

Cutaneous changes in chronic kidney disease patients on maintenance hemodialysis visiting at tertiary care hospital, Karachi

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Abstract *Objective* To determine the frequency of cutaneous changes in patients with chronic kidney disease on maintenance hemodialysis.

Methods A cross-sectional study conducted at Department of Nephrology, Jinnah Postgraduate Medical Centre, Karachi from 1st August 2009 to 31st January 2010. A total of 100 patients with chronic kidney disease on maintenance hemodialysis were included. After taking demographic data, cutaneous changes were noted. Mean and standard deviation were computed for quantitative variables (age) and frequency and percentage were computed for categorical variable (sex, cutaneous changes).

Results Mean age was 52.58±13.84 years and out of 100 patients 56% were males. At least one skin change was noted in 91%. Among type of manifestations, xerosis was noted in 96%, generalized xerosis 70%, alopecia 70%, half-and-half nails 36%, scaling 20% and ichthyosis 10%. Pruritus was found in 64%, out of these 93% had mild to moderate intensity and 7% had severe intensity of pruritus.

Conclusion Chronic kidney disease is associated with a complex array of cutaneous manifestations caused either by the disease or by treatment. Xerosis and pruritus were most common among patients with CKD, so early recognition of cutaneous signs can relieve suffering and decrease morbidity.

Key words

Chronic kidney disease, hemodialysis, cutaneous changes, skin manifestation, xerosis.

Introduction

The ability to diagnose internal disease by means of skin signs is well known.¹ It has been estimated that 50-100% of patients with chronic renal failure (CRF) show some skin changes.² Prevalence of cutaneous manifestations in CRF

is about 72%.³ A study conducted in India showed that 82% of patients had some skin changes among patients with CRF on hemodialysis.⁴ A local study by Mirza *et al.*⁵ showed that 96% of patients have at least one cutaneous manifestation in CRF patients on hemodialysis. Among types of skin manifestation; xerosis accounts for 91% followed by pruritus in 65%, hyperpigmentation 54%, oral lesions 69%, and half-and-half nails in 57%.⁵

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The lack of recognition of these cutaneous features may result in delay of diagnosis and treatment, therefore in progression to a severe or life-threatening disease.¹ So we conducted study to determine the frequency of skin manifestations in patients with chronic kidney disease on maintenance hemodialysis.

Methods

A cross-sectional study conducted at Nephrology Department, Jinnah Postgraduate Medical Center, Karachi from 1st August to 31st January 2010. Total of 100 patients were included through non-probability Purposive sampling. All patients age >12 years with chronic kidney disease for > 6months on maintenance hemodialysis were included. Patients with history of renal transplantation, malignancy, previously diagnosed case of skin and nail disorders were excluded.

Chronic kidney disease was defined as GFR <61 ml/min for >3 months. Pruritus was defined as either of two conditions; at least three episodes of itching during a period of two weeks or less with the symptoms appearing several times a day lasting for at least a few minutes and troubling the patients to perform daily activities and sleep, or the appearance of an itch in a regular pattern during the period of six months. Xerosis was characterized by dull color (usually gray white) rough texture and elevated number of ridges. Alopecia was characterized by either generalizes or localize hair loss from the scalp or other body sites. Lindsay's nail (half-and-half nails) was characterized as red, pink or brown color in distal half while white color in the proximal half.

Data collection procedure

All the patients age >12 years with chronic kidney disease for >6 months on maintenance

hemodialysis presenting to nephrology ward of Jinnah Postgraduate Medical Centre were included in the study after taking informed consent from patients and from parents in case of age <18 years. Skin and nail examination was done by dermatologist for diagnosis of pruritus, xerosis, alopecia and Lindsay's nails. All data were taken by Principal investigator on pretested questionnaire.

Data analysis

The data were entered and analyzed into Statistical Packages for Social Science (SPSS version 19). Mean and standard deviation were computed for quantitative variables (age) and frequency and percentage were computed for categorical variable (sex, and skin manifestations like pruritus, xerosis, alopecia, ichthyosis and Lindsay's nail). Chi square test was used to determine proportion of various skin manifestations among patients with chronic kidney disease on maintenance hemodialysis. *P* value of <0.05 was taken as significant.

