Successful termination of combined rapid atrial flutter/fibrillation and ventricular tachycardia by intravenous sotalol

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Summary: Combined rapid atrial flutter/fibrillation and recurrent ventricular tachycardia occurred in an 82 year old man with acute myocardial infarction. Both arrhythmias were promptly terminated by intravenous sotalol, suggesting another use for this unique drug in the absence of hypotension, heart block or cardiac failure.

Introduction

Combined rapid atrial flutter/fibrillation and recurrent ventricular tachycardia is uncommon after acute myocardial infarction but usually demands urgent treatment to maintain a satisfactory cardiac output and reduce myocardial oxygen demands. We describe the prompt termination of both arrhythmias and restoration of sinus rhythm following intravenous sotalol administration.

Case report

An 82 year old man was admitted following sudden loss of consciousness associated with retrosternal chest pain. He had experienced similar chest pain and intermittent dizziness over the previous seven days.

On physical examination, jugular venous pressure was normal, blood pressure 140/95 mmHg, pulse

Figure 1 (a) ECG on admission showing atrial flutter with 1 : 1 conduction and ventricular rate approximately 250 beats/minute. (b) ECG demonstrating less rapid atrial fibrillation but paroxysmal ventricular tachycardia, 270–300 beats/minute. (c) ECG 10 minutes after 40 mg intravenous sotalol showing return to sinus rhythm, 70 beats/minute.

irregular 160 beats/minute, heart sounds normal, chest clear to auscultation. The electrocardiogram showed atrial fibrillation 135–190 beats/minute, paroxysmal atrial flutter with 1:1 conduction, right bundle branch block and left axis deviation (Figure 1a). Paroxysmal ventricular tachycardia 270–300 beats/minute (Figure 1b) was accompanied by increasing chest pain, hypotension and progressive impairment of consciousness. Chest radiograph was normal.

Lignocaine 100 mg was given intravenously but rapid atrial fibrillation and paroxysmal ventricular tachycardia continued. Ten minutes later, sotalol 40 mg was given intravenously over 15 minutes resulting in slowing of the ventricular rate, shortening of the bursts of ventricular tachycardia, brief periods of triplets and couplets and sudden return to sinus rhythm 70 beats/minute, 10 minutes after sotalol administration (Figure 1c). Blood pressure fell to 130/70 mmHg and the chest pain disappeared. The electrocardiogram showed sinus rhythm, right bundle branch block, q waves in V1–3 and symmetrical T wave inversion in V1–6, AVL. Subsequent cardiac enzymes confirmed myocardial infarction. The patient had no further episodes of atrial fibrillation or ventricular tachycardia, remained in sinus rhythm and was discharged to the ward 24 hours later on oral sotalol 80 mg/day.

References

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Discussion

Few drugs are capable of controlling combined rapid atrial flutter/fibrillation and recurrent ventricular tachycardia simultaneously and treatment often necessitates therapy with more than one antiarrhythmic agent or electrical cardioversion. Intravenous amiodarone may be effective although its onset of action may be slow and is unpredictable.^{1,2} Flecainide has been shown to be capable of restoring sinus rhythm in patients with either atrial fibrillation or ventricular tachycardia (but not both) and may be a suitable alternative due to its speed of action.³ In our patient, intravenous sotalol was promptly effective in restoring sinus rhythm without adverse effects. The additional benefit of relief of chest pain is a well recognized feature of early β -blockade in acute myocardial infarction.⁴

Sotalol is known to have Class III antiarrhythmic activity which lengthens cardiac action potential duration and prolongs the effective refractory period of all cardiac tissue including the atria.⁵ These effects combined with its β -blocking action are thought to be the basis of the unique antiarrhythmic properties of sotalol and the drug should be remembered as a possible therapeutic option for patients with combined atrial and ventricular tachyarrhythmias post myocardial infarction in the absence of hypotension, heart block or cardiac failure.

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