Research Paper

Volume : 5 | Issue : 5 | May 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 69.48

Ocular Manifestation in Retina in The Patients of Cerebrovascular Stroke

Medical Science

KEYWORDS : Cerebrovascular stroke, hypertension and hypertensive retinopathy.

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ABSTRACT

Cerebrovascular stroke is third commonest cause of mortality and morbidity after ischaemic heart disease and malignancies.Hypertension is the most common risk factor for development of cerebrovascular stroke.Systemic hypertension affects retinal arteries,veins,choroids and optic nerves.

This study was carried out in 50 patients who diagnosed as cerebrovascular stroke by physician to find out causes of cerebrovascular stroke and fundus findings in the patients of cerebrovascular stroke.

Our study shows the systemic hypertension is the most common cause of cerebrovascular stroke and hypertensive retinopathy grade 2 is the most common retinal finding in the patients of stroke.

INTRODUCTION

Cerebrovascular accident(C.V.A.) or strokes are the third commonest cause of mortality and morbidity after Ischaemic Heart Disease and Malignancies.7/12

Hypertension is the most common risk factor for development of Cerebrovascular stroke and systemic hypertension affects retinal arteries,veins,choroids and optic nerve.

By help of fundus examination we can know the changes in retina and retinal vasculature.The alteration in retinal vasculature may reflect status ofvasculature of other organs of body especially the cardiovascular ,the central nervous system and the renal system.10

Thus there is composite relationship exist between the cardiovascular, the cerebrovascular, the retinovascular and the renal vascular system due to close relationship exist between retinal,cerebral and renal blood vessels.

By fundus examination in the hand of experts the eye can serve as window through which vessels of brain as well as index of state of parenchyma may be studied.

AIMS AND OBJECTIVES

Ophthalmologically fundus examination having diagnostic as well as prognostic value by which the ophthalmologist can assist in the diagnosis and the management of various disease to physicians and surgeons.

Ophthalmoscopy help in the diagnosis of disease and closed ophthalmoscopic helps in assessing the severity, prognosis of disease, response to treatment if any and ultimate outcome or prognosis.

The retina is derived from the optic cup and is part of brain arising as hollow outgrowth from the forebrain19.So disease of brain specially vascular disorders often parellar with the retina – a good example of this being seen in arteriosclerosis which often affects both almost equally.

A close relationship exist between the eye and the brain due to the common inception and the blood supply10.Different conclusion regarding value of the fundus as a diagnostic measure for determining the condition of blood vessels of brain, the kidney and the cardiovascular system as evidence by varied ophthalmoscopic appearance later compared with pathologists finding at autopsy.

Similar pathological changes occurs in vessels of same callibres in the retina, the brain and the kidney. Thus similar pathology observed in retinal vessels as cerebral vessels which are affected in the production of cerebrovascular stroke. Thus by observing retinal vessels may provide clue in assessing the state of cerebral vasculature which taking part in the production of cerebrovascular stroke.10

MATERIALS AND METHODS

Case selection :

In this study, all the patients admitted with diagnosis of cerebrovascular stroke in the medical wards of Guru Gobind Singh Hospital, Jamnagar were taken randomly from Date 1/1/2003 to Date 31/10/2003.

Method :

All the patients were instilled tropicamide (1%) eyedrop in both the eyes to dilate the pupils.After fully dilatation of pupil, fundus examination was performed with direct and indirect ophthalmoscopy and pilocarpine (2%) eyedrop were instilled in both eyes at the end of the examination.

Fundus findings were noted in details, pathological changes observed in retina, retinal vasculature and optic nerve head were recorded like changes in the colour of disc,disc margin, physiological cup, changes in the retinal blood vessels especially caliber of the vessels, A-V ratio, changes in the vessel walls, blood column, appearance of the vascular light reflex, changes at A-V crossing, changes in the macular area and changes in the background overall appearance, presence of haemorrhages, exudates or any other pathology

An attempt was made to correlate the fundus findings with age, sex, past history, condition at time of admission, blood pressure, laboratory investigations like blood sugar, blood urea, serum creatinine.

For hypertensive retinopathy " Hayreh et al. " classification is used as follow:

Grade-1 : Generalised arteriolar attenuation
Broadening of arteriolar light reflex
Concealment of vein at A-V crossing

Grade-2 : Severe generalized, and focal arteriolar constriction.
A-V crossing changes (Salus Sign)

Grade-3 : Copper wiring of arterioles
Venous banking distal to A-V crossing (Bonnet's Sign)
Venous tapering on either side of crossing (Gunn's Sign)

Right angled deflection of veins Flame shaped haemorrhage, cotton wool spots, hard exudates

Grade-4:All changes of Grade-3 with silver wiring of arter ies Disc oedema.

OBSERVATION AND ANALYSIS

In this study total of 50 patients of different age groups of both sexes are included

TABLE-1 AGE GROUP OF PATIENTS OF CEREBROVASCULAR STROKE

Age (in years)	Number	Percentage
0-10	-	-
11-20	02	04%
21-30	05	10%
31-40	05	10%
41-50	15	30%
51-60	05	10%
61-70	13	26%
71-80	03	06%
81-90	02	04%
Total	50	100%

Above table shows incidence of cerebrovascular stroke in the patients of various age group, it is evident that incident of cerebrovascular stroke increase with increasing age and reaches to highest in 5th decades at level of 30% and again declines.

TABLE-2 INCIDENCE OF CEREBROVASCULAR STROKE IN BOTH SEXES.

Sex	Number	Percentage
Male	33	66%
Female	17	34%

Male /Female=1.94

In this study total 50 patients of both sexes are taken in which 33 are male and 17 are female.

