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FUNDOSCOPIC FINDINGS IN PATIENTS WITH KIDNEY DISEASE UNDERGOING HEMODIALYSIS

Ophthalmology

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ABSTRACT

Renal failure is slowly progressive condition ultimate leads to loss of function of kidney. It affect each organ of body. Kidney & eyes are inextricably linked with each other, so this study was conducted to evaluate ocular findings in patients with renal failure undergoing hemodialysis. Similarly the association between hypertension , Diabetes Mellitus, renal & retinal dysfunction is well recognized.

KEYWORDS

Hemodialysis, Retinopathy, Hypertension, Diabetes mellitus, Glaucomatous optic atrophy, Ishaemic optic neuropathy, Maculopathy.

INTRODUCTION:

Renal failure is a condition where slowly progressive, irreversible loss of kidney functions occur over a period of time. It is a specific group of condition in which patients have more than one disease.Renal failure causes pathological changes of many organs,including bone,heart, blood vessels,peripheral nerves etc. Thus this condition affect almost every organ in body including eye. If kidney dysfunction remains undiagnosed then patients lands up into renal failure & will not survive without dialysis or kidney transplantion.

Common feature in patients with renal diseases is disturbances in mineral metabolism which leads to soft tissue calcification. So ocular calcification is most frequently observed. But visual system is also adversely affected not only by calcification but also other disturbances in body due to renal dysfunction & effect of dialysis itself.

As patient with renal failure on hemodialysis may be associated with more than one diseases, so visual system is affected directly due to worsening of hypertensive retinopathy, diabetic retinopathy, ischaemic optic neuropathy, CRVO, BRVO etc. Anemia or uremia also causes detoriation of eyesight.

Richard Bright , in 1836 first associated renal disease with blindness. Later on, it was recognised that uremic retinitis is the manifestation of hyertention.[1]Retinopathy isnothing but a condition where changes in retinal vesselcauses bleeding & distort vision. In early stage it is asymptomatic but delayed diagnosis leads to loss vision. In patient with renal failure hypertensive changes can be severe & fundus finding reflect the efficacy of anti-hypertensive drugs. Thus fundus finding help to monitor the status of blood pressure control.[2]The condition of the eye also reflects the sugar levels & in turn the progress of disease. Also diabetic retinopathy worsen with reduced renal function & poor control of blood pressure.[3,4]Therefore goal of our study is to evaluate funduscopic changes in patients with renal failure.

MATERIALS & METHODS:

This study was conducted in tertiary care hospital over a period of 1 month. This is cross sectional, non-interventional , descriptive hospital based study. Total 30 patients from general medicine ward with renal failure undergoing hemodialysis were examined . There were 18 male & 12 female aged between 15 to 80 years. Complete case history of patients was taken&laboratory data was noted.

Criteria for selection : Patients with renal dysfunction undergoing hemodialysis.

Inclusion criteria: Patients from general medicine ward with renal dysfunction undergoing hemodialysis. For ocular examination ,

1) Patients history was taken.
2) Best corrected visual acuity recorded.
3) Examination of anterior segment was done.
4) Posterior segment evaluation was done with direct ophthalmoscope & indirect ophthalmoscope.

Hypertensive retinopathy was graded on the basis of Keith Wagner classification.[5]Dibetic retinopathy & macular edema was classified on the basis of Early treatment of diabetic retinopathy study. [6]

RESULTS:

Total 30 patients of kidney dysfunction were included in this study. Age group ranges from 15 to 80 years. Mean age group was 47.5 years. 18 females &12 male were in the study. So, M: F ratio was 3:2. Among 30 patients 13 of them were known case of hypertention, 6 of them were known case of diabetes mellitus & 4 patients had acute kidney injury out of which 2 had uremic encephalopathy ,1 patient had ARF with UTI & 1 had pyelonephritis with urinary calculi. 7 patients did not have any comorbidity.

Thus according to our study commonest cause of renal failure is hypertention which was found in almost 43% followed by diabetes mellitus which was found in 23% of patients & 13% patients had acute kidney injury.

