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Rate limiting calcium channel blockers (CCBs)

Introduction

Calcium channel blockers (CCBs) change the amount of calcium getting into the muscle cells in your heart and blood vessels. There are two classes of CCBs; dihydropyridines and non-dihydropyridines. Dihydropyridines are often used to treat blood pressure. Most of these medicines will have names that end in 'ipine' Examples of these drugs are amlodipine and felodipine. Non-dihydropyridines on the other hand, can be used either alone or in conjunction with other medications, to help in the management of atrial fibrillation (AF). Examples of such drugs are verapamil and diltiazem.

How do they work

CCBs affect the way calcium ions move into the cells within the body. The effect these medicines have in the arteries is that they cause relaxation and widening of the artery, which results in a drop in blood pressure. In the heart they cause the contractual force of the muscle cells to decrease. This in turn reduces the overall force of the heart beat. In contrast beta blocking medications slow down the heart beat by acting on adrenaline receptors (called beta) in the heart.

Clinical Use

Antiarrhythmic: Rate limiting CCBs can be used to help maintain a normal rhythm of the heart and often used in people who are intolerant to beta blocker medication.

Rate reduction: Some patients with atrial fibrillation may find that their heart rate increases drastically, which can cause unpleasant symptoms and reduce their activity levels. Rate limiting CCBs can be effective when used alone, but also when used in combination with other medication such as beta blockers or digoxin.

Hypertension: Rate limiting CCBs are effective in reducing blood pressure although dihydropyridines are more commonly used for this condition.

Side Effects and Problems

Heart failure: Due to the effect of these drugs on the strength of heart muscle contraction, CCBs should not be used in patients who have problems with the strength of their heart beat. People with this condition are classed as having an impairment with their heart, otherwise referred to as heart failure.

Light-headedness: Due to their ability in reducing blood pressure, people may initially find they have sensations of light-headedness or dizziness.

Ankle swelling: From their effect in widening the arteries and veins CCBs can occasionally cause ankle swelling. Whilst ankle swelling is an inconvenience, it does not cause any major problems and reducing the dose of your medication usually helps.

Use with beta blockers: The use of rate limiting CCBs can be combined to assist with heart rate control although this tends to be initiated under specialist guidance.

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