

# Ocular Manifestations of Systemic Hypertension: Its Management and Prevention

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## ABSTRACT



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Hypertension is identified when blood pressure is higher than 140/90 mm of Hg. It is in public health concern in the form of systemic disease as well as in ocular manifestations. The main site for ocular changes in hypertension is retina which shows marked arteriolar attenuation, hemorrhages, oedema and swelling of the optic disc. If further uncontrolled vision threatening conditions like revascularization and even retinal detachment may occur in later stages. Other common ocular manifestations are subconjunctival hemorrhages, strabismus, ptosis and cranial nerve palsies. Most of the recent treatment is focused in retinal laser therapy and intravitreal injection of anti VEGFs agents. To prevent the ocular manifestations blood pressure should be in strict control with sodium and salt restriction in diet. Adequate physical exercise and proper nutrition can also play crucial role for its management.

## KEYWORDS

Hypertension, Hypertensive retinopathy, Macular oedema, Optic atrophy, Retinal detachment, Subconjunctival hemorrhage.

## INTRODUCTION

Hypertension indicates abnormally high blood pressure considering patient's age and gender. The level of blood pressure depends on physical activity, stress, age and on certain diseases. It is labeled as high if in young age it rises above 140/90 mm Hg at rest. Usually our systolic blood pressure lies at 100-140 mm of Hg and diastolic blood pressure at 60-90 mm Hg. Essential hypertension which accounts for 90-95% of cases is that when no obvious cause is known for high blood pressure though excessive salt intake and smoking are considered as main risk factors for it. Secondary hypertension includes 5-10% of hypertensive cases whose cause may be kidney diseases, endocrine diseases, cardiovascular diseases etc. 1, 2.

## OCULAR MANIFESTATIONS OF HYPERTENSION

There are some ocular manifestations of hypertension. It is worldwide a common public health problem affecting up to 60 % of those aged over 60 years 1. Due to hypertension there are arteriosclerotic retinopathies in retina. Hypertensive retinopathy is due to vascular incompetence and breakdown of the blood retinal barrier. Acute severe elevation of blood pressure causes retinal arteriolar narrowing and focal vasospasm which when persistent causes necrosis of the muscular and endothelial coats of the vessels. Due to such damage there will be retinal oedema and necrosis of smooth muscle. Similarly retinal hemorrhages, papilloedema and even retinal detachment are other additional manifestations

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of hypertensive retinopathy<sup>3</sup>.

Due to uncontrolled hypertension, there might be subconjunctival hemorrhages in an eye<sup>4</sup>. Moreover a patient would be more vulnerable to develop retinal vein and retinal artery occlusion which are the cases of ophthalmic emergency to save sight. If not treated in time, due to increased intraocular pressure, neovascularization, vitreous hemorrhages or due to retinal detachment, there might be permanent loss of vision leading to blindness<sup>5, 6, 7</sup>. Similarly hypertension is a causative factor for cranial nerve palsies leading to double vision, strabismus and ptosis. In few cases of hypertension, it has affected occipital cortex with insufficient blood circulation leading to cortical blindness. The most devastating ocular manifestation is optic atrophy which may arise due to disturbance of blood circulation in optic nerve leading to irreversible blindness<sup>7, 8</sup>.

Mild retinopathy is associated with modest risk of systemic morbidity in the form of cerebrovascular (stroke) and cardiovascular diseases. Moderate retinopathy is commonly associated with strong risk of morbidity and malignant retinopathy has got strong association with systemic mortality<sup>7</sup>.

## MANAGEMENT OF OCULAR MANIFESTATIONS

It depends on the cause. Energetic treatment with antihypertensive drugs results in remarkable improvement of the fundus picture. Blood pressure should be lowered gradually<sup>11, 13</sup>. Neovascularization of the retina if present is nowadays managed with laser photocoagulation and intravitreal injections of anti-vascular endothelial growth factor agents (anti VEGF). For retinal hemorrhages, it needs laser therapy by an ophthalmologist<sup>11, 12</sup>. Minor ocular manifestation like subconjunctival hemorrhages can be treated with ice pack or cold compression twice daily for five to ten minutes. For smooth healing, vitamin C tablet 500 mg once daily for one to two weeks is advised. Other anomalies like double vision, strabismus, ptosis etc need other neurological evaluation and management<sup>11, 14</sup>. If hypertensive retinopathy occurs in last trimester of pregnancy, termination of pregnancy is advocated<sup>13</sup>. The visual prognosis is good for retinopathy associated with pregnancy induced hypertension as the change reverse in the postpartum period following delivery<sup>15, 16</sup>. Once hypertensive retinopathy is detected it should be seen every two to three months at first and then every six to twelve months later on. Hence the main treatment is directed toward control of hypertension with systemic treatment<sup>12</sup>.

## PREVENTION OF OCULAR MANIFESTATIONS

Periodic eye evaluation is mandatory to detect ocular changes due to hypertension to prevent further damage to retina and vision. Blood pressure should be in control to prevent ocular changes. Blood pressure should be lowered gradually to allow time for auto regulation therapy to prevent ischemic damage. General measures including weight control, salt restriction and physical exercise will be clinically beneficial to control hypertension and its ocular manifestations<sup>14, 17</sup>.

## CONCLUSION

Hypertension is a common public health problem nowadays. The main ocular changes are hypertensive retinopathy, retinal vein and artery occlusion, subconjunctival hemorrhages, cranial neuropathy, optic atrophy, ptosis etc. To control it blood pressure should be in strict control along with periodic eye and vision evaluation. The treatments for retinal changes include retinal laser therapy and intravitreal injection of anti VEGF agents to prevent further damage to eye.

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