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Cardioversion of AF with ibutilide

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Keywords

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Comments

Antiarrhythmic agents have received plenty of bad press during this decade perhaps because they were used in inappropriate situations. Undoubtedly these drugs have the potential to cause major morbidity and mortality and so need to be used with a balanced understanding of the risks and benefits. Restoration of sinus rhythm frequently improves symptom control in those patients with AF. Electrical cardioversion is a very safe procedure for restoration of sinus rhythm in those patients with AF, but it may not be successful. Ibutilide pretreatment appears to be a useful and safe adjuvant in this unsuccessful group.

Introduction

Transthoracic electrical cardioversion is not always successful in restoring sinus rhythm in those with atrial fibrillation of long duration, or those with a dilated left atrium. The new class III antiarrhythmic agent, ibutilide, has been shown to chemically cardiovert atrial fibrillation (AF) to sinus rhythm and also reduces the energy necessary for ventricular defibrillation. However its effects on the energy requirements for the defibrillation of AF have not been studied.

Aims

To study the effect of intravenous ibutilide therapy on the energy required for cardioversion of AF, and its role in the management of those patients resistant to standard electrical cardioversion.

Methods

One hundred patients referred for cardioversion of AF of more than 6 h duration (August 1997-December 1998), were randomly assigned to pretreatment with or without ibutilide. Those patients who did not receive pretreatment with ibutilide and in whom electrical cardioversion was unsuccessful, then received ibutilide, and cardioversion was attempted again. Exclusions included inadequate anticoagulation and prolonged QT interval. Electrical energy was delivered in a protocol driven step-up fashion from 50-360 J, and successful cardioversion was defined as restoration of sinus rhythm even if only short-lived. The follow-up period was 1 year after cardioversion.

Results

There were no differences in demographics between the groups in terms of duration of AF prior to cardioversion, concurrent drug therapy, left atrial size and left ventricular ejection fraction. In the 50 patients who received pretreatment with ibutilide, 20% had restoration of sinus rhythm with ibutilide alone and the remaining 80% reverted to sinus rhythm following electrical cardioversion. Those patients who reverted with ibutilide alone tended to be those referred with a shorter duration of AF (24 ? 43 vs 122 ? 179 days). Only 72% of those not receiving ibutilide pretreatment reverted to sinus rhythm following transthoracic cardioversion, but all then cardioverted following further transthoracic cardioversion after receiving ibutilide in the crossover period. Energy requirements were significantly lower for those pretreated with ibutilide (166 ? 80 vs 228 ? 93 J). Adverse events associated with ibutilide therapy were 2 cases (3%) of torsades de pointes which required electrical cardioversion. Both these patients had very low ejection fractions and following these incidents patients with ejection fractions less than 0.3 were excluded from the study. Significant prolongation of the QT interval was seen following transthoracic cardioversion in those who were pretreated with ibutilide.

There was no difference at follow-up between the groups in those patients who had further episodes of AF. At 6 months, 57% and 64% of patients were free from further AF in the non-pretreated group and the group pretreated with ibutilide, respectively.

Discussion

Prior treatment with ibutilide improves the success rate for transthoracic cardioversion of AF. The energy required to cardiovert was also significantly lower. However there was the same incidence of further AF, occurring at follow-up, in patients who had and who had not received ibutilide pretreatment. Ibutilide should be avoided in those patients with low ejection fractions because of the risk of torsades de pointes. The mechanism whereby ibutilide lowers the energy requirements in AF is unknown but may be a result of activation of a slow, delayed sodium current prolonging repolarisation.

Ibutilide is available only as an intravenous preparation and is therefore not available for long-term treatment. However its efficacy may prevent those patients with AF resistant to conventional cardioversion requiring internal defibrillation, with its added risks and costs.

Additional information

There is an accompanying [editorial](#) exploring the role of antiarrhythmic agents.

References

1. Oral H, Souza JJ, Michaud GF, Knight BP, Goyal R, Strickberger A, Morady F: Facilitating transthoracic cardioversion of atrial fibrillation with ibutilide pretreatment. *N Engl J Med.* 1999, 340: 1849-1854.