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STUDY OF DERMATOLOGICAL MANIFESTATIONS OF CHRONIC RENAL FAILURE

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Conflicts of Interest: Nil

ABSTRACT:

Introduction: The skin of the body is most visible and accessible organ which function function as an important diagnostic aperture to the disease that affects internal organs including the renal system. In CRF some skin changes like hyper pigmentation, xerosis, pruritus and acquired perforating dermatosis may be present regardless of hemodialysis. "Bullous dermatoses of hemodialysis"and "Nephrogenic fibrosing dermopathy may develop resulting in beginning of hemodialysis. For life-expectancy prolonged treatment with hemodialysis allows newer cutaneous manifestations to appear. Many studies show that about 50-100% of patients with renal disease are associated by at least one dermatological disorder. Therefore early diagnosis of skin disorders and prompt initiation of treatment can be helpful for alter their course and even save a patient's life.

Aim: The main objective of this study is to investigate dermatological Manifestations in patients with Chronic Renal Failure (CRF).

Material and method: Total 100 patients with chronic renal failure (CFR) patients with both gender and age between 20 years to 70 years were included in this study during one year of time period. Out of total 100 CRF patients it was divided in to two groups as dialytic group and nondialytic group to compare dermatological manifestations. From all the patients detail history was taken and physical examination was done in each group for the presence of mucocutaenous manifestations which was recorded as data. Different investigation like CBP, RFT, CUE, RBS, serum calcium and phosphorous including chest X-ray, and ultrasonography were done as well as laboratory investigations like Gram stain, Tzanck smear, KOH mount, and skin biopsies were done.

Result: Total patients were divided in to two groups as dialytic group and nondialytic group to compare dermatological manifestations with each group 50 patients. The patients age range from 20 years to 70 years in which 41–50 years in the dialytic group and 31–40 years in the nondialytic group were maximum. Diabetes mellitus was most common underlying etiology causing CRF. In 58% Nonspecific dermatological manifestations xerosis was observed whereas 57% pallor, 38% pruritus , 30% pigmentation and 4% purpura was observed respectively.

Conclusion: In CRF patients as total number of dialysis increases the prevalence of xerosis, nail changes and diffuse hyperpigmentation increases. Therefore in CRF patient's cutaneous marker in the absence of a primary dermatological problem causes so early diagnosis to rule out by kidney disease is necessary by investigations like hematological, urine, and radiological investigations.

Keywords: Chronic renal failure (CRF), Dermatology, dialysis, nondialytic

Introduction

In human body, skin and kidney are two major organs system which in partner plays important functions and also share a number of diseases[i]. The skin of the body is most visible and accessible organ which function function as an important diagnostic aperture to the disease that affects internal organs including the renal system[ii]. The sign and symptoms present in the skin and mucous membranes can be helpful for the diagnosis of

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internal disease or even it may be part of initial presentation. In Chronic renal failure (CRF) whatever the cause may be but it frequently produces specific skin changes that can develop long before failure manifests clinically[iii].

In CRF some skin changes like hyper pigmentation, xerosis, pruritus and acquired perforating dermatosis may be present regardless of hemodialysis. "Bullous dermatoses of hemodialysis"and "Nephrogenic fibrosing dermopathy may develop resulting in beginning of hemodialysis. For life-expectancy prolonged treatment with hemodialysis allows newer cutaneous manifestations to appear[iv]. Absent lunulae, onychomycosis and Half-and-half nails are common clinical manifestation[v]. Many studies show that about 50-100% of patients with renal disease are associated by at least one dermatological disorder[vi].

In kidney transplantation some cutaneous disorders disappear with conforming metabolic milieu resulting from the malfunctioning kidney that is responsible for some changes[vii]. However in CRF majority of dermatological disorders as few rare skin diseases which may cause serious morbidity and mortality. Therefore early diagnosis of skin disorders and prompt initiation of treatment can be helpful for alter their course and even save a patient's life[viii]. Studied of Pico et al[ix] reported that patients with CRF had one or more skin manifestations whereas studied of Bencini et al[x] reported as patients with renal transplant undergoing hemodialysis notices skin changes in 79% of patients. In India different community based studies has reported that CRF prevalence has been reported between 0.16% and 0.79%[xi]. The main objective of this study is to investigate dermatological Manifestations in patients with Chronic Renal Failure (CRF).

