INTRODUCTION

According to the CDC, atrial fibrillation (Afib) is the most common arrhythmia encountered in clinical practice, accounting for about 15% of all arrhythmias. Though atrial fibrillation may be asymptomatic, it can have significant health consequences—such as stroke, mesenteric ischemia, and heart failure. Symptoms typically manifest as exercise intolerance, syncope, and chest pain or shortness of breath. In addition to these health-related quality of life issues, atrial fibrillation also exerts significant economic consequences. Patients often have to be on anticoagulant therapy that requires lifelong follow-up and accompanying heavy financial burden. In the US, the average annual cost attributable to the management of chronic Afib to the individual is estimated at $8700, and to the nation, about $6 billion.

Atrial fibrillation is classified according to the time period of occurrence as new-onset, paroxysmal, persistent, or permanent. Management may involve conversion to sinus rhythm (with drugs or electricity or both), or controlling heart rate. This research project is a comparative analysis of rate and rhythm control, and the health related quality of life implications to the patient.

CLINICAL INVESTIGATION

Clinical Scenario: A 70 year old male presents to the clinic with shortness of breath, chest pain, and an episode of syncope. He was previously diagnosed with atrial fibrillation in 2014 and is taking a beta-blocker for rate control. An EKG is ordered and shows the following rhythm:

After management of his current symptoms, he would like to know if a beta-blocker or an antiarrhythmic drug would be better for management of his atrial fibrillation

Clinical Question: Among patients with atrial fibrillation, does rhythm control result in a better quality of life than rate control?

METHODS

Databases: PubMed, Google Scholar

Search Terms: “atrial fibrillation rate versus rhythm” and “rate rhythm atrial fibrillation”

Inclusion Criteria: Randomized control trials involving patients with atrial fibrillation, comparison of rate control and rhythm control

Exclusion Criteria: Non-English, performed before 2005, involved animals

RESULTS

Study A

Health-related quality of life in patients with atrial fibrillation treated with rhythm control versus rate control.

Objective

To assess patients’ perception of their quality of life while being treated with rate or rhythm control.

Study Design

Patients were placed into 2 treatment groups – the rate cohort was treated with anticoagulant nodal blockers including a non-sotalol beta-blocker, calcium channel blocker, or digoxin. The rhythm control cohort was treated with class I, sotalol, or class III antiarrhythmic drugs. Health related quality of life (HRQoL) was assessed using a questionnaire, the University of Toronto Atrial Fibrillation Severity Scale (AFSS), at baseline, 3-months, and a 12-months. The questionnaire assigned a symptom severity score. Scores total from 0-35, with higher values indicating a worse patient perception of quality of life.

Results

Statistically significant changes were defined as greater than or equal to 3 points in scores from baseline to 12-month follow up. At the final visit, the AFSS scores were decreased in both cohorts (lesser score indicating better perception of HRQoL). Rhythm control cohort scores decreased by 2.82 points, while rate control cohort scores decreased by an average of 2.51; p-value <0.01.

Table 2: Depicts no statistical difference between the two groups (rate versus rhythm) with regards to all-cause mortality, cardiovascular mortality, and arrhythmic/sudden death, ischemic stroke, systemic embolism and major bleeding were all found to be similar for both rate and rhythm control groups in all the selected studies. Observed differences did not statistically significant.

Study B

Rate versus rhythm control in atrial fibrillation and clinical outcomes: Updated systematic review and meta-analysis of randomized controlled trials.

Objective

To compare the clinical efficacy of rate and rhythm strategies in patients with Afib not due to comorbid diseases.

Study Design

This study, involving a total of 7499 participants with atrial fibrillation, is a systematic review and meta-analysis of 8 randomized controlled trials (comparing rate and rhythm control strategies). The 8 selected studies were PIAF, RACE, AFFIRM, STAR, HOT CAFÉ, AF-CHF, J-CAFÉ and CAFÉ-II studies. The length of follow up ranged from 1-3.5 years. The studies were assessed by one reviewer and then reassessed by another.

Results

All-cause mortality, cardiovascular mortality, arrhythmic/sudden death, ischemic stroke, systemic embolism and major bleeding were all found to be similar for both rate and rhythm control groups in all the selected studies. Observed differences did not statistically significant.

Table 2: Depicts no statistical difference between the two groups (rate versus rhythm) with regards to all-cause mortality, cardiovascular mortality and mortality due to fatal arrhythmias. The same holds true for all other events measured. CI: confidence interval; RR: relative risk

RESULTS CONTINUED...

Study C

A randomized controlled study of rate versus rhythm control in patients with chronic atrial fibrillation and heart failure (CAFÉ-II Study).

Objective

To compare rate versus rhythm control in the improvement of cardiac function, exercise capacity, and quality of life (QoL) in patients with Afib and comorbid heart failure.

Study Design

61 patients were randomly assigned to rate or rhythm control groups. All participants were given a beta-blocker, digoxin, and anticoagulant therapy unless contraindicated. Goal heart rate was defined as 80 beats per minute (bpm) at rest, and 110 bpm post-exercise. The rhythm control group was also treated with 3 months of amiodarone before being electrically cardioverted to sinus rhythm. Symptoms, walk distance (6-minutes walk test; 6MWt), QoL, and cardiac function were assessed for both groups at baseline, and again at 1 year.

Results

At 1 year, the groups demonstrated similar New York Heart Association heart failure class and 6-MWT. However, the rhythm control group did show improved left ventricular function, brain natriuretic peptide concentration, and QoL compared to the rate control group.

CONCLUSIONS

The decision to choose rate control or rhythm control for treatment of atrial fibrillation depends on several factors:

- The presence and type of comorbidities
- Duration of Afib
- Age of the patient
- Medication side effects
- Symptoms present and the severity
- Patient preferences

All of which, must be considered in tandem when selecting the best treatment. In general, studies do not demonstrate a clear advantage of rhythm control over rate control strategy or vice versa. While these findings make it difficult to determine a general protocol for the treatment of Afib, they do provide a framework that may be able to help clinicians, along with patient input, decide on which treatment method is “best”.

REFERENCES

- Centers for Disease Control and Prevention. Atrial Fibrillation Fun Facts.

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