



Case Report: Amlodipine Induced Pedal Edema

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ABSTRACT:

Hypertension is generally referred as a elevated levels of pressure of blood on the walls of arteries. Causes generally includes a pre-existing diabetes, stress, familial history, excess salt intake, smoking and alcohol, narrowing of kidney artery, endocrine disorder and birth control pills. The presence of this disease shows some symptoms like light headedness, anxiety, vertigo, tinnitus, altered vision and often leads to fainting episodes. Treatment includes the nonpharmacological therapy like reduced salt intake, anger management, and performing exercises. Amlodipine is a third generation CCB. It is generally used to treat elevated blood pressure, CAD, angina. Nausea, abdominal pain, headache, vomiting, constipation, dizziness, dry mouth, gingival hypertrophy, heartburn, photosensitivity, insomnia, light headedness, palpitation, ECG abnormalities, chest pain, hypersensitivity reaction, frequent urination and elevated liver enzyme are the most commonly occurring adverse effect with amlodipine. In proteinuria it worsens the situation .

Key words: CCB, CAD, HYPERTENSION, ECG

Introduction:

Hypertension is generally referred as a elevated levels of pressure of blood on the walls of arteries [1]. Causes generally includes a pre-existing diabetes, stress, familial history, excess salt intake, smoking and alcohol, narrowing of kidney artery, endocrine disorder and birth control pills [2,3]. The presence of this disease shows some symptoms like light headedness, anxiety, vertigo, tinnitus, altered vision and often leads to fainting episodes [4]. Treatment includes the nonpharmacological therapy like reduced salt intake, anger management, and performing exercises. Beta blockers are the main line drugs when treatment is done pharmacologically. As beta blockers generally treat anxiety conditions, they are not suitable for longer durations of treatment . This makes the calcium channel blockers as a main stay treatment for longer durations. Calcium channel blockers are more potent than beta blockers at decreasing cardio vascular mortality [7]. CCBs reduce excitability of heart muscles, so these are used to treat abnormal heart rhythms . These are generally used to reduce blood pressure, cerebral vasospasm, reduce chest pain caused by angina. These can influence aldosterone synthesis in adreno cortical cells [6]. The first generation CCBs are generally effective, but their rapid onset of action and shorter duration of action made them as second line drug, making third generation CCBs effective for reduction of blood pressure for longer days . Amlodipine is a third generation CCB. It is generally used to treat elevated blood pressure, CAD, angina [5]. It generally acts by 2 ways: firstly, it inhibits movement of calcium ions into vascular smooth muscle and cardiac smooth muscle, causing vasodilatation, leads to increased peripheral vascular resistance and reduces blood pressure. Second, it reduces total peripheral resistance, which reduces rate pressure product and oxygen demand in angina [8]. Amlodipine causes edema, dizziness, palpitations and flushing . The occurrence of edema is found to be high at a rate of 10.8% followed by palpitations, dizziness, fatigue, flushing . We in our hospital setting found the edema with higher rate of occurrence and the primary mechanism involved was increased peripheral vascular resistance [9]. The other uncommon effects include fatigue, abdominal pain, somnolence, impotence, peripheral neuropathy, insomnia, tachycardia, gingival enlargement and jaundice . The rate of occurrence of edema is three times more in women than in men [10].

Case Description

A 38 year-old female experienced edema while taking amlodipine attend op . She had no past history of edema and she is know HTN since 13 years using amlodipine only and no other medications were taken by the patients. After careful evaluation, case reports linking calcium channel blockers and pedal edema led to further examination of amlodipine as a cause. Amlodipine therapy had been discontinued. Patient was prescribed with other class of drug that is telmisartan. So, the ADR was likely to be caused by amlodipine.

Adverse Drug Reaction (ADR) Analysis:

The ADR Probability Scale consists of 10 questions that are answered as either Yes, No or Do not know. Different point values (-1, 0, +1 or +2) are assigned to each answer. A simplified version of the 10 questions is provided below:

1. Are there previous conclusive reports of this reaction?

2. Did the adverse event appear after the drug was given?
3. Did the adverse reaction improve when the drug was discontinued or a specific antagonist was given?
4. Did the adverse reaction reappear upon readministering the drug?
5. Were there other possible causes for the reaction?
6. Did the adverse reaction reappear upon administration of a placebo?
7. Was the drug detected in the blood or other fluids in toxic concentrations?
8. Was the reaction worsened upon increasing the dose? Or, was the reaction lessened upon decreasing the dose?
9. Did the patient have a similar reaction to the drug or a related agent in the past?
10. Was the adverse event confirmed by any other objective evidence?

Total scores range from -4 to +13; the reaction is considered definite if the score is 9 or higher, probable if 5 to 8, possible if 1 to 4, and doubtful if 0 or less. In the present case, a possible relationship was observed by Naranjo's scale assessment.

Adverse Drug Reaction Management: Generally, management of adverse drug reaction includes dechallenge/rechallenge, dose of suspected drug and administration of supportive therapy. Here in this case report the suspected drug amlodipine was discontinued and alternative drug was added to the patient.

Discussion:

Calcium channel blockers make them as one of the first line monotherapy for the treatment of hypertension [1]. The mechanism by which amlodipine lowers the blood pressure includes, reduction in peripheral resistance thereby leading to vasodilation. Previous studies show that amlodipine is a racemic mixture of (R) and (S) isomers; S isomer has more pharmacologic effect than the R isomers [2]. Nausea, abdominal pain, headache, vomiting, constipation, dizziness, dry mouth, gingival hypertrophy, heartburn, photosensitivity, insomnia, light headedness, palpitation, ECG abnormalities, chest pain, hypersensitivity reaction, frequent urination and elevated liver enzyme are the most commonly occurring adverse effect with amlodipine [3]. Our case is presented with amlodipine induced pedal edema. The mechanism considered to occur in pedal edema is due to increased hydrostatic pressure across capillaries which result in reflex constriction of post capillary vessels. The management involves cessation of the drug and substitution with an alternative antihypertensive agent [4]. In this patient, a combination of angiotensin receptor blocker is prescribed as an alternative therapy.

Conclusion:

Amlodipine induced pedal edema was reported at an incidence rate of 1.8% to 10.8% on a dose between 2.5 mg to 10 mg daily(od) . The healthcare professionals should carefully monitor the patients while administering calcium channel blockers such as amlodipine & nifedipine as they have more incidence rate for pedal edema . The early detection, discontinuation of offending drug and prescription of alternative hypertensive agent improves patient's condition and helps for patients better health care also improve there quality of life .

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