

GUM HYPERTROPHY: AN ORAL MANIFESTATION OF HYPERTENSION THERAPY

Abstract

Nowadays nearly 48.1% of people suffer from hypertension. As a result, these people are on antihypertensive therapy that involves a long group of drugs with each one having its peculiarities. One of the classes of antihypertensive drugs is the Calcium channel Blockers. These include Amlodipine, Diltiazem, Felodipine, Isradipine, Nicardipine, Nefidipine & Nisoldipine[1]. Among these Amlodipine is the most frequently used drug[4]. But as the coin has two sides this drug also has its adverse effects. The most important adverse effect of the Calcium Blockers is the gum hypertrophy. How the decrease of intracellular Calcium storage leads to the development of enlarged gum that is Gum hypertrophy. The most recently used class of drugs for hypertension is the ACE inhibitor Lisinopril. This article brings about the mechanism of action of these Calcium Channel Blockers that further cause gum hypertrophy. Gingival hyperplasia is an overgrowth of gum tissues around the teeth[7]

Keywords: Angiotensin Converterase Enzyme Inhibitors (ACEI), Angiotensin Receptor Blockers (ARB), Calcium Channel Blockers (CCB)

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I. INTRODUCTION

In more than 95% of Cases, a specific underlying cause of hypertension cannot be found. Such patients are said to be essential hypertension patients[2]. Different investigations have proposed that the kidney, peripheral resistance vessels, and the sympathetic nervous system are the seat of the sympathetic outflow of the primary abnormality[2]. There are various methods to diagnose hypertension, especially a Sphygmomanometer used to check hypertension. The article will give you an overview of different types of hypertension and the various antihypertensive drugs that cause oral manifestation. especially the Gum hypertrophy. The exact mechanism of action of calcium channel blocker which leads to Gum hypertrophy. The Investigation was done to check the blood pressure for hypertension. Drug-induced gingival hyperplasia can be a serious concern for both patients and clinicians[4].



Figure 1: Gum hypertrophy in oral lesion an abnormal overgrowth of gingival tissues

II. HYPERTENSION

High blood pressure is a common condition that affects the body's arteries. Its pressure is also called hypertension[8]. If you have high blood pressure, the force of blood pushing against the artery wall is consistently too high[8]. The Heart has to work harder to pump blood. Normal BP- 120/180 mm of hg or lower. Elevated blood pressure: The top number ranges from 120 to 129 mm of hg or the bottom number is below, not above 80 mm Hg[8]. Fig1 Shows abnormal growth in the gingival tissue area due to hypertension.

Stage I Hypertension: The top number ranges from 130 to 139 mm Hg or the bottom number is. between 80 and 89 mm Hg[8].

Stage II Hypertension: The top number is 140 mm Hg or higher or the bottom number is 90 mm Hg or higher. Untreated high Blood pressure increases the risk of heart attack, stroke, and other serious health problems[8].

III. DRUGS USED TO TREAT HYPERTENSION

The first line of antihypertensive drugs is thiazide, diuretics, B blockers, ACE inhibitors/ ARBs, and CCBs[1]. The Group called Calcium channel blockers are used to treat

hypertension. It contains three groups. (1)Phenylalkylamine-Verapamil (2)Benzothiazepine-Diltiazem (3)Dihydropyridines- Nifedipine, felodipine, Amlodipine, Clinidipine, and Lacidipine. Among these most of the drugs like verapamil, and amlodipine cause oral manifestation like Gum Hypertrophy[3].

IV. THE MECHANISM OF ACTION OF CALCIUM CHANNEL BLOCKERS

The Calcium Channel blockers act on (1) Smooth Muscle: Smooth muscles depolarise primarily by inward Ca^{2+} movements through a voltage-sensitive L-type channel. The CCBs cause relaxation by decreasing the intracellular, availability of Ca^{2+} . They markedly relax arterioles, but have a mild effect on veins (2) Heart: In the working atrial and ventricular fibers, Ca^{2+} moves in during the plateau phase of AP, and elicits contraction through binding to troponin. The Calcium Channel Blockers would thus have negative inotropic action by reducing Ca^{2+} Amlodipine causing Gum hypertrophy. As amlodipine is a calcium channel blocker it reduces the influx of Ca^{2+} inside the cell. Depolarization will not be achieved, cell activity will be less. As a result, the uptake of folic acid in the cell will be reduced. Folic acid is required for the inhibition of collagen enzymes. The collagenase enzyme is required for the degradation of collagen fibers giving space for new collagen fibers. As the collagenase enzyme is degraded the collagen fibers will not be degraded instead they will keep growing and accumulating giving rise to hypertrophy.

V. INVESTIGATIONS FOR BLOOD PRESSURE

Table 1: Tabulate the test Sample to investigate for Hypertension

S.no	Test for Examination BP
1	Urine analysis for blood, proteins, and glucose.
2	Chest radiograph for cardiomegaly and heart failure.
3	ECG for left ventricular hypertrophy & and ischemia
4	Plasma electrolytes
5	Blood glucose level and lipids.

VI. CONCLUSION

Gum hypertrophy may be an indication that the patient might be on hypertensives. Accordingly, the treatment planning of the patient should be done by the dentist. The antihypertensive may have Orthostatic hypertension where the patient must avoid sudden changes with the patient chair and when treatment is finished return the chair slowly to an upright position. Better drugs are always available for the treatment of hypertension. A patient undergoing dental treatment should always give a proper history so that the dentist can properly plan the treatment according to the patient's condition. Mostly the angiotensin receptor blockers must be used to treat hypertension.

REFERENCE

- [1] KD Tripathi. (2020, November). Essentials of Pharmacology for Dentistry.
- [2] Sir Sanleyndavidson.(2019). Davidsons Medicine,1440.
- [3] KD Tripathi. (2020). Essentials of Medical Pharmacology, 1142.

- [4] P.S Suzanne. Portnoy, Shin u Lee, Ashley McMullen. (2022). Amlodipine induced massive gingival hypertrophy.
- [5] Wolters Kulwer ,JFE Mann (2022).Choice of drug therapy in primary hypertension.
- [6] Angela L wang Cosa.New generations of dihydropyridines for the treatment of hypertension
- [7] Christine Frank DDS. Kiara Anthony (2018) .Gingival hyperplasia causes, symptoms, and treatment
- [8] Leslie Thomas, M.D (2023). High blood pressure symptoms and causes.