INTERNATIONAL JOURNAL OF PHARMACEUTICAL SCIENCES
[ISSN: 0975-4725; CODEN(USA): IJPS00]
Journal Homepage: https://www.ijpsjournal.com

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Review Article

Amlodipine Induced Severe Pedal Edema: A Case Report from a Tertiary Care Hospital

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ARTICLE INFO

Published: 19 Nov 2026
Keywords:
Amlodipine, Pedal edema
DOI:
10.5281/zenodo.24360430

ABSTRACT

Amlodipine is a dihydropyridine derivative calcium channel blocker, mainly used in the treatment of hypertension, angina and certain other cardiac disorders. It is an L-type Ca2+ channel blocker, which leads to inhibitory action on the sympathetic N-type Ca2+ channels. The oral bioavailability of amlodipine is between 64% and 90%. The longer duration of action of amlodipine is due to a combination of high bioavailability, slow clearance and long half-life. The most frequently occurring adverse effect with amlodipine therapy includes palpitation, flushing, ankle edema, hypotension, headache and nausea. Pedal edema is a common adverse effect of calcium channel blocker (Amlodipine, Nifedipine,). We report a patient who developed pitting type pedal edema after treating with amlodipine for hypertension.

INTRODUCTION

Case Description : A 76 yrs old female patient was admitted to general medicine ward with complaints of bilateral lower limb swelling of the legs for 1 month and bilateral lower limb burning sensation for 1 month . On further interviewing, he was a known case of systemic hypertension. Because of uncontrolled isolated systolic hypertension physician added amlodipine 5 mg BD .so after adding Tab.Amlodipne 5mg blood pressure was found to be 130/70 mmHg, pulse rate 88 beats per minute. All other laboratory investigations such as complete blood count, liver function test, blood urea, serum creatinine ,urine analysis, chest X ray, electrocardiograph seems to be normal and x-ray of both knees shows features of severe secondary osteoarthritis. From the subjective laboratory examination and past history of the patient he was diagnosed with systemic hypertension and severe TCOA bilateral knees. one month after initiation of amlodipine therapy, the patient was presented with pedal edema (pitting type) and gradually it is increasing by two to three months. The physician interprets that the pedal edema was caused by

amlodipine. On cessation of amlodipine the patient was recovered from edema and an alternative antihypertensive agent, telmisartan 40 mg and

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Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

hydrochlorothiazide 12.5 mg once daily was prescribed.

ADVERSE DRUG REACTION (ADR) ANALYSIS :

After collecting the past and current medication history from the patient, it was suspected that the patient had developed a drug induced pedal edema with pitting type. After analysing the ADR profiles of all drugs, it was found that the most suspected drug for producing edema was Amlodipine. We have further analyzed to establish the relationship assessment.

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 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 withdrawal/suspension, dose reduction of suspected drug and administration of supportive therapy. Here in this case report the suspected drug amlodipine was discontinued.

DISCUSSION

The high efficacy and tolerability of 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 severe pitting 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 and thiazide diuretic 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. The health care professionals should carefully monitor the patients while administering calcium channel blockers such as amlodipine, nifedipine, diltiazem. The early detection, discontinuation of offending drug and prescription of alternative antihypertensive agent improves patient's condition.

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HOW TO CITE: Viswa Chandran, Vishnu Prem, Tejaswini V., Amlodipine Induced Severe Pedal Edema: A Case Report from a Tertiary Care Hospital, Int. J. of Pharm. Sci., 2026, Vol 4, Issue 11, 3134-3136. https://doi.org/10.5281/zenodo.24360430