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Ocular Manifestations in Patients with Chronic Kidney Disease

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Abstract: ***Purpose: To conduct a thorough ocular examination and to study the occurrence of various ocular manifestations exhibited by patients with chronic kidney disease and to analyse the findings. Materials and Methodology: This study was conducted at department of ophthalmology, Chalmeda Anand Rao Institute of Medical Sciences from August 2019 to January 2020. 50 patients fulfilling the inclusion and exclusion criteria were included in the study. All patients were subjected to detailed systemic and ophthalmic evaluation. Relevant systemic investigations like FBS, PPBS, BP, Blood urea, serum creatine, serum cholesterol, complete blood picture and ultrasound abdomen were done. Inclusion Criteria: All stages of chronic kidney disease duration of renal disease more than 3 months, age between20-70 years. Exclusion Criteria: cases with acute fulminant disease, cases with pre existing ocular disease. Results: In this study the most common ocular manifestation in chronic kidney disease patients was found to be cataract, followed by macular edema, age related macular degeneration, clinically significant macular edema, lid edema and conjunctival pallor. Conclusion: This study was done to highlight the importance of ocular examination in all patients with chronic kidney disease irrespective of ocular symptoms so that necessary treatment can be given before they cause irreversible visual impairment.***

Keywords: clinically significant macular edema, extra ocular muscles, pigment epithelial detachment ,sub retinal precipitates, age related macular degeneration, branched retinal vein occlusion, central retinal artery occlusion.

1. Introduction

Chronic kidney disease (CKD) is a worldwide health problem. There is a rising incidence of renal failure due to chronic kidney disease and this phenomenon is common in both the developed and under developed countries. There is a significant mortality and morbidity associated with this condition and it drastically reduces the quality of the patient's life.

Normal functions of the kidneys can be affected by a variety of diseases and medical conditions. These cause a reduction in GFR, metabolic imbalances and retention of harmful waste products. A majority of patients progress to end stage kidney disease and may require dialysis or renal transplantation. Chronic kidney disease leads to a lot of systemic effects that affects a variety of systems in the body. The eye also shows changes due to long standing kidney disease. Some systemic diseases such as diabetes, hypertension and auto immune disorders affect the kidneys as well as the eye. Ocular manifestations may arise as a result of the primary diseases causing renal failure or as a result of the secondary effects of renal failure itself. It is thus very difficult to ascertain whether the systemic effects are due to the disease which caused the renal failure or secondary to the changes caused by the kidney disease unless the patient is monitored continuously throughout the course of the disease.

2. Materials and Methodology

This study was conducted at department of ophthalmology, Chalmeda Anand Rao Institute of Medical Sciences from August 2019 to January2020. 50 patients fulfilling the inclusion and exclusion criteria were included in the study. All patients were subjected to detailed systemic and ophthalmic evaluation. Relevant systemic investigations like FBS, PPBS, BP, Blood urea, serum creatine, serum cholesterol, complete blood picture and ultrasound abdomen were done.

Inclusion Criteria: All stages of chronic kidney disease duration of renal disease more than 3 months, age between20-70 years.

Exclusion Criteria: cases with acute fulminant disease, cases with pre existing ocular disease.

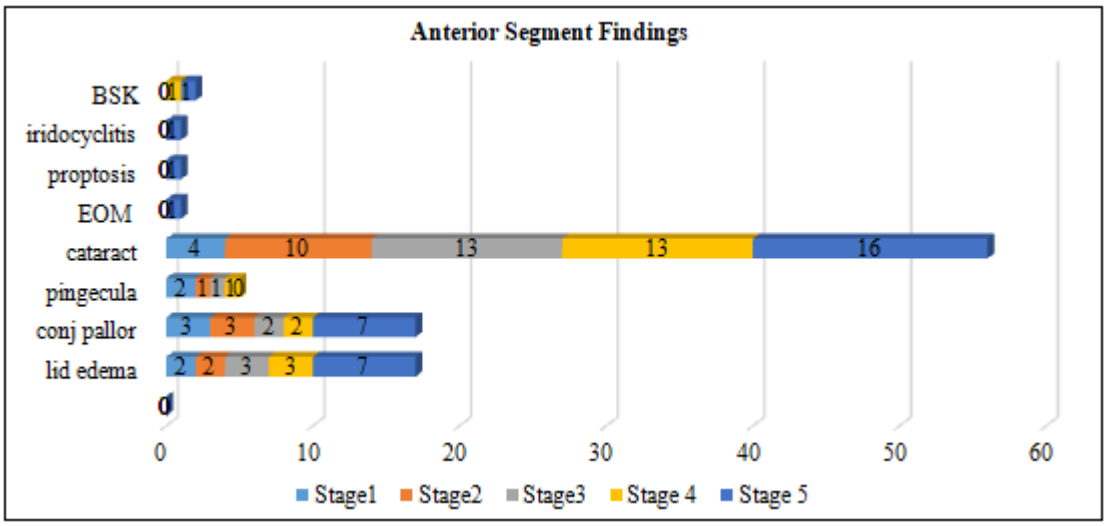
3. Results

In this study hypertension (52%) was the single main cause of chronic kidney disease followed by diabetes and hypertension together (33%). Blurring of vision was the commonest ocular symptom. Ocular findings that were present more in stage 4 & stage 5 grades of chronic kidney disease were cataract(56%) followed by lid edema (17%), conjunctival pallor (17%), pinguecula (5%), band shaped keratopathy (2%), Extraocular muscles restriction (1%), proptosis (1%), iridocyclitis (1%), macular edema (35.4%), Age related macular degeneration (22.5%),CSME(clinically significant macular edema 19.3%), macular hole (9.6%),

Pigment epithelial detachments (6.4%), subretinal precipitates (6.4%).

