**Recurrence of atrial fibrillation following successful direct current cardioversion with amiodarone versus sotalol**

**Authors**

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**Background:** Both electrical and pharmacological cardioversion may be performed to restore sinus rhythm (SR) in patients with persistent atrial fibrillation (AF) or atrial flutter. Despite successful cardioversion, recurrence of AF or atrial flutter is common in the majority of patients. For this reason, following the completion of direct current cardioversion (DCCV), patients are often discharged home on an l antiarrhythmic agent to prevent recurrence of AF and promote maintenance of SR. Published guidelines make recommendations for the selection of an antiarrhythmic agent based on the presence of concomitant structural heart disease.1,2 However, these guidelines do not comment on selection of an antiarrhythmic agent for maintenance of SR following DCCV. A few small studies have investigated antiarrhythmic agents following DCCV, yet, there is still no strong recommendation of one agent over another based on these findings.3-6

**Objective:** The primary outcome of this study was to evaluate time to recurrence of AF or atrial flutter rhythm at 365 days (12 months) following DCCV in patients receiving amiodarone compared to sotalol. The secondary endpoints were focused on describing time to recurrence of AF or atrial flutter rhythm at 30 days (1 month) following DCCV and incidence of adverse events assumed to be related to antiarrhythmic therapy in each group.

**Methods:** This study was an IRB-approved, single-center, retrospective, cohort, chart review analysis of patients with AF or flutter and undergoing DCCV who received amiodarone or sotalol at discharge to maintain SR. Subjects were included in the study if they were at least 18 years of age and underwent successful DCCV for AF or atrial flutter rhythm at UNC Rex Healthcare between the dates of 6/1/2014 and 09/01/2021. Patients were excluded if they were pregnant, incarcerated, had a history of ablation prior to DCCV, underwent DCCV for the treatment of a rhythm other than AF or atrial flutter, or had a history of pacemaker placement prior to DCCV. Included patients were split into one of two arms based on which antiarrhythmic agent was prescribed at discharge. All data was collected retrospectively via chart review from the electronic medical record. Descriptive statistics (mean, standard deviation, minimum, maximum) on all variables were estimated initially. Treatment group (amiodarone vs. sotalol) differences on independent variables were estimated using t-tests, chi-square tests, or Fisher exact tests according to the metrics and distributions across variables. Cox regression models were utilized to estimate the effects of treatment on the primary and secondary outcomes of time to recurrence of AF or flutter rhythm at 365 days and 30 days, respectively.

**Preliminary Results:** A total number of 93 patients were included in the analysis, with 62 patients assigned to the amiodarone group and 31 patients assigned to the sotalol group. Compared with those taking sotalol, patients taking amiodarone were significantly older, had higher burden of heart failure and lower ejection fraction. Additionally, those who received amiodarone had significantly higher SCr and utilization of concomitant rate and rhythm control therapy compared to those who received sotalol. For the primary endpoint, the estimated mean time to recurrence from DCCV was 163.3 days in the amiodarone group as compared to 167.7 days in the sotalol group. These results were not statistically significant with a corresponding hazard ratio of 1.08 and p-value of 0.79. For the secondary endpoint of time to recurrence of AF or atrial flutter rhythm at 30 days was noted in 29 of 62 patients (46.7%) in the amiodarone group with an average time to recurrence of 11.9 days and 12 of 31 patients (38.7%) in the sotalol group with an average time to recurrence of 13 days, which was not statistically significantly different with a corresponding hazard ratio of 1.31 and p-value of 0.47. The most commonly noted adverse events with amiodarone were fatigue (n=3), nausea (n=3), headache (n=2), and abnormal TSH levels (n=2), while the most common side effects in the sotalol group were diarrhea (n=4), fatigue (n=4), and itching (n=2). None of these side effects led to discontinuation of the medication.

**Conclusion:** In this study amiodarone was no different than sotalol at reducing time to recurrence of AF or atrial flutter rhythm at 30 or 365 days post-DCCV procedure. Presence of adverse events were noted for both the amiodarone and the sotalol group, however, none of these side effects led to discontinuation of the medication during the time frame for which patients were evaluated. Study results should be interpreted with caution due to small sample size, unbalanced groups, and retrospective nature of study design.

**References:**

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