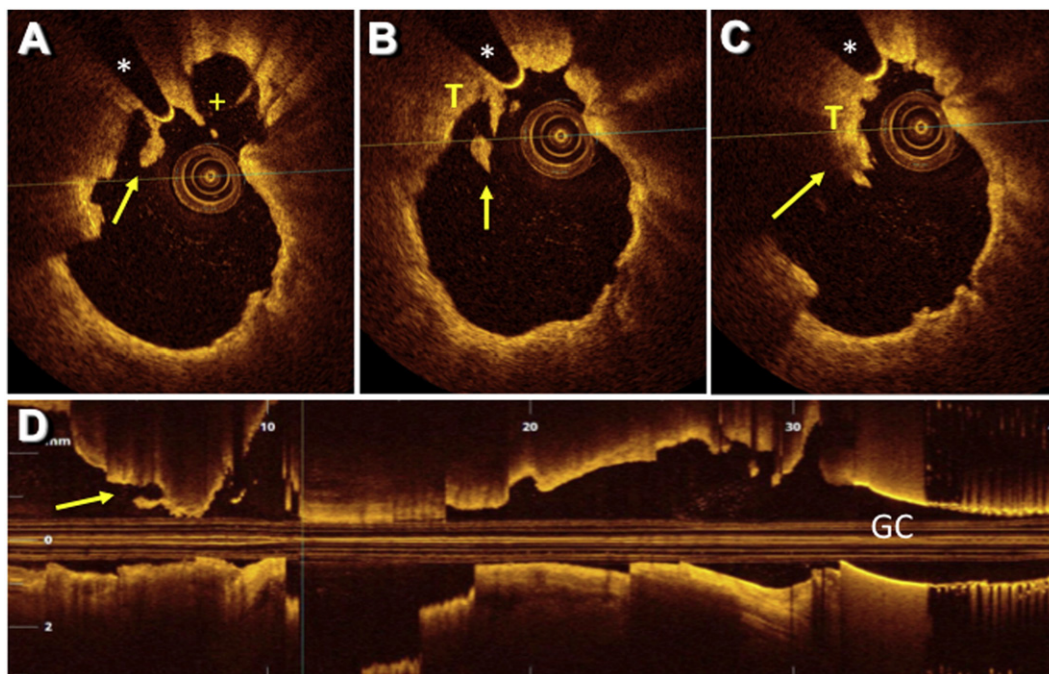


Fig. 2. Optical coherence tomography. A) A thin cap fibroatheroma with ruptured cap causing a large cavity (+) and associated with a small protruding thrombus (arrow) is visualized. B–C) Large red thrombus (T) protruding into the coronary lumen (arrows). D) Longitudinal vessel reconstruction showing a clear cavity with its entrance facing the distal vessel (arrow). GC = guiding catheter. * = wire artifact.

References

- [1] N.G. Kounis, G.M. Zavras, Allergic angina and allergic myocardial infarction, *Circulation* 94 (1996) 1789.
- [2] A. Viana-Tejedor, M.A. Espinosa, J. Cuesta, A. Núñez, H. Bueno, F. Fernández-Avilés, Kounis syndrome secondary to amoxicillin use in an asthmatic patient, *Int. J. Cardiol.* 150 (2011) e113–e115.
- [3] N.G. Kounis, Coronary hypersensitivity disorder: the Kounis syndrome, *Clin. Ther.* 35 (2013) 563–571.
- [4] Y. Ino, T. Kubo, A. Tanaka, et al., Difference of culprit lesion morphologies between ST-segment elevation myocardial infarction and non-ST-segment elevation acute coronary syndrome: an optical coherence tomography study, *JACC Cardiovasc. Interv.* 4 (2011) 76–82.