Ataxia caused by amiodarone in older people

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Abstract

Amiodarone is recommended for the cardioversion of atrial fibrillation and prevention of paroxysmal atrial fibrillation in patients with structural heart disease, coronary artery disease or left ventricular dysfunction. It has well-recognised side-effects on the skin, lungs, liver, thyroid and eyes. Neurological side-effects, including ataxia and neuropathy, also occur, and may be more prevalent in older patients. These side-effects are reversible after cessation of amiodarone. Monitoring of amiodarone therapy should include assessment of the central and peripheral nervous system especially in older patients.

Keywords: amiodarone, ataxia, side-effects, neuropathy, elderly

Introduction

Amiodarone is a commonly used anti-arrhythmic drug for both ventricular and supraventricular arrhythmias [1]. It is recommended for the cardioversion of atrial fibrillation and prevention of paroxysmal atrial fibrillation in patients with structural heart disease, coronary artery disease or left ventricular dysfunction [2]. The safe use of amiodarone requires understanding of its pharmacokinetics, drug interactions and adverse events [1] which include unrecognised neurological side-effects. We present a case of dose-related ataxia in an elderly lady treated with amiodarone for atrial fibrillation.

Case

A previously active 95-year-old lady was admitted with a history of palpitations for 1 week, and signs of congestive cardiac failure. She had a short admission 2 months previously with a self-limiting period of atrial fibrillation. She had stage 4 chronic kidney disease (urea of 13.6 mmol/l, creatinine of 192 mmol/l, cGFR 23 ml/min/1.73 m²), but liver function tests were normal. A chest x-ray showed bilateral pleural effusions. ECG confirmed atrial fibrillation with a ventricular rate of 140 beats per minute. An echocardiogram showed moderate mitral and tricuspid regurgitation with severely dilated atria. She was warfarinised. She was treated as a case of paroxysmal atrial fibrillation but was unable to tolerate beta blockade even with small doses of bisoprol due to symptomatic hypotension. In discussion with the cardiologist she was commenced on amiodarone 200 mg three times a day for 1 week, followed by 200 mg twice a day for 1 week, and then 200 mg once a day. Fourteen days after the loading dose she reverted to sinus rhythm.

Two months later she developed hypothyroidism (FT4 12.4, TSH 9.38) and was commenced on thyroxine. Her heart failure improved and her renal function remained stable. She was continued on amiodarone 200 mg, thyroxine 75 µg and bumetanide 2 mg with warfarin. She noticed she had become gradually unsteady on her feet after 8 months, and at 10 months she was ataxic in clinic. On examination, she had a wide-based gait, bilateral dysdiadochokinesia, and bilateral nystagmus. She also had reduction in light-touch and vibration sense below the knees. The dose of amiodarone was reduced to 100 mg once a day, and 1 month later she felt steadier, although she still had some mild ataxia and nystagmus. One month after the amiodarone was stopped the ataxia and sensory signs had resolved.

Discussion

Amiodarone is an excellent choice for use in patients with structural heart disease or congestive heart failure [1]. Many physicians hesitate to use amiodarone because of concern about side-effects. The NICE guidelines for atrial fibrillation recommend amiodarone but do not make any recommendations on monitoring side-effects or doses [2].
The side-effects of amiodarone include hypothyroidism (20%), thyrotoxicosis (3%), dermatological side-effects (25–75%), corneal deposits (100%), pulmonary fibrosis (<3%) and neurological disturbances (3–30%) including ataxia [1]. In a recent report in which intravenous amiodarone had been used, the resolution of the ataxia was rapid with complete resolution 6 weeks after stoppage [3]. In older reports, tremor and ataxia with encephalopathy and neuropathy were the commonest reason for the withdrawal of amiodarone [4], and central and peripheral nervous system neuro-toxicity were described commonly [5]. In these studies, high doses of amiodarone were used (~ 500 mg per day) which may explain the high frequency of neurological adverse events. In hindsight, perhaps a lower dose of 100 mg amiodarone should have been used in this elderly patient, particularly when she had already developed hypothyroidism. A periodic ataxia responsive to acetazolamide has been described [6], in addition to head-positional vertigo and vomiting [7]. The mechanisms of central neuro-toxicity are unclear, but amiodarone can cross the blood–brain barrier. It is possible that peripheral neuropathy is caused by amiodarone-induced intracellular lipidosis [8]. The variation of incidence of neurological side-effects in reviews may be due to dose variations in different reports with neurological side-effects being more common in older people [1].

The lowest possible dose to control the arrhythmia should be used, especially in older people. Withdrawal or reduction of amiodarone therapy may lead to considerable improvement in neurological side-effects. Patients on amiodarone should have regular cardiac, hepatic, thyroid, pulmonary, dermatological, ophthalmological screening and assessment of neurological function, particularly in older people.

Key points
- Amiodarone can cause neurological side-effects which include ataxia and neuropathy.
- Neurological side-effects may be dose dependent and more common in older patients.
- Screening for side-effects should include a neurological examination.
- The lowest possible dose should be used to control arrhythmias.

Conflicts of interest
None

References

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