Results

Mean age was 46.8±14.63 years (ranging from 11-75 years). Out of these 56% were males and 44% were females. Maximum duration of hemodialysis was 9 years (range from 6 month to 9 years). At least one cutaneous change was found in 91% of patients with 95% CI. Out of these; 59% were males and 41% were females. Xerosis was noted in 96%, out of these, generalized xerosis in 70%, scaling in 20%, and ichthyosis in 10%. Pruritus was found in 64%. Out of these; 94% had mild to moderate intensity while 7% had severe intensity. Alopecia was seen in 70% patients. Among these 47% were males and 53% were females.

Table 1 Frequency of different variables

Variables	N (%)
<i>Gender</i>	
Males	56 (56)
Females	44 (44)
<i>Skin manifestations (at least one skin change)</i>	91 (91)
<i>Type of skin manifestations</i>	
Xerosis	87 (96)
Alopecia	64 (70)
Pruritus	58 (64)
Half-and-half nails	33 (36)
<i>Xerosis</i>	
Generalized	61 (70)
Scaling	17 (20)
Ichthyosis	09 (10)
<i>Pruritus</i>	
Mild-moderate	54 (93)
Severe	04 (7)

Table 2 Frequency of cutaneous changes with gender.

<i>Skin manifestations</i>	Male	Female	p-value	95% CI
At least one skin change	54 (59%)	37 (41%)	0.004	(85.89 - 94.97)
<i>Type of skin manifestations</i>				
Xerosis	53 (62%)	34 (38%)	0.002	(95.89 - 104.97)
Alopecia	33 (52%)	31 (48%)	0.540	(105.89 - 114.53)
Pruritus	30 (52%)	28 (48%)	0.540	(105.89 - 114.53)
Half-and-half nails	17 (51%)	16 (49%)	0.830	(122.89 - 134.76)

Half-and-half nails were present in 36% patients. Among these 61% being males and 39% females as shown in **Table 1**. According to age groups skin manifestations were most commonly found in age >50 years; xerosis 36 (41%), alopecia 28 (44%), pruritus 26 (45%), half and half nail 12 (36%).

Table 2 shows the frequency of these changes according to the gender.

Discussion

Cutaneous manifestations are common among patients with chronic kidney disease causing high morbidity and poor quality of life. We conducted study to determine proportion of various skin manifestations in patients with chronic kidney disease on maintenance hemodialysis. In our study at least one skin

change was found in 91% of the patients (95% CI; 85.89 - 94.97). This is comparable with local study by Mirza *et al.*⁵ who showed the prevalence of at least one skin manifestation among patients with chronic kidney disease on hemodialysis was 96%, while study by Luqman *et al.*⁶ showed 85% of patients had some skin changes. An Indian study by Udayakumar *et al.*⁴ showed some skin changes in 82% of patients. A recent study done by Shah *et al.*⁷ showed some dermatological changes in 100% of chronic kidney disease patients.

In our study xerosis was the most common type in 96% of patients followed by alopecia in 70%, pruritus in 58% and half and half nail in 36%. A study conducted by Mirza *et al.*⁵ showed similar findings. In our study xerosis was more frequently noted in males (52% versus 38%, $p=0.002$, 95% CI; 95.89-104.97). In the study by

Shah *et al.*⁷ xerosis was found in 76%, pruritus in 60% and nail changes in 82%. This high prevalence of xerosis might be due to, reduction in the size of eccrine sweat glands, high dose diuretic regimens and high vitamin A level. The exact cause of pruritus in chronic kidney disease patients is not well-established but uremia, anemia, inadequate hemodialysis, peripheral neuropathy and secondary hyperparathyroidism may be associated.⁸⁻¹¹

Conclusion

The study emphasizes the fact that cutaneous changes are very common in hemodialysis patients and an early dermatological intervention may help.

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