

Dermatological Manifestations in Patients of Chronic Kidney Disease

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Aim:

Background: Chronic kidney disease is a pathophysiologic process with multiple aetiologies, resulting in the inexorable attrition of nephron number and function, and frequently leading to end stage renal disease (ESRD). There are diverse ways in which the skin is affected by chronic kidney disease (CKD). Various specific and nonspecific skin abnormalities are observed in the patients which are caused either by the disease or by treatment and is due to factors ranging from metabolic disturbances to immunosuppressive drugs.

Objective: To study and compare the various dermatological manifestations seen in patients suffering from chronic kidney disease.

Materials and methods: This study was carried out in P.G. Department of Medicine, Sarojini Naidu Medical College, Agra over a period of 18 months. 120 patients attending the outpatient and inpatient department of medicine fulfilling the inclusion and exclusion criteria were selected.

Result: A significant percentage of patients suffering from chronic kidney disease in both group A and B were found to have dermatological manifestations.

Conclusion: Dermatological manifestations in chronic kidney disease patients in our study was significantly associated with mean duration of disease, which was higher in dialytic patients as compared to non-dialytic patients.

Keywords: chronic kidney disease, skin manifestations.

Date of Submission: 29-08-2021

Date of Acceptance: 13-09-2021

I. Introduction:

The dermatologic complications of chronic kidney disease can significantly impair the quality of life in certain individuals; therefore, early diagnosis and treatment can greatly reduce the associated morbidity. Symptoms and signs in the skin and mucous membranes can be supportive of the diagnosis of internal disease or may even be a part of the initial presentation. Chronic kidney disease irrespective of its cause, often produces specific skin changes that can develop long before failure manifests clinically¹. Hemodialysis (HD) is one of the therapeutic modalities that can improve the survival in these patients². Skin change can precede or follow the initiation of HD treatment, and there are more chances of developing newer skin changes during the course of HD therapy. Some of these cutaneous disorders disappear following kidney transplantation, confirming that the metabolic milieu resulting from the malfunctioning kidney is responsible for some of these changes³. Although the majority of dermatological disorders in chronic kidney disease (CKD) are relatively benign, a few rare skin disease have the potential to cause serious morbidity and mortality

II. Materials And Methods:

The present study was conducted in the P. G. Department of medicine, Sarojini Naidu Medical College, Agra. 120 patients who were diagnosed with CKD and attending the out patient and inpatient department of medicine and fulfilling the inclusion and exclusion criteria were selected.

Patient's history was taken which include demography data (Name, Age, Sex Address & Phone number), Symptoms and their duration/ medical history, history of smoking and occupational history.

Two Groups were formed. 60 patients in each group were included.

Group A: Patient on maintenance hemodialysis

Group B: Patient not on maintenance hemodialysis

The Dialysis group included 60 CKD patients on maintenance hemodialysis who were selected for hemodialysis according to the predialysis criteria of serum creatinine >4mg/dl, blood urea >70mg/dl, serum potassium >6.5. If asymptomatic, irrespective of the above mentioned criteria, patients were considered for dialysis. The non-dialysis group patients were selected randomly. After taking written and informed consent, detailed history and the thorough physical examinations were done in both the group [dialysis and non-dialysis] for the presence of mucocutaneous manifestation. This was included in details assessment of skin, nail, hair, mucous membrane for specific and non-specific cutaneous manifestation and recorded on pre designed proforma. Investigation such as gram stain, Tzanck smear, KOH mount, skin biopsies, bacterial culture and sensitivity and photograph of the lesion was taken wherever indicated. Other investigations were CBC, Serum creatinine, serum urea, serum electrolyte, 24 hour urinary protein, serum calcium, RBS, serum albumin, SGOT, SGPT, Serum bilirubin [Total/ Direct/ Indirect].

Descriptive and comparative data were examined for all variables. For continuous variables results were presented as mean + SD. Categorical variables were recorded as frequency counts and intergroup comparisons were analysed by Chi-square /Fisher exact test. Statistical significance was accepted if a p value <0.05.

INCLUSION CRITERIA:

1. Patients of chronic kidney disease upon the clinical and biochemical parameters who were on hemodialysis were included in the study.
2. Patient with stage IV and stage V as per KDIGO guidelines were included in the study.
- 3 Age Group: 16-80 years.
4. Patients more than 6 months of chronic kidney disease.

