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Original Research

Observational Analysis of Ocular Manifestations in Patients with Systemic Hypertension

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ABSTRACT

Background: Hypertension refers to blood pressure that is unusually high for the patient's age and gender. Blood pressure levels are influenced by physical activity, stress, age, and certain medical conditions. The present study was conducted to assess ocular manifestation in patients with systemic hypertension.

Materials & Methods:84 adults aged between 30–60 years with systemic hypertension of both genders were selected. In all patients, IOP was measured using a non-contact tonometer and BP with a digital machine attached to the patient's left arm in the sitting position by taking two readings during the same visit of the day, and an average value was obtained. Blood pressure was recorded using auscultatory method

Results: Outof 84 patients, 50 were males and 34 were females. Ocular manifestations were retinal hemorrhages in 35, papilloedema in 12, retinal detachment in 10, arteriosclerotic retinopathiesin 5 and subconjunctivalhemorrhagesin 10 patients. The mean IOPin right eye was 18.5 and in left eye was 17.9. The difference was significant (P< 0.05).

Conclusion: Common ocular manifestations were retinal hemorrhages, papilloedema, retinal detachment, arteriosclerotic retinopathiesand subconjunctival hemorrhages.

Keywords: Hypertension, hemorrhages, papilloedema,

Introduction

Hypertension refers to blood pressure that is unusually high for the patient's age and gender. Blood pressure levels are influenced by physical activity, stress, age, and certain medical conditions. It is classified as high if, during youth, it exceeds 140/90 mm Hg at rest.[1] Our systolic blood pressure typically ranges from 100 to 140 mm Hg, while our diastolic blood pressure falls between 60 mm and 90 mm Hg. Essential hypertension, responsible for 90-95% of cases, refers to high blood pressure with no identifiable cause, although excessive salt consumption and smoking are regarded as primary risk factors. Secondary hypertension accounts for 5-10% of hypertensive cases, with potential causes including kidney diseases, endocrine disorders, cardiovascular diseases, and others.[2]

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.[3] 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.[4] 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 of hypertensive retinopathy.[5] Due to uncontrolled hypertension, there might be subconjunctival hemorrhages in an eye. Moreover, patient would be more vulnerable to develop retinal vein and retinal artery occlusion which are the cases of ophthalmic emergency to save sight.[6]The present study was conducted to assess ocular manifestation in patients with systemic hypertension.

Materials & Methods

The study was carried out on 84 adults aged between 30–60 years with systemic hypertension of both genders. All gave their written consent to participate

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in the study.

Data such as name, age, gender etc. was recorded. In all patients, IOP was measured using a non-contact tonometer and BP with a digital machine attached to the patient's left arm in the sitting position by taking two readings during the same visit of the day, and an average value was obtained. Blood pressure was recorded using auscultatory method. Results thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

Results

Table: I Distribution of patients

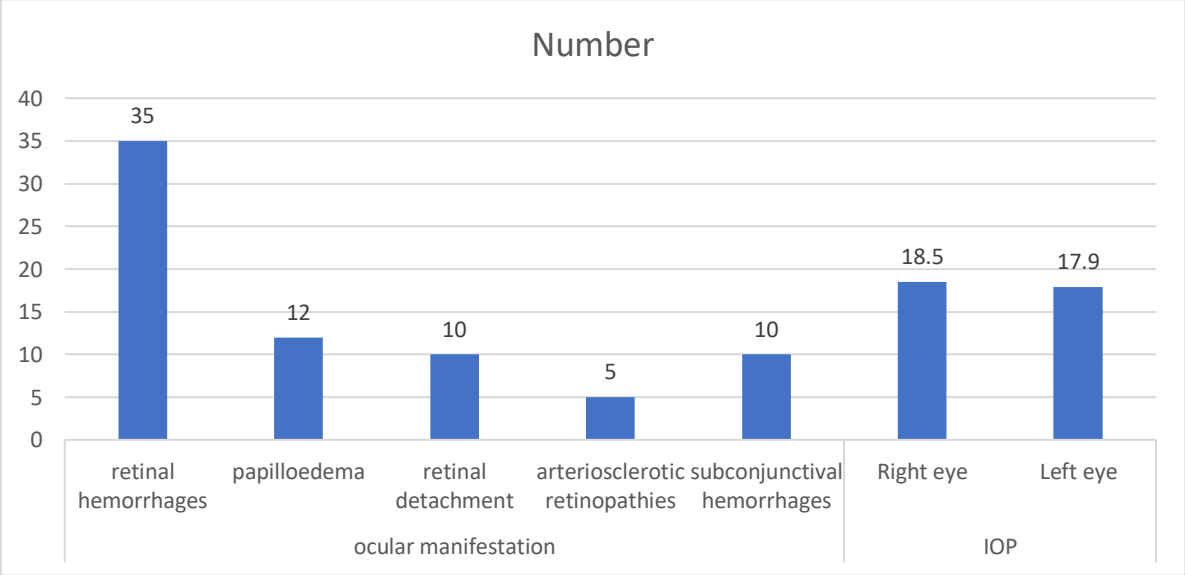
Total- 84		
Gender	**Male**	**Female**
Number	50	34

Table I shows that out of 84 patients, 50 were males and 34 were females.

