Reviewer’s report

Title: Multi-modality imaging evaluation of recurrent Tako-tsubo syndrome in a patient with coronary artery fibromuscular dysplasia

Version: 0 Date: 06 Nov 2017

Reviewer: Rodolfo Citro

Reviewer's report:

Cheng et al. reported the case of a 57 years old woman with transmural myocardial infarction due to coronary artery fibromuscular dysplasia (FMD) and concomitant, recurrent, Takotsubo syndrome (TTS).

The authors focused on the importance of a multi-modality imaging approach to assess different features of acute myocardial infarction (AMI) and TTS.

The manuscript is very interesting and tries to emphasise a possible correlation between different clinical conditions such as fibromuscular dysplasia, AMI and TTS whose underlying mechanisms are not yet well understood.

Comments to the authors:

1. TTS is prevalent in postmenopausal women and is often triggered by an emotional or physical stressful event. The presented case denotes these features and looks like an acute TTS occurred in a patient with underlying chronic artery disease.

Whether the authors might provide the value of acute phase myocardial biomarkers (at least Troponin) this hypotheses could be further corroborated.

2. TTS is characterized by transient abnormality of left ventricle wall motion beyond a single coronary artery perfusion territory in absence of obstructive coronary artery disease.

Can the authors better clarify the meaning of the expression "takotsubo effect", recurrently used in the manuscript?

If the TTS diagnostic criteria (Prasad et al. Am Heart J 2008) were completely fulfilled, might the authors prefer the expression "takotsubo syndrome"?
3. FMD is a disease associated with arterial wall abnormalities which can lead to multiple stenosis and less frequently to aneurysms or dissections. (Wuerzner et al. Rev Med Suisse 2017)

The coronary artery involvement is a rare but possible condition which can present, among the possibilities, as acute coronary syndrome.

In the presented case the coronary angiogram revealed a tapering and long narrowing distal left anterior descending artery which is consistent with FMD, but doesn't allow a definitive diagnosis of such disease. (Michelis et al. J Am Coll Cardiol 2014)

Can the authors provide further elements proving the involvement of at least one other non-coronary artery to confirm the diagnosis?

4. AMI and TTS are thought to be not mutually exclusive. The coexistence of these clinical entities has been described mainly through case reports.

It has been hypothesised that the psychological stress and/or the physical pain due to acute coronary syndrome may precipitate TTS. (Hurtado Rendón et al. Am J Med 2017)

The authors should rephrase the sentence: "The current case illustrates a unique scenario, in which "Tako-tsubo" effects occur recurrently in the heart with pre-existing localized myocardial infarction, suggesting that TTS and AMI might share some fundamentally common mechanic characters and underlying mechanisms" Since there are no data suggesting common pathophysiology mechanisms between TTS and AMI.

5. Cardiac MRI provide important information regarding morphology and tissue characterization and can play a key role in differentiating TTS and AMI secondary to coronary artery disease.

Late gadolinium enhancement (LGE) images allow the identification of areas affected by myocardial fibrosis, while T2-weighted images can prove the eventual presence of myocardial edema.

The authors should provide further LGE (4- and 2- chamber) and T2-weighted images to confirm that the scar area is limited to the distribution territory of distal LAD and that the myocardial edema is extended to the entire area of TTS-related wall motion abnormalities.
Level of interest
Please indicate how interesting you found the manuscript:

An article whose findings are important to those with closely related research interests

Quality of written English
Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

Declaration of competing interests
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

No conflict of interest to declare

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal