Withdrawing cardiovascular medications at a syncope clinic

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Abstract

It is widely assumed in clinical practice that drug treatment associated with hypotension can result in falls and syncope, but there is actually very little evidence to support this. Therefore the data in all patients whose cardiovascular medications were stopped at a falls/syncope clinic were analysed to see if their symptoms were altered and if renewal of these medications was necessary at subsequent visits.

Of 338 consecutive referrals, cardiovascular medications had been stopped in 65 (19%). At follow up 78% reported improvement in their original presenting symptoms and renewal of medication was not necessary in 77% off antianginals, 69% off antihypertensives, and 36% off antiarrhythmics. It was concluded that adjusting cardiovascular medications could help in the management of falls and syncope and may obviate the need for other treatment. These medications can be stopped in select patients if there is regular monitoring and this should reduce unwanted side effects and costs of these drugs.

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Hypotensive responses are associated with recurrent falls and syncope and, a high prevalence of cardiovascular diagnoses in elderly fallers with and without syncope has been reported.^{1,2} Some observational studies suggest that cardiovascular medications are associated with falls and syncope,^{3–5} while case-control data refute this concept.⁶ The main objectives of this study were to examine if patients attending a falls/syncope clinic reported any change in symptoms after their cardiovascular medications were adjusted, and to see if it was necessary to renew these drugs at follow up visits.

Methods and results

All attendances at the syncope clinic in a two year period were reviewed noting those in whom cardiovascular drugs were deliberately stopped. Referrals to the clinic included those with recurrent unexplained falls and presyncope as well as syncope. Certain cardiovascular medications were stopped altogether if there was evidence of unwanted side effects including a cardiovascular diagnosis attributable to their use, if there was no indication, that is, digoxin in those in sinus rhythm, and if supine

blood pressure was <120/80 mm Hg in those taking antihypertensives.

Twenty four hour ambulatory blood pressure monitoring (ABPM) was carried out after a six week period in all patients whose antihypertensive medications were stopped and at intervals thereafter in certain cases. The initial follow up visits were scheduled within a two month period and repeat visits were arranged at 2–3 month intervals for those needing ongoing review.

Indications for restarting the medications at follow up visits were angina for antianginals and symptoms attributable to arrhythmias for antiarrhythmics. Three or more systolic blood pressure readings ≥ 160 mm Hg, three or more diastolic blood pressure readings ≥ 90 mm Hg, and/or a mean daytime blood pressure value $>134/81$ mm Hg⁷ recorded during the 24 hour ABPM were considered indications to resume antihypertensive therapy in those 84 years of age or younger. These indicators were also applied in those older than 84 years if they had evidence of end organ damage.

Of 338 patients, cardiovascular medications were stopped in 65 (19%); age range 63–94, mean age 80 years, and 75% female. Fall related injuries were documented in 60% of these. Syncope was reported by 55%, presyncope by 45%, and recurrent non-syncopal falls by 21%, respectively.

The cardiovascular medications were stopped because of an attributable cardiovascular diagnosis (for presyncope/falls or syncope) in 88% of which hypotensive disorders were the most common (see table 1), and because of other side effects in the remainder, that is electrolyte imbalance, dizziness since taking medications, and hypothyroidism associated with amiodarone. All bradycardic diagnoses were associated with cardioinhibitory medication use.

Antihypertensives were stopped in 41 (63%): thiazides in 18, β -blockers in 12, calcium channel blockers in 10, angiotensin converting enzyme inhibitors in seven, central acting antihypertensives in two, and vasodilator antihypertensives in one. Nine of these were taking combination therapy. Antianginals were stopped in 13 (20%): nitrates in six, β -blockers in four, and calcium channel blockers in three. Antiarrhythmics were stopped in 11 (16%): β -blockers in six, amiodarone in three, and digoxin in two.

Ninety six per cent attended follow up clinics with a mean of 2.5 visits over a 30 month period. Patients were asked in detail during each visit about symptoms of falls, dizziness, presyncope, and actual syncope and this was documented in the case notes each time.

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Table 1 Principal diagnoses in the patients whose medications were stopped

Orthostatic hypotension	35%
Vasovagal syncope	22%
Carotid sinus syndrome	17%
Tachyarrhythmia	9%
Abnormal balance/gait	6%
Symptomatic bradycardia	5%
Postprandial hypotension	2%
Hypothyroidism	2%
Central dizziness	2%

Seventy eight per cent reported symptom improvement of which 47% reported that they had not experienced any of their original referring symptoms since medication adjustment.