Table: II Assessment of parameters

Parameters	Variables	Number	P value
ocular manifestation	retinal hemorrhages	35	0.01
	papilloedema	12	
	retinal detachment	10	
	arteriosclerotic retinopathies	5	
	subconjunctivalhemorrhages	10	
IOP	Right eye	18.5	0.04
	Left eye	17.9	

Table II, graph I shows that ocular manifestations were retinal hemorrhages in 35, papilloedema in 12, retinal detachment in 10, arteriosclerotic retinopathies in 5 and subconjunctival hemorrhages in 10 patients. The mean IOP in right eye was 18.5 and in left eye was 17.9. The difference was significant (P< 0.05).



Graph: I Assessment of parameters

Discussion

Intraocular pressure is an essential entity in maintaining the structural and functional integrity of the eyeball. Any abnormality in the intraocular pressure of a given eye can result in the dysfunction of the eye.[7]The most important factor which regulates the intraocular pressure within physiological limits is the aqueous humour. The intraocular pressure is maintained by the equilibrium between aqueous production from ciliary body and its drainage via trabecular complex.[8]The aqueous humor helps in maintaining the nutrition of the avascular structure of the globe and act as a refractive medium in the eye.[9] An increase in intraocular pressure leads to a clinical complex known as glaucoma. Among the various possible causes, high blood pressure is one of the possible cause of ocular hypertension.[10]The present study was conducted to assess ocular manifestation in patients with systemic hypertension.

We found that out of 84 patients, 50 were males and 34 were females. Dubeyet al[11]compared the IOP in non-glaucomatouspatients between the systemic

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hypertensive group and the normotensive group. IOP was measured using a non-contact tonometer and BPwith a digital machine attached to the patient's left arm in the sitting position by taking two readings during the same visit of the day, and anaverage value was obtained. In the presentcomparative study, 80 cases and 80 controls were taken with the average age of the cases being 62.64 ± 6.85 years, and among the controlsthe average age was 59.99 ± years. Among the cases, 76.2% had raised systolic blood pressure (SBP) and 47.5% had raised diastolic bloodpressure (DBP). The average IOP among the cases for the right eye was 18.81 ± 4.10, while the average IOP among the controls for theright eye was 13.83 ± 2.83. IOP for the left eye among the cases was significantly higher among the cases (17.86 ± 4.27) as compared withthe controls (14.33 ± 3.32). There was a significant variation in IOP in the systemic hypertensive group.

We found that ocular manifestations were retinal hemorrhages in 35, papilloedema in 12, retinal detachment in 10, arteriosclerotic retinopathiesin 5 and subconjunctivalhemorrhagesin 10 patients. The mean IOPin right eye was 18.5 and in left eye was 17.9. Monisha NS et al[12]concluded that, persons with hypertension and advancing age need to be monitored for high intraocular pressure and periodic BP monitoring may be indicated. Hence a population based screening for elevated IOP and its control could reduce the number of people at greatest risk of glaucoma, which is the second commonest cause for blindness and visual impairment in India and worldwide.

Mensah SH et al[13]determined the association between blood pressure, intraocular pressure and glaucoma. The outcome of the study revealed a positive correlation of 0.364 and 0.309 between systolic blood pressure and the intraocular pressure of the right and left eye respectively.The correlation between diastolic blood pressure and intraocular pressure of the right and left eyes were 0.334 and 0.239 respectively. Out of the 104 patients with systolic blood pressure exceeding 139mmHg, 54 of them (51.9%) had intraocular pressures greater than 21mmHg and 58 of them (55.8%) had cupto-disc ratio in the range of 0.7–1.0. A weak but positive correlation between systolic blood pressure and cup-todisc was also established.

The shortcoming of the study is small sample size.

Conclusion

Authors found that common ocular manifestations were retinal hemorrhages, papilloedema, retinal detachment, arteriosclerotic retinopathiesand subconjunctivalhemorrhages.

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