Material and methods:

This study was carried in department of dermatology in K.M. Medical college and hospital, Mathura ,UP India. Total 100 patients with chronic renal failure (CFR) patients with both gender and age between 20 years to 70 years were included in this study during one year of time period. Out of total 100 CRF patients it was divided in to two groups as dialytic group and nondialytic group to compare dermatological manifestations. In each group 50 patients were included. The CRF patients included in dialytic group on maintenance hemodialysis who were selected according to the predialysis criteria of serum creatinine – >4 mg/dl, blood urea > 70 mg/dl, serum potassium > 6.5.

In non-dialytic group for CRF patients attending the nephrology and DVL outpatient department were randomly selected. From all the patients detail history was taken and physical examination was done in each group for the presence of mucocutaenous manifestations which was recorded as data. In physical examination detail evaluation of skin, nails, hair, and mucous membrane for specific and nonspecific cutaneous manifestations were done. Patients with hemodialysis were examined for any extravasation, puncture marks, and arteriovenous shunt dermatitis. Different investigation like CBP, RFT, CUE, RBS, serum calcium and phosphorous including chest X-ray, and ultrasonography were done as well as laboratory investigations like Gram stain, Tzanck smear, KOH mount, and skin biopsies were done.

Result:

Total 100 patients with chronic renal failure (CFR) patients with both gender and age between 20 years to 70 years were included in this study which was carried in department of dermatology at K.M. Medical college and hospital, Mathura UP India. Total patients were divided in to two groups as dialytic group and nondialytic group to compare dermatological manifestations with each group 50 patients. Out of 100 patients 70 were male and 30 were females. The patients age range from 20 years to 70 years in which 41–50 years in the dialytic group and 31–40 years in the nondialytic group were maximum. Diabetes mellitus was most common underlying etiology causing CRF as shown in table no: 1 below.

Table 1: showing etiology of CRF patients

Cause	male	female	total
ADPKD	4	0	4
CGN	8	4	12
CIN	18	6	24
Diabetes	29	12	41
Hypertension	6	3	9
Obstruction	2	0	2
Pyelonephritis	1	2	3
SLE	0	1	1
Vascular	1	1	2
Undiagnosed	1	1	2
Total	70	30	100

Note: ADPKD=Autosomal dominant polycystic kidney disease; CGN= Chronic glomerulonephritis; CIN= Chronic interstitial nephritis; SLE= Systemic lupus erythematosus

From the table below, in this study there was no statistically significant difference in the prevalence of skin manifestations in the dialytic group as compared to the nondialytic group. In 58% Nonspecific dermatological manifestations xerosis was observed whereas 57% pallor, 38% pruritus , 30% pigmentation and 4% purpura was observed respectively. In the dialytic group 37(70%) prevalence of xerosis was more as compare to nondialytic group 23(46%) with statisticall significant higher prevalence in the dialytic group with P value 0.015.

In 57% of patients Pallor was found which second most common finding in which dialytic 27(54%) and nondialytic 30(60%) which was statistically not significant. In pallor and absent lunula there was a significant association.

As compared to the nondialytic group 13(26%) there was higher prevalence of pruritus in the dialytic group 25(50%) statistically significant.

In 30 patients Pigmentation was found in which 20 in dialytic patients and 10 in nondialytic patients. Commonly affected areas are Face and extremities. As comparing with nondialytic group, dialytic group was higher prevalence statistically significant.

In 30 patients Cutaneous infections were observed in which fungal, bacterial and viral infection were 13, 6 and 1 for dialytic and 8, 2 and zero for nondialytic patients respectively. the prevalence of cutaneous infections in the dialytic group was significant difference as compared to the nondialytic group.

In 19 patients was observed changes in hair in which 11 patients from dialytic group and 8 patients from nondialytics group diffuse alopecia, dull and brittle hair were most common complained by patients.

Mucosal changes were observed in 8 patients in which 6 from dialytic group and 2 from nondialytic group. Chelitis, aphthous stomatitis, Xerostomia and uremic fetor were commonly observed in patients.

