Rate vs rhythm control in patients with atrial fibrillation: a meta-analysis

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CRD summary
This review compared the effect of rhythm and rate control strategies in the management of atrial fibrillation (AF). The authors concluded that in patients with persistent AF, or AF at risk of recurrence, ventricular rate control appears to be at least equivalent to rhythm control, and may even be superior. The conclusion that rate and rhythm control are equivalent seems appropriate given the evidence presented.

Authors’ objectives
To compare the effect of strategies for the management of atrial fibrillation (AF) on mortality and stroke.

Searching
Two reviewers independently searched MEDLINE (from 1966 to May 2003), the Cochrane Controlled Trials Register (March 2003) and International Pharmaceutical Abstracts (from 1970 to May 2003); the search terms were reported. Conference abstracts (2001, 2002) of the American Heart Association, the American College of Cardiology and the European Heart Society, and reference lists of retrieved studies, reviews and guidelines were also searched. In an attempt to identify published and unpublished trials, researchers in the field and pharmaceutical companies were contacted, and the websites of the U.S. Food and Drug Administration and European Medicines Agency were searched.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) were eligible for inclusion. Unblinded trials were included in the review. The follow-up period ranged from 1 year to a mean of 3.5 years.

Specific interventions included in the review
Studies of pharmacologic rhythm and rate control strategies as first-line therapy were eligible for inclusion.

Participants included in the review
Studies of patients with AF were eligible for inclusion. Studies of post-surgical patients, or studies evaluating patients undergoing invasive or surgical interventions as a primary strategy, were excluded. The mean age of the participants in the included studies ranged from 60.5 to 69.7 years, and the proportion of females ranged from 27 to 39.3%.

Outcomes assessed in the review
Studies reporting all-cause mortality or incidence of stroke were eligible for inclusion.

How were decisions on the relevance of primary studies made?
Two reviewers independently assessed studies for relevance to the review. Any differences were resolved by consensus, or by a third reviewer.

Assessment of study quality
The criteria used to assess the quality of the included studies related to allocation concealment, method of randomisation, the use of an intention-to-treat analysis, and blinding of the patients and investigators. Studies were rated as a low (all criteria met), moderate (at least 1 criterion partially met), or high (at least 1 criterion not met) risk of bias. The authors did not state who performed the quality assessment.

Data extraction
One reviewer extracted the data and a second reviewer verified it. Any differences were resolved by consensus, or with
a third reviewer. Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated for each study.

**Methods of synthesis**

*How were the studies combined?*

Summary ORs and 95% CIs were calculated using a random-effects meta-analysis.

*How were differences between studies investigated?*

Differences between the studies were investigated using the Q statistic (P<0.05).

**Results of the review**

Five RCTs (n=5,239) were included in the review.

All 5 RCTs were considered to be at a high risk of bias, owing to the lack of blinding. All 5 RCTs used an intention-to-treat analysis.

Mortality (5 RCTs).

There was no statistically significant difference in all-cause mortality between the rate and rhythm control groups (OR 0.87, 95% CI: 0.74, 1.02, P=0.09).

Stroke (3 RCTs).

There was no statistically significant difference in the incidence of stroke between the rate and rhythm control groups (OR 0.50, 95% CI: 0.14, 1.83, P=0.30).

**Authors’ conclusions**

In patients with persistent AF, or AF at risk of recurrence, ventricular rate control, in combination with anticoagulation in appropriate patients, appears to be at least equivalent to rhythm control, and may even be superior.

**CRD commentary**

The research question and the inclusion criteria were clear. The authors undertook an extensive search to identify both published and unpublished trials. It was unclear whether any language restrictions were applied during the search. Appropriate measures of effect were calculated and the pooling of the results seemed appropriate, with no statistical heterogeneity and seemingly little clinical heterogeneity between trials. The conclusion that rate and rhythm control are equivalent seems appropriate given the evidence presented. However, given the small number of studies, and the opposing results reported by these studies, the implication that rate control may be better than rhythm control, based on the overall trend seen, may be an over-interpretation of the results.

**Implications of the review for practice and research**

The authors did not state any implications for practice or further research.

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