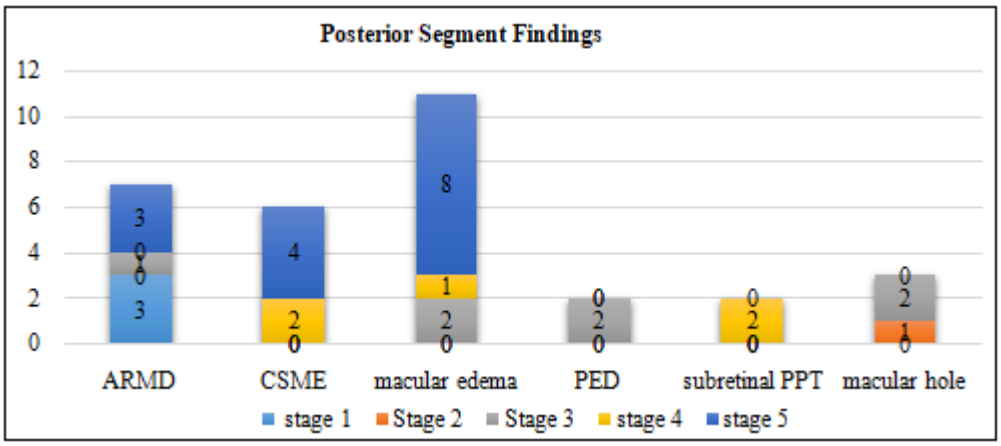
Anterior Segment Findings

	Stage I	Stage II	Stage III	Stage IV	Stage V	Total eyes	%
Lidedema	2	2	3	3	7	17	17
Conj.Pallor	3	3	2	2	7	17	17
Pingecula	2	1	1	1	0	5	5
Cataract	4	10	13	13	16	56	56
EOM Restriction	0	0	0	0	1	1	1
Proptosis	0	0	0	0	1	1	1
Iridocyclitis	0	0	0	0	0	1	1
Band shaped Keratopathy	0	0	0	1	1	2	2
Total	11	16	19	20	34	100	100



Posterior Segment Findings

	Stage I	Stage II	Stage III	Stage IV	Stage V	Total Eyes
ARMD	3	0	1	0	3	7
CSME	0	0	0	2	4	6
Macular Edema (DM&HT)	0	0	2	1	8	11
PED	0	2	0	0	0	2
Sub Retinal PPT	0	0	0	2	0	2
Macular Hole	0	0	2	1	0	3
Total						31



Other Posterior Segment Findings

	Stage I	Stage II	Stage III	Stage IV	Stage V	Post Transplant	Total
BRVO	0	0	0	2	0	0	2
CRAO	0	0	0	0	2	0	2
RAISEDCDRATIO	2	0	2	0	0	0	4
DiscPallor	0	0	0	3	0	0	3

4. Discussion

CKD is the end result of multiple systemic diseases or primary renal disease. During the natural course of the disease it affects multiple systems of the body including the eye. Detailed ocular examination was conducted in 50 patients in varying stages of CKD. In this study hypertension was the single main cause of CKD followed by diabetes and hypertension together blurring of vision was the commonest ocular symptom. Most of the patients having complaints of blurring of vision were examined for the first time indicating the lack of knowledge about the potential ocular complications. Significant visual loss was due to cataract followed by Proliferative Diabetic retinopathy and macular edema. Ocular findings that were present more in stage IV & stage V grades of CKD were cataract, lid edema, conjunctival pallor, hypertensive retinopathy, diabetic retinopathy, macular edema and CSME. Most of the patients are detected in advanced stages of chronic kidney disease, when they become symptomatic . Hence it becomes imperative to institute steps to detect CKD at an early stage to institute specific therapy and retard the progression of renal disease. Eye can be used as a window to the kidney status, and detect any underlying renal compromise and institute early treatment.

Retinopathy is often asymptomatic in its early stage. Delay in diagnosis can result in significant visual loss.

Optimized control of risk factors like renaldisease which affect onset and progression of retinopathy should be approached through an intensive, multidisciplinary health care which can markedly reducethe incidence of visual loss.

5. Conclusion

This study was done to highlight the importance of ocular examination in all patients with chronic kidney disease irrespective of ocular symptoms so that necessary treatment can be given before they cause irreversible visual impairment.

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