EXCLUSION CRITERIA:

1. Patient not giving consent.
 2. Patient of stage I, II and Stage III of chronic kidney disease.
 3. Patient of immunocompromised state (HIV, Hepatitis- B and Hepatitis-C)
 4. Patient with acute renal failure.
 5. Patient with chronic kidney disease undergoing peritoneal dialysis.
 6. Patient with chronic kidney disease who has undergone renal transplantation.
- Staging of CKD was done according to the Kidney disease Improving Global Outcomes (KDIGO), clinical practice guideline.

III. Result:

Total 120 patients were taken. Two groups were formed. 60 patients were taken in each group.

Group A - contains patients who were on maintenance hemodialysis

Group B - contains patients who were NOT on maintenance hemodialysis

AGE WISE DISTRIBUTION

In group A out of 60 patients, 18 patients (30%) belonged to age group 46 to 55 years.

While in group B out of 60 patients, 27 patients (45%) belonged to age group 36 to 45 yrs

SEX WISE DISTRIBUTION

In group A out of 60 patients, 41 patients (68.33%) were male and 19 patients (31.67%) were female.

While in group B out of 60 patients, 32 patients (53.33%) were male and 28 patients (46.67%) were female.

MEAN WEIGHT

In group A, the mean weight was 60.37 while in group B, the mean weight was 58.23

CREATININE CLEARANCE

In group A, the mean creatinine clearance was 12.78 while in group B mean creatinine clearance was 18.85

CHRONIC KIDNEY DISEASE STAGE

In group A, out of 60 patients, 10 patients (16.67%) belong to CKD STAGE 4 and 50 patients (83.33%) belong to CKD STAGE 5.

While in group B out of 60 patients, 43 patients (71.67%) belong to CKD STAGE 4 and 17 patients (28.33%) belong to CKD STAGE 5.

Blood urea

In group A, the mean blood urea was 102.48 while in group B, the mean blood urea was 101.48.

SERUM CREATININE

In group A, the mean serum creatinine was 6.28 while in group B, the mean serum creatinine was 4.22

DERMATOLOGICAL MANIFESTATION

	GroupA(N=60)		GroupB(N=60)	
	No.	%	No.	%
Xerosis	39	65.00	26	43.33
Pallor	20	33.33	14	23.33
Pruritus	17	28.33	11	18.33
Pigmentation	17	28.33	12	20
Purpura	10	16.67	6	10
Cutaneousinfection	9	15.00	6	10
Nailchanges	8	13.33	5	8.33
Hairchanges	9	15.00	6	10
Mucosalchanges	9	15.00	6	10
Localcomplication	10	16.67	7	11.67

In group A out of 60 patients Xerosis were seen in 65% patients while in group B, Xerosis were seen in only 43.33% patients. Xerosis was the most common dermatological manifestation. Pallor was found in 33.33% patients in group A while it was seen in only 23.33% patients in group B. Pallor was second most common skin manifestation.

Pruritus was seen in 28.33% patients in group A while it was seen in only 18.33% patients of group B. It was third most common dermatological manifestation. Pigmentation were seen in 28.33% patients of group A while it was seen in 20% patients in group B.

Purpura was found in 16.67% patients of group A while it was found in only 10% patients of group B.

Cutaneous infection (Bacterial, Viral, Fungus and parasitic) were found in 15% patients of group A, while it was found in 10% patients of group B.

The nail changes were seen in 13.33% patients of group A as compared to group B in which it was 8.33%. The hair changes were seen in 15% patients of group A as compared to group B (10%).

Mucosal changes were seen in 15% patients of group A while it was seen in 10% patients of group B.

Local complication were seen in 16.67% patients in dialytic group while it was seen in only 11.67% patients of nondialytic group.

IV. Discussion:

In the present study, out of 120 patients, all patients have at least one skin manifestation and nail, hair, and mucosal manifestations seen in 8.33%, 10%, and 10% respectively. Pico et al⁴ also found skin involvement in all patients undergoing dialysis. Nunley et al⁵ reported that 50–100% of patients with ESRD had at least one cutaneous lesion.

Among 120 CKD patients, 73 were males and 47 were females. The most common affected age Group was 46-55 years (30%) in the dialytic group and nondialytic group 36-45 years (45%).

