

Intraventricular Thrombus Formation and Embolism in Takotsubo Syndrome: Insights From the International Takotsubo Registry

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Abstract

Objective: Takotsubo syndrome (TTS) is characterized by acute left ventricular dysfunction, which can contribute to intraventricular thrombus and embolism. Still, prevalence and clinical impact of thrombus formation and embolic events on outcome of TTS patients remain unclear. This study aimed to investigate clinical features and outcomes of patients with and without intraventricular thrombus or embolism. Additionally, factors associated with thrombus formation or embolism, as well as predictors for mortality, were identified. **Approach and Results:** TTS patients enrolled in the International Takotsubo Registry at 28 centers in Australia, Europe, and the United States were dichotomized according to the occurrence/absence of intraventricular thrombus or embolism. Patients with intraventricular thrombus or embolism were defined as the ThrombEmb group. Of 1676 TTS patients, 56 (3.3%) patients developed intraventricular thrombus and/or embolism following TTS diagnosis (median time interval, 2.0 days [range, 0-38 days]). Patients in the ThrombEmb group had a different clinical profile including lower left ventricular ejection fraction, higher prevalence of the apical type, elevated levels of troponin and inflammatory markers, and higher prevalence of vascular disease. In a Firth bias-reduced penalized-likelihood logistic regression model apical type, left ventricular ejection fraction $\leq 30\%$, previous vascular disease, and a white blood cell count on admission $>10 \times 10^3$ cells/ μL emerged as independent predictors for thrombus formation or embolism.

Conclusions: Intraventricular thrombus or embolism occur in 3.3% of patients in the acute phase of TTS. A simple risk score including clinical parameters associated with intraventricular thrombus formation or embolism identifies patients at increased risk.

Clinical trial registration: URL: <http://www.clinicaltrials.gov>. Unique identifier: NCT01947621.