Amlodipine-Induced Gingival Hyperplasia: A Case Report

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Abstract

One of the most prevalent chronic diseases in the world is hypertension. Numerous drug options are available in the medical treatment of the disease. One of these drug classes is calcium channel blockers since they are effective, safe, and well-tolerated. Flushing, headache, and pretibial edema are among the common side effects of these drugs. In this case report, we present a case of gingival hyperplasia secondary to amlodipine, a calcium channel blocker, and draw attention to this rare side effect.

We examined a case of gingival hyperplasia that developed in a 67-year-old male patient diagnosed with hypertension. History, examination, and other tools ruled out other cases of gingival hyperplasia, and amlodipine remained the sole suspected cause.

Gingival hyperplasia due to amlodipine should be managed with discontinuation of the drug, improving oral hygiene, and surgical removal of abnormally growing tissue (when necessary). Amlodipine use should be kept in mind in patients with gingival hyperplasia.

Keywords: *Amlodipine, calcium channel blockers, gingival hyperplasia, hypertension, treatment, side effects.*

INTRODUCTION

Hypertension is one of the most common health conditions worldwide. Its management includes lifestyle modification, dietary measures, and various pharmacological treatments. Amlodipine, a calcium channel blocker, is among the frequently prescribed options. Besides its systemic effects, amlodipine has been associated with gingival hyperplasia, a less common but noteworthy adverse reaction. Drug-induced gingival overgrowth may occur with certain systemic therapies [1], and amlodipine is one of the medications known to contribute to this condition [1]. Although multiple factors contribute to gingival enlargement, dental plaque is considered the main predisposing factor, and drug use may exacerbate the inflammation caused by plaque accumulation [2].

Amlodipine is a long-acting calcium channel blocker commonly used for hypertension and angina. It is generally well tolerated, but clinicians should be aware of its dose-related and non-dose-related side effects. The most frequent is peripheral edema, seen particularly at higher doses (10 mg/day), occurring in roughly 10.8% of patients compared to about 0.6% with placebo. This edema is thought to result from greater arteriolar dilation than venular dilation, which increases hydrostatic pressure and causes fluid leakage into the surrounding tissues. Other commonly reported side effects include dizziness, palpitations, and flushing, many of which improve after dose adjustment or in combination with ACE inhibitors or angiotensin receptor blockers [3, 4]. Less commonly, patients may experience fatigue, nausea, abdominal discomfort, or drowsiness. Rare adverse effects include gingival enlargement, hepatic impairment, or neuromuscular symptoms such as muscle pain or weakness, with occasional reports of progressive myopathy possibly linked to amlodipine use [5].

In this report, we present a case of amlodipine-induced gingival hyperplasia and highlight the importance of recognizing this uncommon adverse effect.

CASE REPORT

A 67-year-old man was referred to our clinic by his dentist because of complaints of gum enlargement. He had been taking amlodipine 10 mg daily for the past 10 years for hypertension. He reported no other chronic illnesses. He was not prescribed any other medications. During home blood pressure monitoring, systolic blood pressure was 140-145 mmHg and diastolic blood pressure was 85-90 mmHg. The patient had noticed growth in his gums after brushing his teeth for the last few months and was

Fig. (1): Gingival hyperplasia of the patient.

