

## The heart in the tentacles of an octopus

Commentary on the case report “Late-onset takotsubo cardiomyopathy after acute pulmonary embolism”

by Aleksandra Wilk et al.



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More than 30 years have passed when stress cardiomyopathy was first described, today referred to as takotsubo syndrome (TTS) [1]. Scientists describing the first cases of TTS noted the peculiar shape of the left ventricle, reminiscent of the jar used in Japan for traditional octopus fishing. Following the publications on TTS, perversely, the TTS itself has something of an octopus — just like this cephalopod is a master of camouflage.

The most common clinical manifestations of TTS are chest pain and dyspnoea [2]. Changes in the electrocardiogram (ECG) and the usually observed increase in the concentration of cardiac troponins and the concentration of natriuretic peptides make us differentiate between TTS and acute coronary syndrome (ACS) in the first place. Some authors suggest that even 2.5% of the diagnosed ACS is actually TTS [2, 3]. It is also worth remembering that despite the reversible nature of impaired contractility of the left ventricle, the prognosis for survival is not always good. According to Han et al. [4], the factors significantly increasing the in-hospital risk of death in patients with TTS are acute kidney injury and coexistence of the proliferative process, while the long-term prognosis is worsened by male gender, left ventricular ejection fraction (LVEF) < 35% at diagnosis, clinical symptoms of shock and advanced age of patients.

Another entity that should be considered in the differential diagnosis is myocarditis. In this case, it may not be possible to make a final diagnosis without magnetic resonance imaging (MRI) [2, 3, 5]. The criteria for diagnosing TTS are changing right before our eyes. Initially, this diagnosis was a diagnosis based on exclusion. The authors of the commented case report refer to the current InterTAK criteria, according to which the presence of significant stenosis in the coronary vessels does not exclude the diagnosis of TTS. It is also possible to find the coexistence of a pheochromocytoma in the patient, as well as several other pathologies: stroke, subarachnoid haemorrhage, seizure — they can act as a trigger mechanism that triggers the occurrence of TTS [5]. A slightly different approach is presented in the criteria proposed by the Mayo Clinic, still sometimes quoted, according to which the diagnosis of TTS requires the exclusion of significant changes in the coronary vessels and the exclusion of pheochromocytoma [2, 3].

However, this is not the only element of the diagnostic criteria that has been modified in recent years. The approach to the relationship between the occurrence of TTS and the strong emotional stress preceding it is also changing. First of all, this stress can be both negative (sudden, sad events, such as the death of a loved one) and positive. The association of joyful events in the lives of patients with the development of TTS contributed to the coining of the term “happy heart syndrome” [3]. Stress can also be physical, or rather biochemical, related to a sudden illness. At this point, it is worth noting that despite the still many hypotheses concerning the pathomechanisms responsible for TTS, the key role is now attributed to excess catecholamines, excessive stimulation of beta-adrenergic receptors and the cardiotoxic effect of excess calcium ions [2, 3, 5].

The jar for catching octopuses is therefore still full of secrets, and in this context, the description of TTS after a pulmonary embolism, in the diagnosis of which heart TTE with strains assessment was used, is an extremely interesting and informative description.

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