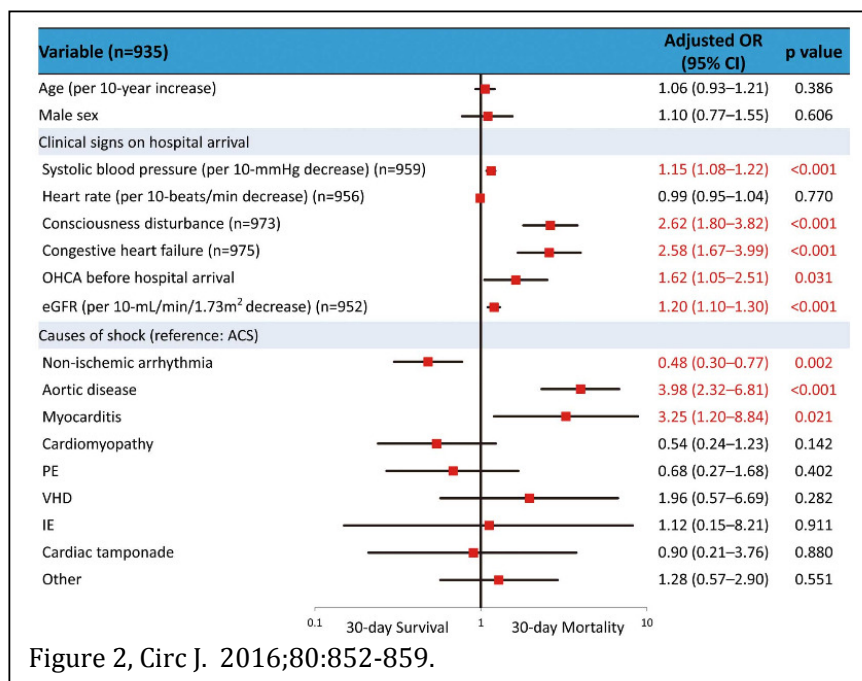


Understanding causes and outcomes of cardiogenic shock

Shock is a potentially fatal systemic disorder that can be triggered by low cardiac output, resulting in rapid drops in blood pressure and insufficient delivery of oxygen to tissues. The most common cause of cardiogenic shock is acute myocardial infarction, but any disturbance in perfusion can bring on a state of shock. Thanks to advances in emergency cardiovascular care, recent decades have seen dramatic improvements in overall survival following shock, but it remains extremely serious and often proves fatal. In the emergency care setting, understanding causal factors and prognostic indicators may help improve outcomes and lead to the development of new therapeutic approaches.

In this month's issue of *Circulation Journal*, Yasushi Ueki of Shinshu University School of Medicine and colleagues report the findings of a two-year study by the Japanese Circulation Society (JCS) Cardiovascular Shock Registry into the causes and outcomes of cardiogenic shock in Japan. The group looked at nearly 1000 patients ($n=979$) who presented with cardiovascular shock between May 2012 and June 2014, and assessed the primary causes and overall mortality for the entire cohort. The registry also evaluated the effects of a range of factors, including changes in systolic pressure, altered consciousness, location of shock onset, and etiology, on outcomes.

The JCS shock registry was a prospective, observational, multicenter study involving patients treated at 82 hospitals across Japan. The primary endpoint of the study was all-cause mortality in the first 30 days from presentation, which remains high at around 34%. Slightly over half (51%) of shock cases were caused by acute coronary syndrome, with non-ischemic arrhythmias (16.4%) and aortic disease (14.9%) the next most frequent causes.



Outcomes, including survival and neurological disturbances, were significantly influenced by a number of factors. Out-of-hospital cardiac arrest and shock etiology, specifically aortic disease and myocarditis, were associated with the highest mortality. Non-ischemic arrhythmia showed comparatively higher survival. The better prognosis for arrhythmia was particularly significant because of the unexpectedly high incidence of this cause of cardiogenic shock. Where previous studies had found such disturbances in only 3–6% of shock cases, in the JCS registry arrhythmias were the second most common cause.

In addition to 30-day mortality, cognitive disturbance was an important secondary outcome in this study. Predictors of neurological outcome were broadly similar with those of survival, although advanced age was even more closely associated with poor cognitive status, which the authors speculate reflects the general decline in daily living activities in older patients.

The JCS shock registry findings have clear implications for practice. “Understanding the actual distribution of causes of cardiovascular shock may be useful in situation where the cause of shock is difficult to determine immediately,” says lead author Yasushi Ueki, M.D. “Knowledge of predictors of short-term prognosis and mortality for each etiology may also be useful for risk stratification and patient informed consent.”