

Ocular Manifestation in Hypertensive Patients of Jamnagar District

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Abstracts: Hypertension affects millions of patients worldwide. Persistent elevation affecting the arteries and veins in eye can be the most accessible to clinically detect undiagnosed hypertension. **Aim:** To know the incidence of retinopathy due to hypertension in both sex and various age groups. The severity of hypertension and its relation with fundus changes is observed. **Material and Methods:** The Study was carried out at the department of ophthalmology in Shri Guru Gobind Singh Hospital. Detailed ophthalmic evaluation including dilated fundus and systemic examination of the patient is carried out in detail. Thereafter attempt is made to correlate the Fundus findings with age, sex, past history etc. For hypertensive retinopathy Keith-Wagener-Barker Classification is used. **Result:** Hypertension is most common in 5th to 6th decade of life. Males are more affected than females. Male to female ratio is 1.72. Fundus changes are observed maximum in grade II (26, 44.8%) followed by Grade I(15,21.9%), Grade III(11,19%) and minimal in Grade IV(6,10.3%).With incidence of hypertensive retinopathy in different age group shows that Grade II more number of cases 26 (44.8%) in 41-50 years of age group showing 8 cases. In complication of hypertensive retinopathy, 10 cases of macular edema, 6 cases of disc edema, 1 case of central retinal vein occlusion and 1 case of branch retinal vein occlusion are found. **Conclusion:** Incidence of hypertensive retinopathy is increased as age is increased with maximum presentation in 5th to 6th decade of life with male dominance with male:female ratio 1.72. Hypertensive retinopathy grade II is the most common retinopathy found. Higher systolic and diastolic blood pressure was associated with more severe retinopathy. Grade-III and Grade-IV hypertensive retinopathy was maximally associated with systemic involvement. [Gohel D NJIRM 2014; 5(4) :36-40]

Key Words: Hypertension, Hypertensive Retinopathy, Keith Wagner Barker Classification, Macular oedema

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Introduction: Hypertension affects approximately 1 billion people worldwide.1The global burden of hypertension is rising and projected to affect 1.5 billion persons – one third of the world’s population-by the year 2025.Hypertension despite its widely recognized high prevalence and associated danger, remains inadequately treated in majority of patients. The retina remains the most accessible organ for the clinician to detect undiagnosed hypertension.2 The present study is done in 100 patients of hypertension of different etiology, attending the Guru Gobind Singh Government Hospital, Jamnagar.

Aims:

1. Know the incidence of retinopathy due to hypertension in both sex and various age groups.
2. Know the status of blood vessels in hypertensive patients and the severity of hypertension.
3. Understand the occurrence of ophthalmic complications according to severity of hypertension.

Material and Methods: The study is carried out over a period of 1year at the department of Ophthalmology, Guru Gobind Singh Hospital, Jamnagar.

Detailed ophthalmological assessment done along with general and systemic examination. Dilated Fundus finding were noted in detail and pathological changes observed were noted like changes in the retinal blood vessels especially caliber of the vessels, A-V ratio, changes in vessel walls, appearance of blood column, appearance of the vascular light reflex, changes at the A-V crossing, changes in macular area and changes in background overall appearance, presence of hemorrhage, exudates or any other pathology. Thereafter attempt was made to correlate the Fundus findings with age, sex, past history, blood pressure etc. For hypertensive retinopathy Keith-Wagener-Barker Classification was used.

Results: In our study, total 100 patients of different age groups of both sexes are included. In our

Study, total 100 patients of both sexes are taken in which 64 are males and 36 are females. Males are more affected than females in the ratio of nearly M:F is 1.72. Incidence of hypertension increases with age and reaches to highest in 5TH to 6TH decade due to involutinal sclerosis and its protective mechanism by which they are able to withstand adverse effect of hypertension better than normal blood vessels.

