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Original Research Article

A clinical study of cutaneous and mucosal manifestations in patients with chronic renal failure on hemodialysis

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ABSTRACT

Background: Chronic kidney disease is defined as presence of kidney damage, manifested by abnormal albumin excretion or decreased kidney function, quantified by measured or estimated glomerular filtration rate (GFR) that persists for more than 3 months. Chronic kidney disease is major health problem. Chronic kidney failure presents with an array of cutaneous manifestations. The objective of the present study was to determine the pattern of muco-cutaneous manifestations of chronic renal failure on hemodialysis.
Methods: A cross sectional study done in the Dermatology & Nephrology OPD of Sri Manakula Vinayagar Medical College and Hospital from October 2014 to May 2016. About 38 consenting patients who fulfilled the inclusion criteria were chosen for the study. The demographic characteristics were included in the study and the clinical profile of the patient such as hematological investigation and renal function tests were assessed. KOH mount, skin biopsy, Woods lamp, Grams stain and culture & sensitivity were done if needed after getting informed consent from the patients.
Results: The most common cutaneous manifestations in haemodialysis patients were xerosis and uraemic pruritus.
Conclusions: Cutaneous manifestations like uraemic pruritus, Xerosis, Kyrle's disease, infections, icthyosis & other lesions were seen with Xerosis beimg the most common feature. At least one cutaneous manifestation is found in all CRF patients.

Keywords: Chronic kidney disease, Cutaneous manifestations, Xerosis, Uraemic pruritus

INTRODUCTION

Chronic kidney disease (CKD) is defined as presence of kidney damage, manifested by abnormal albumin excretion or decreased kidney function, quantified by measured or estimated glomerular filtration rate (GFR) that persists for more than 3 months. Chronic kidney disease is major health problem. Hemodialysis is the standard treatment for these patients. Chronic kidney failure presents with an array of cutaneous manifestations. The number of CKD patients continue to rise, reflecting growing elderly population and increasing numbers of patients with diabetes and hypertension.[1]

Hence we undertook this study to analyse the pattern of cutaneous manifestation in patients with CKD on hemodialysis in our population.

METHODS

Patient attending Dermatology and Nephrology OPD of Sri Manakula Vinayagar Medical College & Hospital with chronic renal failure from November 2014 to May 2016 was included in the study. After getting informed consent a detailed history of the patient and examination was entered in a pre-prepared proforma. The demographic characteristics were recorded and the

clinical profile of the patient such as hematological investigation and renal function tests were assessed.

Potassium hydroxide (KOH) mount, Skin biopsy, Wood's lamp, Grams stain and culture & sensitivity were done if needed after getting informed consent from the patients.

All cases of chronic renal failure of all age groups and sexes attending Dermatology OPD and Nephrology OPD in Sri Manakula Vinayagar Medical College & Hospital, Pondicherry were included in the study. Patients with acute renal failure and renal transplant were excluded from the study.

Statistical analysis

Data were entered in Epi info 3.5.4 and analysed using SPSS 24.0 and proportions for all the variables were calculated.

RESULTS

A total of 38 patients were included in the study. Majority of the patients were farmers and labourers. Most of them belonging to low socio economic status. Most of the patients were aged between 41 – 50 age group (11 patients out of 38) and 51 – 60 (11 out of 38) as given in Table 1.

Table 1: Age distribution.

Age group (years)	Number
16 to 30	5
31 to 40	4
41 to 50	11
51 to 60	11
61 to 70	5
71 to 80	1
81 to 90	1

Mean age was 54.60±14.58 and male female ratio of 3:1. Most common cause of CKD noted in this study was hypertension. The mean urea and creatinine value was 84.72±35.04 and 3.92±1.77 respectively as shown in Table 2.

Table 2: Demographic features of the subjects.

Feature	Mean ± SD
Mean age	54.60±14.58
Male: Female	3:1
Mean duration of CKD	22.02±25.38
Mean urea	84.72±35.04
Mean creatinine	3.92±1.77

Most common dermatological conditions for patients with CKD on hemodialysis were uraemic pruritus and Xerosis. Other manifestations like Kyrle's disease, Tinea corporis and Icthyosis were seen in 3 patients each. As given in Table 3.

Table 3: Common skin conditions in CKD on hemodialysis patients.

S. no	Dermatological disorders	No of people affected
1	Uraemic pruritus	10
2	Xerosis	10
3	Kyrle's Disease	3
4	Tinea corporis	3
5	Icthyosis	3
Miscellaneous		
6	Asteatotic eczema	1
7	Polymorphous light eruption	1
8	Perforating folliculitis	1
9	Folliculitis	1
10	Herpes labialis	1
11	Lichen simplex	1
12	Oral Candidiasis	1
13	Periporitis	1
14	Callosity	1
15	Pyogenic granuloma	1

Figure 1: Pseudomembranous candidiasis in CKD patient.

Figure 2: Xerosis involving the forearms in CKD patient.

Figure 3: Kyrles disease in a CKD patient.

