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Editorial

The short-term prognostic role of chronic kidney disease in Takotsubo syndrome: Does it really matter?

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"Who in the world am I? Ah, that's the great puzzle"
[(Lewis Carroll)]

Takotsubo stress syndrome is a form of acute and usually reversible heart failure, due to a transient left ventricular dysfunction affecting mostly postmenopausal women frequently after either a physical or emotional stressor [1]. Despite the growing interest demonstrated by the cardiological community over this fascinating entity, our knowledge is still unsatisfactory. In fact, the exact nomenclature together with its related pathophysiological background is a matter of controversy [2]. Although usually considered well distinguished by acute coronary syndromes, despite a similar presentation, Takotsubo shares some features with ischaemic heart disease (e.g. microvascular dysfunction and myocardial stunning), and the term cardiomyopathy should no longer be applied to define this syndrome [2]. A number of knowledge gaps remain in our understanding of the pathophysiology of Takotsubo, thus limiting the identification of prognostic factors which seem to be the *holy grail* for researchers. Currently, we recognize that long-term mortality of patients with Takotsubo is higher as compared with the control general population [3], and this fact is at least in part related to patients' comorbidities [4]. Chronic kidney disease (CKD) is a well-recognized and independent cardiovascular risk factor [5]. CKD patients presenting with both non-ST segment elevation myocardial infarction (NSTEMI) or ST segment elevation myocardial infarction (STEMI) have an increased risks of death, recurrent events and major bleeding [6,7]. Furthermore, they receive guideline-recommended therapies less frequently than do patients without CKD [6], and the optimal timing of coronary angiography and revascularization in this category is controversial. At the present time, data on CKD and its potential interactions and prognostic role in Takotsubo syndrome are scarce and sometimes conflicting, despite available studies overall suggest an unfavorable impact of renal pathology [8,9].

In the current issue of *International Journal of Cardiology*, Yassin and colleagues investigated the clinical impact of advanced CKD on in-hospital outcomes and complications in patients with Takotsubo [10]. The study population included 24.595 patients from the National Inpatient Sample (NIS) database. Diagnoses were based on ICD-9-CM codes. Investigators performed a comparative analysis of the outcomes in patients with advanced and non-advanced CKD. The primary outcome was all-cause in-hospital mortality, secondary outcomes were the in-hospital complications (i.e. acute kidney injury - AKI - requiring dialysis and length of hospital-stay). A propensity-matched analysis was performed to account for confounders. The Authors found that advanced CKD does not confer an increased risk of in-hospital mortality (OR 1.12; 95% CI 0.59–2.10, P = 0.734), while it is associated with higher rates of AKI and longer length of hospital stay. Despite the potential limitations in terms of quality when managing and interpreting data deriving from a large national administrative database, the study by Yassin and colleagues has the largest sample size of all studies that evaluated the impact of renal dysfunction on Takotsubo outcomes. Looking at the results, it is worth noting the data on in-hospital mortality. We should acknowledge that in-hospital (i.e., short term) mortality determinants might be not simply the same influencing long-term survival (in this case the results of previous studies seem to go in another direction) and that this data deserves some considerations. According to the results of the study by Yassin and colleagues, the impact of advanced CKD on mortality seems to be less pronounced in Takotsubo in comparison with that observed in acute coronary syndromes (ACS). Several factors may explain these differences. Among these, the fact that patients with CKD receive guideline-recommended therapies (including antithrombotic agents and invasive reperfusion strategies) less frequently than controls. Moreover, percutaneous coronary intervention and bypass surgery are often delayed and with a complicated course in patients with impaired renal function. Of note, secondary but not less interesting results from the study by Yassin refer to the higher risk of AKI and the longer hospital-stay in Takotsubo patients with advanced CKD.

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The first could be explained by the higher risk of contrast-induced nephropathy in the context of a severe (although transient) left ventricular dysfunction with low cardiac output. A longer hospital-stay, apart from specific clinical consequences, has obvious economic consequences.

In conclusion, Takotsubo natural history is still poorly understood and still controversial. The study by Yassin and colleagues is another piece of the complex puzzle of Takotsubo syndrome. At this point, one might ask if does it really matter from a clinical point of view. The answer is certainly positive since a puzzle needs all its pieces to be complete.

Conflict of interest statement

The Authors have no conflicts of interest to declare.

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