Table 1: Incidence in Age

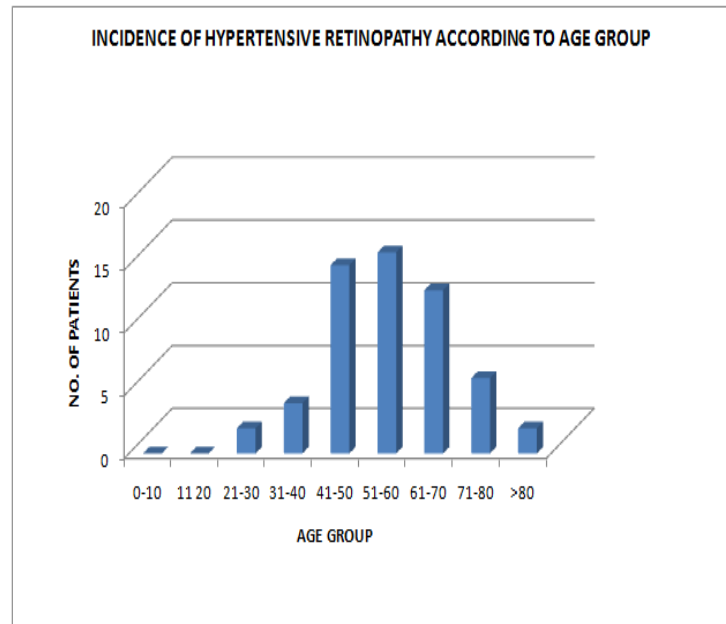
AGE(in years)	Numbers	Percentage
0-10	-	-
11-20	-	-
21-30	3	3%
31-40	9	9%
41-50	27	27%
51-60	28	28%
61-70	25	25%
71-80	6	6%
81-90	2	2%
TOTAL	100	100%

Table 2: Age and Sex Relation in Patient Of Hypertension

Age(in years)	Male			Female		
	Total	% from 64	% from 100	Total	%from 36	% from 100
0-10	-	-	-	-	-	-
11-20	-	-	-	-	-	-
21-30	2	3.13	2	1	2.8	1
31-40	6	9.4	6	3	8.34	3
41-50	14	21.9	14	13	36.2	13
51-60	20	31.3	20	8	22.3	8
61-70	17	26.6	17	8	22.3	8
71-80	3	4.7	3	3	8.34	3
>80	2	3.13	2	0	0	0
Total	64	100	64	36	100	36

Systemic hypertension occurs more commonly in 5th to 6th decade in male and 4th to 5th decade in female.

FIGURE 1:



In case of fundus examination, there are no Fundus changes in 42 cases of hypertensive patients and 58 have hypertensive retinopathy. The maximum numbers of patients (28, 28%) are between 51-60 years of age. Then number of cases reduced towards both extremities. Maximum cases of hypertensive retinopathy seen in Grade-II(26,44.8%) followed by Grade I(15,25.9%), Grade-III(11,19%) and minimum cases of Grade IV(6,10.3%). In 21-30 years of age groups, 1 case of Grade-III and 1 case of Grade-IV hypertensive retinopathy are noted. In 31-40 years of age, 3 cases of Grade-III & 1 case of Grade-IV hypertensive retinopathy are noted. In 41-50 years of age group, 2 cases of Grade-I, 8 cases of Grade-II, 2 cases of Grade-III and 3 cases of Grade-IV hypertensive retinopathy are noted. In 51-60 years of age group, 6 cases of Grade-I, 7 cases of Grade-II, 3 cases of Grade-III & 0 cases of Grade-IV hypertensive retinopathy are noted. In 61-70 years of age groups, 4 cases of Grade-I, 6 cases of Grade-II, 2 cases of Grade-III and 1 case of Grade-IV are noted. In 71-80 years of age group, 1 case of Grade-I, 5 cases of Grade-II hypertensive retinopathy has been noted. Above 80 years of age, 2 cases of Grade-II hypertensive retinopathy has been noted.

Table 3: Showing Incidence of Hypertensive Retinopathy In Different Age Group.

