

MINOCA? Takotsubo syndrome? Or both? Pitfalls, clues, and indications for advanced modalities in differential diagnosis. Author's reply

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DOI: 10.33963/KPa2022.0257

Received:

November 3, 2022

Accepted:

November 3, 2022

Early publication date:

November 11, 2022

We would like to thank Dr. Kenan Yalta, Dr. Muhammet Gurdogan, Dr. Cihan Ozturk, and Dr. Tulin Yalta [1] for their thorough comment on our vignette, and we are glad that it has provoked an important discussion about challenges and pitfalls of diagnosing myocardial infarction with nonobstructive coronary arteries (MINOCA).

First of all, we agree that in the case of our patient, the coexistence of MINOCA with takotsubo cardiomyopathy (TTS) cannot be excluded. Our patient presented with the electrocardiographic picture of inferior ST-segment elevation myocardial infarction. However, female sex, history of emotional stress, initial echocardiographic presentation (with akinetic apex and apical segments of the left ventricle), and no obstructive lesions in the coronary arteries on angiography were suggestive of TTS, and TTS was our first diagnosis. One more argument for TTS was fast partial recovery from wall motion abnormalities. To address our colleagues' question, this recovery was preceded by pain relief and resolution of ST-segment elevation in the inferior leads on electrocardiography.

However, it was cardiac magnetic resonance (CMR) that changed our perception of the patient's status because it revealed a pattern of myocardial damage typical of ischemia: with a subendocardial lesion in late gadolinium enhancement sequences and a subendocardial perfusion defect within the apical inferior segment and adjacent part of the apical septal segment. Furthermore,

a post-infarct scar was confirmed on the follow-up CMR performed 12 weeks later. CMR is recommended by both European and American guidelines as an essential diagnostic tool in all patients with the working diagnosis of MINOCA [2, 3]. It has been shown that early performed CMR provides diagnosis in 60%–80% of patients with MINOCA [4]. In a study by Reynolds et al. [5] performed in a group of women with a working diagnosis of MINOCA, early CMR identified ischemic myocardial injury in more than 50% of cases, and if combined with optical coherence tomography (OCT), it confirmed diagnosis in 85% of cases; in 64% of these cases, myocardial infarction was diagnosed. It is noteworthy that the early timing of the CMR examination is crucial as pathologies typical of non-ischemic causes of working diagnosis of MINOCA (myocarditis or TTS) might be transient [4].

Therefore, coexistence of myocardial infarction and TTS in our patient is possible. The differential diagnosis between these two entities is extremely challenging because of overlapping risk factors and clinical presentations, which was thoroughly described by Yalta et al. [1]. However, our vignette aimed to draw attention to the diagnosis of myocardial infarction in women with a working diagnosis of MINOCA. On the one hand, women constitute ca. 90% of patients with TTS, and the majority of them are post-menopausal. On the other hand, it is after menopause that the incidence of ischemic heart disease in women rapidly grows. It is very important not to over-

look myocardial infarction in women without significant coronary stenosis because of therapeutic and prognostic implications. According to the ESC guidelines, patients with a final diagnosis of MINOCA of unknown cause may be treated according to secondary prevention guidelines for atherosclerotic disease [2]. This is why we introduced statin and dual antiplatelet therapy (DAPT) into the therapy of our patient after establishing the diagnosis of myocardial infarction. Lindahl et al. [6] showed that statins, alongside angiotensin-converting enzyme inhibitors/sartans, improve prognosis in patients with a final diagnosis of MINOCA. The data concerning DAPT in MINOCA is less conclusive — so far it has been recommended in the case of plaque disruption [3]. Unfortunately, neither OCT nor intravascular ultrasound was performed in our patient, so the mechanism of ischemia, in this case, remains unknown.

To conclude, there are many challenges and pitfalls in the diagnostic workup of patients with MINOCA and thorough multi-modality imaging, alongside careful analysis, is required.

Article information

Conflict of interest: None declared.

Funding: None.

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