Review of: "Effectiveness of amiodarone versus digitalis for heart rate control in critically ill patients with new-onset atrial fibrillation"

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Treatment strategies for new onset atrial fibrillation in critically ill patients has been challenging. As per the results from meta-analysis of seven randomized controlled trials (RCTs), the use of ultrashort-acting beta-blockers including esmolol and landiolol in septic patients with persistent tachycardia despite initial resuscitation was associated with lower mortality[1]. However, most of the RCTs included in this meta-analysis had small sample size and were conducted in single center. The recently published surviving sepsis campaign guidelines could not provide the conclusive recommendation for the use of beta-blocker to manage septic shock patients with tachycardia[2, 3]. Beta-blockers and calcium channel blockers which may worsen hemodynamics, are often hesitated in critically ill patients. Amiodarone and digitalis can be alternatives in those patients, although not enough evidence.

Gillmann et al [4] performed a retrospective cohort study in single center, which had a larger sample seize compared with the previous studies[5], and compared amiodarone with digitalis in critically ill patients. Amiodarone was associated with an absolute heart rate reduction of 10 bpm more than digitalis and a relative reduction in heart rate twice as effective as digitalis. Furthermore, patients treated with amiodarone had longer sinus rhythm restoration time during the first 24 h of treatment. This study may provide two rationales for use of these drugs. First, we should consider a target heart rate. Considering that cardiac output is the product of heart rate and stroke volume, heart rate should be titrated carefully in patients with hemodynamic instability. It is difficult to titrate both drugs, which have a long half-life. Thus, digitalis may be preferred for those patients, since digitalis may provide a modest reduction of heart rate and also exert a positive inotropic effect. Second, more sinus rhythm restoration was observed in patients treated with amiodarone. Both rhythm control therapy and anticoagulation are expected to decrease thromboembolic complications in critically ill patients with atrial fibrillation. Importantly, an interaction term was observed between these strategies [6]. Therefore, rhythm control strategies including amiodarone, may be useful in patients who cannot be administered anticoagulants.

One of my concerns is that mixed-effects models and difference-in-differences analyses may be better than a propensity score analysis in assessing changes in heart rate which was a primary outcome in their study. However, our practice should be reconsidered based on the results of well-designed observational studies, since no large RCTs are currently planned.

References

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