



Letter to the Editor

Seizure-triggered Takotsubo syndrome – A need for cooperation between neurologists and cardiologists



ARTICLE INFO

Keywords:

Takotsubo
Seizures
Cardiomyopathy

We thank Dr. Binaghi et al. for their thoughtful comments about our review article “Immediate versus delayed detection of Takotsubo syndrome after epileptic seizures” [1]. For this article we included only reports which provided information about the interval between the epileptic seizure and the detection of Takotsubo syndrome (TTS) as well as studies that reported the 12-lead electrocardiogram. Thus no information about prevalence and prognosis of seizure-associated TTS can be derived from our data.

Binaghi et al. postulate that seizure-triggered TTS might be the cause of death in only about 0.05% of the total epileptic population. This estimation is very vague since 1. the prevalence of TTS in the epileptic population is unknown and 2. data about mortality after seizure-associated TTS are lacking. Knowledge about seizure-triggered TTS derives mainly from case reports [2]. There are, however, indications from a large TTS registry that mortality of neurologically triggered TTS is higher than in patients with other triggers of TTS [3].

Furthermore, TTS is associated with various complications in more than 50% of patients [4]. The complications comprise atrial fibrillation, ventricular tachycardia, pulmonary edema, cardiogenic shock, transient intraventricular pressure gradients leading to left ventricular outflow tract obstruction and subsequent hypotension, left ventricular thrombi and embolic stroke [4]. Recognition of these complications requires diligent monitoring to treat them appropriately, if diagnosed at time. These potential complications stress the need for careful monitoring of patients with TTS, which is also recommended by a position paper [5]. Diagnosing seizure-induced TTS is thus not only required for preventing death but also to prevent serious complications.

Negative T-waves are a frequent electrocardiographic finding in TTS. In contrast to ST-elevations, which may only be subtle and present for several hours, negative T-waves persist after TTS for several weeks [6]. Negative T-waves, as indicated by Binaghi et al., are not specific for TTS, but may also appear due to several other conditions. However,

negative T-waves in a patient after an epileptic seizure, should stimulate cardiologic investigations, particularly the search for TTS, especially when negative T-waves develop de novo.

In conclusion, there are many open questions regarding prevalence of TTS after seizures, frequency of complications from seizure-induced TTS, prevalence of risk factors for the development of seizure-induced TTS, and regarding algorithms for the best detection of TTS after seizures. Answers to these unsolved questions will only be obtained if neurologists, emergency medicine physicians and cardiologists collaborate in prospective studies investigating systematically patients after epileptic seizures for cardiac complications.

References

- [1] C. Stöllberger, M. Sauerberg, J. Finsterer, Immediate versus delayed detection of Takotsubo syndrome after epileptic seizures, *J. Neurol. Sci.* 397 (2019) 42–47.
- [2] J. Finsterer, A. Bersano, Seizure-triggered Takotsubo syndrome rarely causes SUDEP, *Seizure* 31 (2015) 84–87.
- [3] J.R. Ghadri, K. Kato, V.L. Cammann, S. Gili, S. Jurisic, D. Di Vece, et al., Long-term prognosis of patients with Takotsubo syndrome, *J. Am. Coll. Cardiol.* 72 (2018) 874–882.
- [4] B. Schneider, A. Athanasiadis, J. Schwab, W. Pistner, U. Gottwald, R. Schoeller, et al., Complications in the clinical course of tako-tsubo cardiomyopathy, *Int. J. Cardiol.* 176 (2014) 199–205.
- [5] A.R. Lyon, E. Bossone, B. Schneider, U. Sechtem, R. Citro, S.R. Underwood, et al., Current state of knowledge on Takotsubo syndrome: a Position Statement from the Taskforce on Takotsubo Syndrome of the Heart failure Association of the European Society of Cardiology, *Eur. J. Heart Fail.* 18 (2016) 8–27.
- [6] J. Bennett, B. Ferdinande, P. Kayaert, S. Wiyono, K. Goetschalkx, C. Dubois, et al., Time course of electrocardiographic changes in transient left ventricular ballooning syndrome, *Int. J. Cardiol.* 169 (2013) 276–280.

Claudia Stöllberger*, Josef Finsterer
Krankenanstalt Rudolfstiftung, Wien, Austria
E-mail address: claudia.stoellberger@chello.at (C. Stöllberger).

* Corresponding author at: Steingasse 31/18 A-1030, Wien, Austria.