Age Groups in years	No hypertensive changes	Hypertensive retinopathy grades as per Keith Wagener Barker classification				Number and % of Hypertensive retinopathy
		Grade 1	Grade 2	Grade 3	Grade 4	
21-30	1	0	0	1	1	2(3.4%)
31-40	5	0	0	3	1	4(6.9%)
41-50	12	2	8	2	3	15(25.9%)
51-60	12	6	7	3	0	16(27.6%)
61-70	12	4	6	2	1	13(22.4%)
71-80	0	1	5	0	0	6(10.3%)
>81	0	2	0	0	0	2(3.4%)
TOTAL	42	15(25.9%)	26(44.8%)	11(19%)	6(10.3%)	58

Local complication in the form of Macular involvement is found in 1 case of Grade I, 2 cases of Grade II and III each and 7 cases of Grade IV hypertensive retinopathy; Optic disc edema is present in 6 cases of Grade IV hypertensive

Retinopathy; central retinal vein obstruction in 1 case of Grade III and 2 cases have branch retinal vein obstruction. Central retinal artery obstruction and anterior ischemic optic neuropathy are not found in any cases.

Table 4: Local Complications According To Severity of Hypertensive Retinopathy

GRADES	Macular involvement	Optic disc edema/atrophy	Central retinal vein obstruction	Branched retinal vein obstruction	Central retinal artery obstruction	Anterior ischemic optic neuropathy
GRADE I	1	-	-	-	-	-
GRADE II	2	-	-	-	-	-
GRADE III	2	-	1	2	-	-
GRADE IV	7	6	-	-	-	-
TOTAL	12	6	1	2	-	-

According to systemic involvement: 58 cases had no systemic involvement, while 42 cases had systemic involvement of which 23(54.76%) cases of cardiovascular system, 8(19.05%) cases of central nervous system and 10(23.81%) cases of renal involvement. Out of 42 cases of hypertension with systemic involvement, 7 (16.67%)cases have Grade 0 (normal Fundus) of which 4(17.4%) cases of CVS, 1(12.5%) case of CNS and 2(20%) cases of renal involvement. In case of 6 cases of Grade I of which 3(37.5%) cases of CNS and 3(13.04%) cases of CVS. While 14 cases Grade II having 3(37.5%) cases of CNS, 9(39.1%) cases of CVS and 2(20%) cases of renal, 11 cases of Grade III having 1(12.5) cases of CNS, 6(26.08%) cases of CVS and 4(40%) cases of renal. And lastly, 4 cases of Grade IV having 1(4.3%) case of CVS and 3(30%) cases of renal involvement.

In our study, systolic blood pressure below 150mm of Hg is recorded in 18 cases(46%) of Grade-0, 8 cases(20.5%) of Grade-I, 12 cases(31%) of Grade-II & 1 case (2.5%)of Grade-III retinopathy. Systolic blood pressure between 151 to 175 mm of Hg is recorded in 15 cases (54%) of Grade-0,4(14%) cases of Grade-I,6 cases(21%) of Grade-II, 2 cases(7%) of Grade-III, 1 case(4%) of Grade-IV retinopathy. Systolic blood pressure between 176 to 200 mm of Hg is recorded in 8 cases(33%) of Grade 0, 3 cases(13%) of Grade-I, 6 cases(25%) of Grade-II, 5 cases(21%) of Grade-III, 2 cases(8%) of Grade-IV retinopathy. Systolic blood pressure above 200 mm of Hg is recorded in 1 cases(11.2%) of Grade 0, 2 cases(22.3%) of Grade-II, 3 cases(33.4%) of Grade-III, 3 cases(33.4%) of Grade-IV retinopathy.