Figure 4: Herpes labialis involving the lips in CKD patient.

DISCUSSION

Our study was a cross sectional study which was conducted to find out the cutaneous and mucosal manifestations of chronic renal failure in patients on hemodialysis. The results of this study showed that all patients with CKD had at least one or more cutaneous manifestations, which was in agreement with the results of Pico et al, Sultan et al and Bencini et al on regular hemodialysis.[2-4]

Chronic renal failure is a disease with varied cutaneous manifestation. Xerosis was the most common cutaneous abnormality seen in these patients. Xerosis was seen in 10 patients in this study out of 38 patients who were on hemodialysis, which was in agreement with Udaykumar et al and Falodun et al, who reported xerosis in 79 and 60% of CRF patients, respectively. However, Hajheydari et al reported xerosis only in 23% of Iranian patients and they attributed this to geographical distribution.[6-8]

The possible etiological factors for xerosis include atrophy of sebaceous glands, secretory and ductal portions of the eccrine sweat glands, resulting in lower levels of surface lipids of the skin. Loss of integrity of the water content in the stratum corneum by skin barrier dysfunction may also be important in the pathogenesis of xerosis. It is also important to note that these patients had no knowledge about skin care in CKD and counseling them about moisturizing and application of moisturizer can solve the problem.[9]

Pruritus was observed in 10 patients in this study, is an early finding that leads to an increased morbidity of these patients. Pruritus is one of the most characteristic and annoying cutaneous symptoms of CRF. In other studies its prevalence among hemodialysis patients ranges from 19 to 90%. Pruritus was also similar to studies done by Uday kumar et al and Sanai et al who noted pruritus as the second most common manifestations in CKD patients on Hemo dialysis. It may be episodic or constant, localized or generalized, and mild to severe in intensity. When localized, the forearms and upper back are predominately affected. It has no consistent association with age, sex, race, or the precipitating disease. Pruritus in patients with CKD could be due to various causes. Cutaneous manifestations of pruritus include excoriations, prurigo nodularis and lichen simplex chronicus.[10,11]

The etiology of pruritus in CRF is unknown; however, several hypotheses have been suggested. Immuno hypothesis considers uremic pruritus as an inflammatory systemic disease rather than a local skin disorder. This idea is supported by the beneficial effects of ultraviolet B radiation exposure on uraemic pruritus. The neurophysiological hypothesis is considered to play an important role in CRF – associated pruritus.[10,11]

Kyrle's disease was seen in 3 patients. In a study done by Sanai et al, Kyrle's disease was noted in 17% of the patients. Uday kumar et al study noted Kyrle's disease in 21% of the patients which is similar to our study. This difference could be explained by the higher frequency of diabetic patients in their study. The pathogenesis of the disease is not known, but it may occur as a result of dermal connective tissue dysplasia and decay. Probable causes include an inflammatory skin reaction secondary to the presence of uremic toxins, uric acid deposits, or scratching – induced trauma. Microvascular deposition of calcium may interrupt blood flow to connective tissue in the dermal layer, causing death and necrosis. Kyrle's disease with obvious cutaneous features are diagnostic and histopathology confirmed the diagnosis.[4]

Tinea corporis were seen in 3 patients in this study. Sultan et al. reported skin infections in 40% of patients in their study (fungal infections, bacterial infections, and viral infections). Udayakumar et al reported skin infections in 67% of their HD Indian patients (fungal infections, bacterial infections, and viral infections). The lower percentage of skin infections in the present study may be because of the lower percentage of diabetes associated with CRF patients and excessive use of antibiotics may also be the reason for this lower incidence.[4]

In this study, asteatotic eczema was seen in two patients. However, this might not be directly related to the dialysis. Asteatotic eczema was present before starting of dialysis in these patients.

Pallor was observed in 57% of patients in this study. This is in agreement with Udayakumar et al, who observed pallor in 60% of Indian patients, which may be attributed to nutritional factors. Patients with CKD are at risk of blood loss because of platelet dysfunction. Erythropoietin deficiency is considered the most important cause of anemia in CKD. Other contributory factors included absolute iron deficiency as HD patients may lose 3-5 g of iron per year. The survival of red blood cells is reduced by approximately one-third in HD patients.[11]

Common nail changes seen in this study was leukonychia in 11 patients followed by Lindsay's nail in 6 patients, onycholysis in 4 patients and subungual hyperkeratosis in 3 patients. In other studies nail changes observed were leukonychia, koilonychia, subungual hyperkeratosis, onycholysis, Mees' lines, Muehrcke's lines, Beau's lines and splinter hemorrhage.[11]

Calcification and calciphylaxis is a rare phenomenon in chronic renal failure and was not seen in our study. It was seen in study done by Udaykumar et al.[11] Cancerous and precancerous lesions were not seen in this study. It was seen in few patients in other studies.[12]

Patients with chronic renal failure on hemodialysis are prone to develop cutaneous infections and dermatoses. Frequent monitoring and adequate treatment helps in appropriate management of the dermatoses.

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