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presented to the outpatient clinics of our institution. His oral hygiene was fine before he noticed gingival enlargement (He had regular dentist visits). Fig. **(1)** shows the patient's gingival hyperplasia. The patient had no history of previous surgery and no systemic disease other than hypertension. He was conscious and cooperative during the physical examination. Vital signs: pulse: 78/min, respiratory rate 17/min. There was extensive gingival hyperplasia and dental plaque in the lower jaw. Blood pressure was 140/80 mmHg. Laboratory findings: Glucose 120 mg/dL, urea; 42 mg/dL, creatinine; 1.01mg/dL, K (Potassium): 3.9 mmol/L, Na (Sodium): 139 mmol/L, ALT (alanine aminotransferase): 19 U/L, AST (Aspartate Aminotransferase):17, TSH was 0.72 µIU/mL, hemoglobin: 15.3 g/dL, leukocytes: 8440 K/uL, platelets: 259 K/uL. The case was evaluated as gingival hyperplasia secondary to amlodipine use. Amlodipine was discontinued, and he was prescribed perindopril 5mg for blood pressure control. Oral and dental hygiene, as well as a dentist check-up, were recommended. At the six-month follow-up, the patient's gingival hyperplasia was completely resolved. His oral hygiene was fine, according to his last dentist visit and examination. Therefore, the cause of gingival hyperplasia was attributed to amlodipine. Moreover, the Naranjo scale point was calculated as 7 (probable). Table **1** shows the Naranjo scale of the case.

Table 1: Naranjo scale of the case.

Question	Assessment in This Case	Score
1. Are there previous conclusive reports on this reaction?	Yes. Amlodipine is a well-known cause of gingival hyperplasia.	+1
2. Did the adverse event appear after the suspected drug was administered?	Yes. The patient had been taking amlodipine chronically before gingival enlargement was noticed.	+2
3. Did the adverse reaction improve when the drug was discontinued (dechallenge)?	Yes. Gingival hyperplasia completely resolved within 6 months after stopping amlodipine.	+1
4. Did the adverse reaction reappear upon re-administration?	Not applicable (no rechallenge performed).	0
5. Are there alternative causes that could have caused the reaction?	No strong alternative causes identified—no systemic disease, no other medications. Although dental plaque was present, oral hygiene had been good previously, and full resolution occurred after drug withdrawal.	+2
6. Did the reaction reappear with the placebo?	Not applicable.	0
7. Was the drug detected in toxic concentrations in blood or other fluids?	Not measured / not applicable.	0
8. Was the reaction more severe with increased dose or less severe with decreased dose?	No dose adjustment reported before discontinuation.	0
9. Did the patient have a similar reaction to the same or similar drugs previously?	No prior history reported.	0
10. Was the adverse event confirmed by objective evidence?	Yes. Clinical examination documented extensive gingival hyperplasia, and complete resolution after withdrawal provides objective confirmation.	+1

Total = 1 + 2 + 1 + 2 + 1 = 7
≥ 9: Definite
5-8: Probable
1-4: Possible
0: Doubtful

DISCUSSION

Here, we present a case of gingival hyperplasia secondary to the use of amlodipine, which is widely prescribed for the treatment of hypertension.

Hypertension is among the most common diseases worldwide [6, 7]. When left untreated, it is associated with increased morbidity and mortality [8]. There is a wide variety of medications available to treat this condition. Calcium channel blockers are among the options. Amlodipine is also frequently preferred in this class [9]. Amlodipine is available in 2.5, 5, and 10 mg tablets and is primarily administered orally [10]. The optimal dosage for treating hypertension in adults is 5-10 mg/day [11]. A serious adverse drug event related to prescribed medications accounts for 2.4% to 16.2% of all hospital admissions [12]. Among the symptoms of prescribed medications are gingival enlargement, oral hyperpigmentation, and, more seriously, hypersensitivity reactions [13]. Among the most significant side effects of amlodipine are peripheral edema, heart failure, pulmonary edema, flushing, dizziness, headache, drowsiness, skin rash, nausea, abdominal pain, and constipation. Researchers reported in controlled clinical trials that at a 10 mg dose of amlodipine, the incidence of peripheral edema, flushing, palpitations, and dizziness were 10.8%, 2.6%, 4.5%, and 3.4%, respectively. The incidence of headache, nausea, and abdominal pain was 7.3%, 2.9%, and 1.6%, respectively. However, one rare side effect is abnormal gingival enlargement [10]. Reports of adverse drug reactions related to the use of amlodipine are very few in the literature to date. Gingival hyperplasia is a rare adverse reaction associated with this drug, as reported in this case [10]. A retrospective study conducted in the USA determined that drug-related gingival hyperplasia can be associated with the use of amlodipine, phenytoin, and zonisamide. Another study in Japan linked drug-related gingival hyperplasia to medications like mycophenolate mofetil, amlodipine, benidipine, nifedipine, levetiracetam, topiramate, and phenytoin [14]. This is consistent with our case report.