Xerosis was the most common nonspecific manifestations noted, with an overall prevalence of 54.16%. Dialytic group (65%) had statistically significant higher prevalence compared to nondialytic patients (43.33%).

Prevalence of xerosis in CKD patients was reported to be variable (59–93%). Gilchrest et al⁶ observed xerosis in 69% of non dialytic uremics and 70% of patients on hemodialysis. These figures were reported to be 62% and 91% by Yopisowitch et al⁷. The higher prevalence of xerosis in our study could be to inadequate use of emollients due to poor economic status. Other factors such as caloric intake and protein malnutrition are more prevalent in the Indian scenario, and the tropical climate with greater sun exposure and resultant chronic dehydration maybe contributory. Pallor was the second most common manifestation observed in 28% patients. There was no significant difference between dialytic and nondialytic groups. Udayakumar et al⁸ reported pallor in 60% of uremic patients. Malnutrition and iron deficiency anemia superimposed on the anemia of chronic disease may result in a higher prevalence of skin pallor.

Pruritis was found in 23.33% patients; dialytic group (28.33%) has higher prevalence compared to the nondialytic group (18.33%). The reported prevalence of pruritis in the predialytic period ranges from 22% to as high as 85%. Recent reports show that 20–50% are affected.

Xerosis is thought to contribute in the pathogenesis of pruritis, and the two may coexist in several skin conditions. There was statistically significant (67% patients) association between xerosis and pruritis in our study.

Pigmentation was found in 24.16%/patients, dialytic group (28.33%) had higher prevalence compared to nondialytic group (20%). Udayakumar et al³ observed pigmentary changes in 53% of the patients.

Purpura was found in 16.67% of dialytic patients, and 10% of the nondialytics had purpura. Heparin use in dialysis may be the cause for purpura in dialytic patients. Udayakumar et al⁸ observed purpura in 9% patients on hemodialysis.

A total of 15 patients had cutaneous infections fungal (9), bacterial (4), viral (2), and parasitic (0). Statistically significant difference was not found between the two groups.

Nail changes constituted 13.33%, dialytic group had statistically significant higher prevalence compared to the nondialytic group. Absent lunula (12%) was significantly associated with pallor. Mean hemoglobin in patients with absent lunula was significantly lower compared to those without it. Melanonychia (9%) was found only in dialytic patients.

Attia et al¹⁰ reported absent lunula in 33.7% of the patients and half and half nails in 21% of the patient.

Hair changes were observed in 15 patients (dialytic 9 and nondialytic 6), difference was not statistically significant. Diffuse alopecia seen in this study has also been reported by Kint et al¹¹, resulting from telogen effluvium due to heparin in hemodialysed patients.

Mucosal changes were observed in 15 patients (dialytic 9 and nondialytic 6). There was no statistically significant difference in mucosal changes between dialytic and nondialytic groups.¹⁹

Xerostomia, cheilitis, angular stomatitis, and uremic breath were reported in 4%, 3%, 2%, and 1% of the patients, respectively.

Local complications of dialysis were seen in 16.67% of the dialytic patients. Multiple cannulations for obtaining intravenous access for dialysis and administration of numerous drugs result in a large number of puncture marks.²⁰ Xerosis, pruritis, and pigmentation had significantly higher prevalence in dialytic compared to nondialytic.

The increasing prevalence of dermatological manifestations such as xerosis, pigmentation, and pruritis with increasing severity of kidney disease was also reported by Gilchrest et al⁶. However, their study included very few patients (n = 25), which is not statistically significant. In our study, all dermatological findings were higher in patients on dialysis than the nondialytic group. This could be because of higher mean duration of disease in dialytic patients compared to nondialytic group.

Second, most of our dialytic patients belonged to stage 5 CKD whereas nondialytic patients comprised stage 4 CKD.

V. Conclusion:

In our study dermatological manifestations in CKD patients was significantly associated with mean duration of disease, which was higher in dialytic patients compared to nondialytic group. Some specific manifestations such as Kyrles disease and calcinosis were predominantly noted in dialytic group. There was statistically significant higher prevalence of nonspecific manifestations such as xerosis, pruritis, hyperpigmentation, purpura, and nail changes in dialytic patients. Recognition and management of these problem may improve quality of life in dialysis patients.

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Dr. Gaurav Singh, et. al. "Dermatological Manifestations in Patients of Chronic Kidney Disease." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 20(09), 2021, pp. 60-64.