Renewal of medication was not necessary in 70% of the overall group: 77% off antianginals, 69% off antihypertensives, and 36% off antiarrhythmics. Three of the 13 patients whose antianginals were stopped subsequently reported angina, of these two resumed their original medication and one chose to remain off therapy. Antihypertensives were renewed in 13 of 41 and thiazide alone was adequate in 10 of these. Antiarrhythmics were renewed in seven of 11 patients on the basis of palpitations and the patients' wishes to resume treatment. None experienced presyncope or syncope off treatment.

Discussion

The majority of patients in this retrospective study reported symptom improvement after their cardiovascular medications were stopped and most did not need these prescriptions renewed at follow up visits. These data highlight the importance of reviewing medications in the elderly and suggest that there may be a causal relationship between cardiovascular medications and falls/syncope in the elderly.

It is widely assumed that drug treatment associated with hypotension can result in falls and syncope but there is very little evidence to support this. Some observational studies have identified vasodilators and antiarrhythmics as risk factors,⁸⁻¹⁰ while many others have not demonstrated any significant increases in the risk of falls among those taking cardiovascular medications.¹¹⁻¹⁴

One multicentre case-control study which examined medication use among elderly syncope patients, did not find that cardiovascular medications were significantly associated with excess risk of syncope.⁶

Our study comprised a select population of elderly fallers as many had a history of presyncope or syncope. Seventy eight per cent reported symptom improvement at follow up of whom only nine patients underwent additional therapy—that is, three were referred for pacemaker implantation, three received physiotherapy, two were treated with pressor agents, and one was treated with thyroxine replacement therapy.

We altered the cardiovascular medications on the assumption that these drugs were aggravating the hypotensive or bradycardic disorders, depending on the type of drug and the

abnormal cardiovascular response elicited. Although many fallers and syncope patients are not taking cardiovascular drugs, it is likely that these medications can increase the likelihood of injurious falls in susceptible individuals. This is supported by studies which suggest that drug induced orthostatic hypotension is more important in some groups and that coexisting factors such as dehydration due to illness or diuretic treatment can predispose the elderly to drug related hypotensive effects.

This study also indicates that cardiovascular medications can be withdrawn for at least short periods without untoward effects. Three quarters of those whose antianginals were stopped denied angina at follow up visits. Many were taking these medications for years despite very infrequent symptoms, often having been symptom-free for some time.

Sixty eight per cent of those whose antihypertensives were stopped had satisfactory blood pressure parameters at follow up. Treatment of hypertension is usually considered lifelong but there is good evidence that blood pressure can remain normal in select patients with mild to moderate hypertension after medication withdrawal for periods of up to 20 months and that some do not need medication renewal at all.¹⁵⁻¹⁷

More than half of those whose antihypertensives were stopped were over 80 years of age and there is no good evidence to date that lowering blood pressure in this particular age group is beneficial. Two of the intervention trials that included those over 80 did not show any benefit from treatment in this particular age group^{18, 19} and a recent subgroup meta-analysis of randomised controlled trials found that there was no treatment benefit for cardiovascular death and a non-significant relative excess of death from all causes in treated patients over 80.²⁰ Cardiac drugs are among the most commonly used medications in the elderly and a prospective controlled trial with more prolonged follow up is needed to investigate the role of these drugs in falls and syncope. Meanwhile, we consider it worthwhile to review all cardiovascular drugs in fallers. Even if there is no symptom improvement it is always interesting to note that the medication is no longer indicated.

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IMAGES IN MEDICINE

The heart of stone

A 31 year old woman with end stage renal disease secondary to hypertension and on haemodialysis for 10 years was admitted with shortness of breath, cough, and low grade fever. She had a past history of hypercalcaemia, which had developed due to tertiary hyperparathyroidism because of her renal disease. She subsequently underwent total parathyroidectomy. Her physical examination was significant for a low grade fever, dull percussion note and decreased air entry at the right base. Results of laboratory investigations on admission were significant for calcium = 1.5 mmol/l, phosphate = 1.7 mmol/l, total

protein = 59 g/l, and albumin = 13 g/l. Chest radiography revealed an old right sided pleural effusion and bibasilar atelectasis. The cardiac silhouette was enlarged suggesting left ventricular hypertrophy but no evidence of calcification. Thoracentesis was performed which was unremarkable. However, as she continued to have a low grade temperature, computed tomography of her chest was performed to rule out any localised fluid collection. The scan showed the old pleural effusion and no new fluid pockets. Interestingly, the computed tomography revealed diffuse deposition of calcium within the myocardium (fig 1). We believe that the patient developed “metastatic calcification” in the myocardium when she was hypercalcaemic due to tertiary hyperparathyroidism. There was no evidence of calcium deposition elsewhere. Her echocardiogram was consistent with restrictive filling pattern. She was empirically started on broad spectrum antibiotics. Her fever resolved after three days and the patient was discharged home. All the appropriate cultures came back negative.

Figure 1 Computed tomogram showing diffuse deposition of calcium within the myocardium.

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