TABLE-3 AGE AND SEX IN RELATION TO CEREBROVASCULAR STROKE.

Age (in years)	Male	%from 33	%from 50	Female	%from 17	%from 50
0-10	-	-	-	-	-	-
11-20	01	3.03	2	1	5.88	2
21-30	3	9.09	6	2	11.76	4
31-40	3	9.09	6	2	11.76	4
41-50	11	33.33	22	4	23.52	8
51-60	4	12.12	8	1	5.88	2
61-70	8	24.24	16	5	29.41	10
71-80	3	9.09	6	-	-	-
81-90	-	-	-	2	11.76	4
Total	33	100	66	17	100	34

Above table shows the incidence of cerebrovascular stroke in various age groups of both sexes.Incidence of cerebrovascular stroke reaches to its peak in 5th decade in both sexes.

TABLE-4 BLOOD PRESSURE IN PATIENTS OF CEREBROVASCULAR STROKE

	Number	Percentage
(A) Normotensive	21	42%
(B) Hypertensive	29	58%
(a) Known case of hypertension	20	40%
(b) Detected for first time	09	18%
Total	50	100%

Above table shows incidence of hypertension in patients of all age groups of both sexes.It shows 58% patients are hypertensive.

TABLE-5 DIABETES AND PATIENT WITH CEREBROVASCULAR STROKE

	Number	Percentage
(A) Non diabetic	45	90%
(B) Diabetic	05	10%
(a) Known case of diabetes	05	10%
(b) Detected for first time	00	00
Total	50	100%

Above table shows incidence of diabetes mellitus in patients of all age groups of both sexes . It shows 10% patients are diabetic.

TABLE-6 FUNDUS FINDINGS IN PATIENTS OF CEREBROVASCULAR STROKE

	Number	Percentage
Hypertensive retinopathy	08	16%
Diabetic retinopathy	02	04%
Others Glaucomatous optic atrophy In known case of glaucoma	01	02%
Total	11	22%

TABLE-7 HYPERTENSION AND HYPERTENSIVE RETINOPATHY IN VARIOUS AGE GROUPS IN PATIENTS OF CEREBROVASCULAR STROKE.

Age (in years)	Hypertension					Hypertensive retionopathy					% of hypertensive retinopathy in patients of hypertension
	M	F	Total	% From 29	% From 50	M	F	Total	% From 8	% From 50	
0-10	-	-	-	-	-	-	-	-	-	-	-
11-20	-	-	-	-	-	-	-	-	-	-	-
21-30	2	-	2	6.89	4	1	-	1	12.5	2	50
31-40	1	-	1	3.44	2	-	-	-	-	-	-
41-50	4	4	8	27.58	16	1	1	2	25	4	50
51-60	3	-	3	10.34	6	2	-	2	25	4	66.66
61-70	6	4	10	34.48	20	2	1	3	37.5	6	60
71-80	3	-	3	10.34	6	-	-	-	-	-	-
81-90	-	2	2	6.89	4	-	-	-	-	-	-
Total	19	10	29	100	58	6	2	8	100	16	27.58

Above table shows the incidence of hypertension and hypertensive retinopathy in various age groups in patients of cerebrovascular stroke.Hypertension and hypertensive retinopathy is more common after 4th decade.

Hypertension was found more in males upto 4th decade but it becomes almost equal later on. Incidence of cerebrovascular stroke is more in males than females upto 4th decades.

The relation between hypertensive retinopathy found in hypertensive patients shows that it is about 50% upto 5th decades, reaches to peak about 66% in 6th decades and than comes down gradually after 6th decades.

TABLE-8 AGE AND HYPERTENSIVE RETINOPATHY IN PATIENTS WITH CEREBROVASCULAR STROKE

Age group	Hypertensive retionopathy					
	Grade II		Grade III		Grade IV	
	Male	Female	Male	Female	Male	Female
0-10	-	-	-	-	-	-
11-20	-	-	-	-	-	-
21-30	-	-	1	-	-	-
31-40	-	-	-	-	-	-
41-50	1	-	-	1	-	-
51-60	3	-	-	-	-	-
61-70	1	1	1	-	-	-
71-80	-	-	-	-	-	-
81-90	-	-	-	-	-	-
Total	4	1	2	1	-	-
% out of 8	50%	12.5%	25%	12.5%	-	-
Total						

Above table shows the incidence of the hypertensive retinopathy in the patients of cerebrovascular stroke in the various age groups, it shows that hypertensive retinopathy was of Grade-2 predominantly and mainly found in the 5th and 6th decades.

Grade-2 Hypertensive retinopathy was found in the 62.5% cases

Volume : 5 | Issue : 5 | May 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 69.48

and
Grade-3 Hypertensive retinopathy was found in the 37.5% cases.

SUMMARY AND CONCLUSION

1. Incidence of cerebrovascular stroke increase with the increasing age and is highest in the 5th decade..
2. Males are affected more than females.
3. Male female ratio is 1.94.
4. Hypertension is the most common systemic disorder associated with cerebrovascular stroke.
5. Hypertensive retinopathy in patients with cerebrovascular stroke is common in 5th ,6th and 7th decades.
6. Hypertensive retinopathy grade-2 is the most common retinopathy found in the patients with cerebrovascular stroke.
7. Diabetes mellitus is the one of the major risk factor for development of cerebrovascular stroke.
8. There is no relation between hypertensive retinopathy and condition at the time of admission.
9. Majority of patients expired belongs to 4th and 5th decades with no evidence of hypertensive retinopathy.Mortality rate is zero (0) in patients having evidence of hypertensive retinopathy.

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