Table1. Associated co-morbid conditions:

Associated condition	No. of patients	Percentage
Hypertention	13	43%
Dibetes Mellitus	6	20%
Acute kidney injury	4	13%
1. Uremic encephalopathy	2	6.5%
2. ARF with UTI	1	3.2%
3. Urinary calculi	1	3.2%
Not associated with any comorbidity	7	23%

On fundus examination, hypertensive retinopathy change were found in almost 12 patients out of 13 (39.7%). Out of which 10 patients (32.5%) had Grade 2 hypertensive retinopathy , 2 patients had (6.5%) Grade 3 & Grade 4 hypertensive retinopathy i. e. papilloedema with macular star & 1 of them had vitreous haemorrhage too.

Similar to this diabetic retinopathy was found in 4 patients out of 6 (13.3%) out of them 2 had mild NPDR (6.6%) ,1 had Moderate NPDR with Maculopathy (3.3%) & 1 patient had PDR (3.3%). 2 patients had Glaucomatous optic atrophy (6.6%) & 2 had cataract(6.6%).

Table2. Fundoscopic findings:

Ocular findings	No. of cases	Percentage
Hypertensive Retinopathy	12	39.7%
1. Grade 1	-	-
2. Grade 2	10	32.5%
3. Grade 3 & Grade 4	2	6.5%

Diabetic Retinopathy	4	13.33%
1. Mild NPDR	2	6.6%
2. Moderate NPDR	1	3.3%
3. Severe NPDR		
4. PDR	1	3.3%
Glaucomatous optic atrophy	2	6.6%
Cataract	2	6.6%

Table3. Visual acuity:

Vision	No. of patient	Percentage
6/6 to 6/18	20	67%
6/18 to 6/24	3	10%
6/60 to PL +	7	23%

Table4.Causes of impaired vision:

Causes of impaired vision	No. of patients	Percentage
Cataract	2	20%
NPDR with Maculopathy	3	30%
PDR	1	10%
Hypertensive Retinopathy	2	20%
Glaucomatous optic atrophy	2	20%

Most important symptom in patient with renal failure on hemodialysis is diminution of vision which is gradual & progressive. 20 patients out of 30 (67%) had good vision ranging from 6/6 to 6/18. 10 patients had impaired vision i. e. below 6/18 (33%), out of them 7 patients (23%) were legally blind had vision between 6/60 to perception of light+. Among the patients those were legally blind, mostly due to diabetic retinopathy with maculopathy, followed by hypertensive retinopathy. Glaucomatous optic atrophy, cataract & PDR also contribute in blindness.

DISCUSSION:

In our study M:F ratio was 3:2 while it is 2.5:1 in world wide data.[7,8] Age group ranges from 15 to 80 years of age group & maximum number of patients within 20 to 60 years. 67% of patients had good visual acuity i.e. above 6/18 , but visual acuity is not only indicator of ocular status because visual acuity is good even in advanced diabetic retinopathy & hypertensive retinopathy unless macula is involved. In his study only 2 patients of hypertensive retinopathy had poor vision, rest had quite good vision but they were at risk of visual loss. In our study diabetic retinopathy with maculopathy accounts for cause of visual loss in majority of cases (30%). Cataract & Glaucomatous optic atrophy also contribute visual loss (6.6%). Most of patients in our study had been undergone hemodialysis since 1 year or less than 1 year. There is no control group in this study.

CONCLUSION:

This study shows importance of detail ocular examination in patients with renal dysfunction undergoing hemodialysis. If patient had history of abnormal renal status, then he should be monitored regularly for any ocular abnormalities. Awareness should be created in patients regarding ocular complications associated with renal dysfunction. Appropriate treatment at appropriate time will prevent visual loss & morbidity.

LIMITATION OF STUDY :

As this study is of only one month of duration & 30 patients only. It require to be studied in more number of patients & duration should also be more.

CNFLICTS OF INTEREST : Nil.

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