Table 5: Showing Relationship between Varying Grades of Hypertensive Retinopathy (Keith Wagener Barkar Classification) & Systolic Blood Pressure

Systolic B.p(mm of Hg)	Grades of Hypertension					Total
	0	I	II	III	IV	
Up to 150	18 (46%)	8 (20.5%)	12 (31%)	1 (2.5%)	-	39
151-175	15 (54%)	4 (14%)	6 (21%)	2 (7%)	1 (4%)	28
176-200	8 (33%)	3 (13%)	6 (21%)	5 (21%)	2(8%)	24
>200	1(11.2%)	-	2 (22.3%)	3 (33.4%)	3 (33.4%)	9
Total	42	15	26	11	6	100

Discussion: In our study incidence of hypertension increases with age and reaches to highest in 5th to 6th decade and again declines whereas incidence is maximum between 41-50 years of age with decline in extremes of age in Jagmohansingh et al (1992) study.³Karki kjd et al(2003) in his study found that majority of patients about 54.96% were between 61-70 years of age and about 23.17% between 51-60 years of age.⁴ In our study hypertension is more in males(64%) than females(36%). These results were consistent with S K Lal, IS Jain, SD Gupta, PL Wahi⁵ study in 1974 and karki KJD et al study in 2003.[4]

Our study shows that hypertensive retinopathy is evident in 58% patients and 42% have no fundus findings. Consistent with our findings were MUHAMMAD ZAKRIA study (2004)⁶ with 56% retinopathy & Karki KJD (2003) study⁴ with 63.57% retinopathy. S K Lal, IS Jain, SD Gupta, PL Wahi in their study⁵ found 85.4% hypertensive retinopathies and normal fundus in 14.5%.

In our study maximum cases of macular involvement 12% cases were noted. Other ophthalmic complications were 6% cases of optic disc involvement, 1% cases of central retinal vein occlusion, 2% cases of branch retinal vein occlusion and no cases of central retinal artery obstruction or anterior ischemic optic neuropathy.Jagmohan Singh, MK Tewari, PK Khosla, Rajvardhan Azad in their study³ showed macular involvement(13%), optic disc involvement(11%), Central retinal vein

Occlusion (6%), branched retinal vein occlusion (4%) and central retinal artery occlusion (3%).As in our Study, this study also shows macular involvement and optic disc edema in accelerated and Grade-IV hypertensive retinopathy.

In our study, systemic involvement is observed in 41% cases of which 23% have cardiovascular involvement, 10% have renal involvement and 8% have central nervous system involvement. Renal and cardiovascular involvement is observed more frequently in Grade-III(40%) and Grade-IV(30%) hypertensive retinopathy in contrast to the central nervous system involvement in Grade-I(37.5%) and Grade-II(37.5%). Jagmohan Singh, MK Tewari,PK Khosla , Rajvardhan Azad study³ showed 10% renal involvement of which 60% had Grade-IV retinopathy while 20% had Grade-III retinopathy,12% cardiac involvement & 10% cerebro vascular episodes. 80% of patients having cerebrovascular and cardiac complications had Grade-III retinopathy. Hickam et al(1953)⁷ also found positive correlation between retinal and cerebrovascular response in degenerative vascular diseases like hypertension

Conclusion: One hundred cases of systemic hypertension were examined to study their correlation with age, sex and associated local complications. The age of patients varied from 22 to 85 years. The maximum number of patients is in age group of 5th to 6th decade with males more affected than females with Male: Female ratio is 1.72. Hypertensive retinopathy grade II is the most

common retinopathy found. Severity of retinopathy had no correlation to age except for grade IV retinopathy which is comparatively in younger age. Grade-III and Grade-IV hypertensive retinopathy is maximally associated with systemic involvement. Higher systolic and diastolic blood pressure is associated with more severe retinopathy.

Systolic blood pressure below 150 mm of Hg is noted in maximum number of cases (39%) of which 46% have no retinopathy. No Grade-IV retinopathy associated with systolic blood pressures below 150mm of Hg. Systolic blood pressure between 151-200 mm of Hg have majority of cases(50%)Grade-0 and less cases of Grade-III & IV retinopathy.

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