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Disappointing success of electrical cardioversion for new-onset atrial fibrillation in cardiosurgical ICU patients

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Introduction

Electrical cardioversion (ECV) of atrial fibrillation (AF) is recommended in patients with hemodynamic instability. ECV may therefore be favorable for critically ill patients with new-onset AF, although evidence is lacking. Data about conversion rates in critically ill patients undergoing urgent ECV are scarce.

Objectives

The aims of this study were to assess the success of ECV for the treatment of new-onset AF in critically ill patients and to evaluate the stability of sinus rhythm in responders during the subsequent 24 hours.

Methods

Consecutive cardio-surgical patients with new-onset AF (less than 7 days of duration) treated by ECV were included. All applied shocks were synchronized, of biphasic waveform and performed using an external defibrillator. Physicians were encouraged to administer a high initial energy with escalating doses for subsequent shocks. Repeated shocks within 15 minutes were defined as an ECV session. A conversion into sinus rhythm for at least 30 seconds during an ECV session was defined as a successful ECV. The stability of sinus rhythm during the following 24 hours was investigated and the presence of sinus rhythm at ICU discharge was documented.

Results

A total of 72 patients were included. Thirty-seven patients had one ECV, the remaining up to 6 sessions during their ICU-stay. Finally, a total of 144 ECV were analyzed in the study. The restoration of sinus rhythm was achieved in 102 (71%) ECV. Hemodynamic instability was present during 117 (81%) ECV. Electrodes were placed in the antero-posterior position for 52% of ECV, 85% of shocks were performed with maximal biphasic energy of 200 Joules. During the 24 hours follow up, the stability of sinus rhythm was poor: after 1 and 24 hours sinus rhythm was documented in only 43% and 23% of patients, respectively. Intravenous amiodarone was administered during the 6 hours before ECV in 94 (65%) cases, but showed no significant effect neither on the immediate success of ECV, nor on the maintenance of sinus rhythm during the first 24 hours. At ICU discharge, 54 (75%) patients were in sinus rhythm, whereby 20% converted spontaneously, 46% after amiodarone post-treatment and only 33% after repeated ECV. The median length of ICU stay was 7 days and ICU mortality of the study population was 15%.

Conclusions

In this retrospective study, immediate success rate of ECV was 71% and therefore higher than previously reported in critically ill patients. However, early relapse of AF was common, so that only 23% of the patients were still in sinus rhythm after 24 hours. At ICU discharge, 75% of patients were in sinus rhythm, whereby repeated ECV was responsible for a conversion into sinus rhythm in only a third of the patients. Hence, the efficacy of repetitive ECV in restoring sinus rhythm was disappointing.

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