A published analysis of drug-induced gingival hyperplasia using FAERS data (January 2004 to June 2014) identified 195 FAERS reports associated with amlodipine when considered as the drug entity term in all reports, and 174 reports when amlodipine was listed as a suspected drug [14]. These values refer specifically to reports classified as gingival hyperplasia in the FAERS dataset and indicate that amlodipine contributed to one

of the higher reporting odds among calcium-channel blockers in this context.

Although the exact mechanism of amlodipine-induced gingival hyperplasia remains unknown, several mechanisms have been proposed. Among these, defective collagenase activity due to folic acid deficiency, an increase in adrenocorticotropic hormone (ACTH) due to a defect in aldosterone synthesis, an increase in keratinocyte growth factor, and inflammation in crevices and bacterial plaques due to drug concentration [15]. Gingivitis is also an underlying cause in many patients. Other factors such as poor dental hygiene, nutritional deficiencies, and male gender may also contribute to gingival hyperplasia [16]. The basis of treatment consists of discontinuing the offending agent [2]. Case reports in the literature show that this adverse effect can be reversed by discontinuing the drug alone, as in this case. In addition, gingivectomy or periodontal flap surgery is recommended for better aesthetic results [17].

Amlodipine is a third-generation dihydropyridine calcium channel blocker widely prescribed for hypertension and angina pectoris. While generally well tolerated, its use has been associated with several adverse effects, of which gingival enlargement (gingival overgrowth or hyperplasia) is among the most clinically significant. Gingival overgrowth due to amlodipine, though less common than other adverse effects, can lead to functional impairment, aesthetic concerns, and reduced oral hygiene, potentially resulting in secondary periodontal disease and caries [18]. Amlodipine is generally well-tolerated. The prevalence of amlodipine-induced gingival hyperplasia varies across studies. A 1997 study reported a prevalence of 3.3% among patients taking 5 mg/day of amlodipine for at least 6 months, which was not significantly different from that of control groups not on calcium channel blockers. In contrast, a more recent cross-sectional study from Nepal found a 37% prevalence among patients on amlodipine for at least 3 months, with severity correlating with dosage and duration of therapy [19-21]. Risk factors for developing gingival hyperplasia include higher doses (particularly 10 mg/day), longer duration of therapy, male gender, poor oral hygiene, and genetic predisposition [16].

Gingival overgrowth typically manifests within 1 to 3 months of initiating amlodipine therapy. Patients may present with painless, firm, generalized gingival enlargement that can interfere with mastication, speech, and aesthetics [22]. In some cases, the overgrowth can be massive, affecting both the upper and lower gums [2, 19]. Current explanations point to a multifactorial cause involving both inflammatory and non-inflammatory mechanisms. Drug-related changes in collagen turnover, inflammation triggered by plaque accumulation, and individual genetic predisposition are thought to contribute to the development of gingival enlargement [19]. Management generally involves improving oral hygiene, minimizing plaque buildup, and, when feasible, discontinuing or changing the suspected medication. When amlodipine is switched to another antihypertensive, the gingival changes often regress within a few months [16]. In more advanced or resistant cases, surgical procedures such as gingivectomy may be required. Our case may be notable in the literature due to the unusually long (10-year) duration of amlodipine use before the development of gum hyperplasia.

CONCLUSION

The management of amlodipine-related gingival hyperplasia should include stopping the suspected medication when possible, supporting optimal oral hygiene, and surgically removing enlarged tissue when necessary. Clinicians should consider calcium channel blockers as potential contributors when evaluating patients presenting with gingival overgrowth.

CONSENT FOR PUBLICATION

The patient has given informed consent to publication.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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