Comparison of sotalol versus quinidine for maintenance of normal sinus rhythm in patients with chronic atrial fibrillation

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Authors' objectives
To compare the efficacy and safety of quinidine, sotalol, and control in maintaining normal sinus rhythm (SR) in patients with chronic atrial fibrillation (AF).

Searching
The authors searched the electronic MEDLINE database from 1985 to present, the search term ‘sotalol’ was crossed with ‘atrial fibrillation’ and ‘atrial flutter’, and the results of this search were crossed with the search term ‘clinical trial’. An additional search from 1990 to present used the search term ‘quinidine’. A previous meta-analysis was included in the search for additional studies and the reference lists of selected articles were searched for additional studies.

Study selection
Study designs of evaluations included in the review
Randomised clinical trials (RCTs) which had data available at 3, 6 or 12 months regarding mortality and/or the proportion of patients remaining in normal SR. Crossover studies were excluded.

Specific interventions included in the review
Quinidine, sotalol, and control. Studies of nonracemic or intravenous sotalol (or quinidine) were excluded.

Participants included in the review
Patients with chronic atrial fibrillation (AF) (>72 hours) AF or flutter. The mean age of participants ranged from 44 to 65 years of age. Patients with postoperative AF or paroxysmal AF were excluded from the review.

Outcomes assessed in the review
Rates of patients remaining in SR at certain time points (3, 6 and 12 months) and mortality.

How were decisions on the relevance of primary studies made?
Two investigators independently selected studies for entry into the study and any disagreements were resolved by a third investigator.

Assessment of study quality
The authors did not state that they assessed quality.

Data extraction
One investigator extracted data regarding efficacy and mortality and a second investigator confirmed the accuracy of the extracted data. Data were extracted for the categories of number of participants, mean age of participants, number of patients in normal SR divided by the number of patients achieving normal SR (%) at 3 months, number of patients in normal SR divided by the number of patients achieving normal SR (%) at 3 months, number of patients in normal SR divided by the number of patients achieving normal SR (%) at 3 months, number of deaths, and measurements of left atrial diameter (in mm).

Methods of synthesis
How were the studies combined?
The observed number of patients remaining in normal SR at each predetermined time point versus the total number of
patients achieving normal SR was used to devise a point estimate and 95% confidence intervals (CIs). The same method was used to estimate the probability of death in each drug group for each included study.

How were differences between studies investigated?
The hypothesis H of parametric homogeneity among individual studies was assessed using the observed proportions and corresponding posterior probability for the hypothesis H, i.e. P(H). Probability P(H) is derived from the Bayes factor, which is the ratio of averaged likelihoods for the homogeneity hypothesis and its alternative, and its value quantifies its credibility according to the observed data. Groups were considered homogeneous if P(H) was > 0.75 on a scale of 0 to 1.

Results of the review
Eleven RCTs were included in the review (9 RCTs of quinidine with 443 participants (one study did not state number of participants); 4 RCTs of sotalol with 197 participants; and 7 RCTs of controls with 293 participants (one study did not state number of participants)).

Efficacy rates in the quinidine group at 3 months were reported in 8 studies and ranged from 55% to 91%. At 6 months, 6 studies showed rates ranging from 42% to 73%. At 12 months, 3 studies showed rates ranging from 29% to 52%. The point estimates and 95% CIs for the probability of death for the quinidine group was 3.0% (95% CI: 1.7, 4.7).

Efficacy rates in the sotalol group at 3 months were reported in 1 study at 63%. At 6 months, 4 studies showed rates ranging from 42% to 71%. No data were available for the 12 month time point. The point estimates and 95% CIs for the probability of death for the sotalol group was 2.2% (95% CI: 0.6, 4.8).

Efficacy rates in the control group at 3 months were reported in 6 studies and ranged from 33% to 57%. At 6 months, 5 studies showed rates ranging from 0% to 38%. At 12 months, 3 studies showed rates ranging from 5% to 28%. The point estimates and 95% CIs for the probability of death for the control group was 1.1% (95% CI: 0.3, 2.4).

Homogeneity testing for the efficacy endpoint gave values for P(H) of 0.775 for the quinidine group, 0.846 for the sotalol group, and 0.951 for the control group, implying that the data were combinable. Homogeneity testing for the mortality end point gave values for P(H) of > 0.999 for the quinidine group, > 0.996 for the sotalol group, and > 0.999 for the control group, implying that the data were combinable.

Authors' conclusions
The authors state that sotalol and quinidine are comparable in their ability to maintain sinus rhythm at 6 months and both agents are superior to control. There is a trend for both agents to increase mortality with long-term therapy. In the absence of definitive, prospective trials, the data presented here do not support choosing sotalol over quinidine as a safer alternative in the maintenance of SR in patients with chronic atrial fibrillation (AF).

CRD commentary
The authors have clearly stated their research question and some inclusion and exclusion criteria. The literature search appears thorough, however the authors do not mention any language restrictions or the inclusion of unpublished data in the review. The quality of the included studies was not assessed but the authors have reported on how the articles were selected and how many of the reviewers were involved in the data extraction.

The data extraction is summarised by treatment groups in tables. Study details are reported in tables and discussed in the text, along with some discussion of the limitations of the review by the authors. The statistical pooling summarised the data as point estimates and there were tests for heterogeneity. The authors conclusions appear to follow from the results.

Implications of the review for practice and research
The authors did not state any implications for further research and practice.
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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.