Table 2: showing dermatological manifestations in CRF patients with and without haemodialysis

Manifestations	Dialytic N=50	(%)	Non dialytic N=50	(%)	X^2	P
Xerosis	35	70	23	46	5.900	0.015
Pruritis	25	50	13	26	4.240	0.030
Pigmentation	20	40	10	20	4.570	0.032
Pallor	27	54	30	60	0.040	0.839
Purpura	4	8	0	0	4.150	0.041*
Fungal infection	13	26	8	16	0.540	0.443
Bacterial infection	6	12	2	4	0.572	0.445
Viral infection	1	2	0	0	0.510	0.455
Kyrles disease	3	6	1	2	0.282	0.585
Uremic frost	0	0	1	2	1.010	0.313
Metastatic calcification	1	2	0	0	1.010	0.313
Nail changes	32	64	17	34	9.058	0.002*
Half and half nails	6	12	1	2	1.596	0.205
Absent lunula	5	10	4	8	0.094	0.746
Beau's lines	4	8	2	4	1.596	0.205
Hair changes	11	22	8	16	0.669	0.413
Mucosal changes	6	12	2	4	1.634	0.201
Puncture marks	36	72	1	2	52.600	0.0001***
Onychodystrophy	3	6	3	6	0.153	0.685
Melanonychia	5	10	0	0	4.433	0.035*
Subungualhyperkeratosis	4	8	2	4	0.122	0.736

Note: *P<0.05 - statistically significant, ***P<0.0001 statistically - highly significant

TABLE 3: showing nail changes in CRF

Nail changes	Dialytic group N	%	Non dialytic group N	%
Melanonychina	6	12	1	2
Absent lunula	7	14	7	14
Half and half nails	5	10	1	2
Beaus lines	6	12	1	2
Subungual hyper keratosis	4	8	4	8
Onychodystrophy	4	8	3	6
Total	32	64	17	34

Out of 100 patients (49%) had nail changes. Higher prevalence of nail changes was observed in Dialytic group patients as compared to nondialytic group. Out of total 49 patients 31(64%) patients were from Dialytic group and 17(34%) patients were Nondialytic group as shown in above table.

Discussion:

In this study total 100 patients with CRF were included in two equal groups with equal group as dialytic group and nondialytic group. Out of 100 patients, more than 95% had at least one skin, hair and nail manifestation and mucosal manifestations. In studied of Pico et al[9] also found skin

involvement undergoing dialysis patients which is similar to this study as well as study done by Sultan et al[xii]. in the study of Avermaete A et al[xiii] in patients of CRF Pruritus is most characteristic and annoying cutaneous symptoms among Dialytic patients ranges from 19 to 90% which is alternate to this study. Pruritus (38%) was found as third most common skin manifestation in this study.

This study shows the most common cutaneous abnormality as Xerosis (58%) was as observed which was similar to the other studies as they reports (46-90%) in Morton CA et al[xiv], Tawade N et al[xv] Siddappa K et al[xvi]. in this study diabetes mellitus was common underlying etiology causing CRF followed by chronic glomerulonephritis which was similar to other studies as Ghunawat et al[xvii] and Khanna et al[xviii] other Indian studies showed frequency of skin involvement ranged 96–100%[xix]. Gilchrest et al[xx] studied observed 69% xerosis in nondialytic uremics and 70% of patients on hemodialysis. Yopisowitch et al[xxi] study also reported to be 62% and 91%. In 30 patients pigmentation was observed and higher prevalence in dialytic group as compared to to nondialytic group. Smith et al[xxii] studied reported pigmentation in both undialysed and dialysed patients. In this study 49% had nail changes and dialytic group had higher prevalence as compared to nondialytic group. Pallor was significantly associated with absent lunula. Similar study also reported by Attia et[xxiii] alas absent lunula (33.7%) and half and half nails (21%) of the patients.

Conclusion:

Xerosis, pruritus, pallor and pigmentation were the commonest cutaneous manifestations observed in patients of CRF in this study. In CRF patients as total number of dialysis increases the prevalence of xerosis, nail changes and diffuse hyperpigmentation increases. In CRF cutaneous manifestations were significantly associated with disease was more in dialytic patients than nondialytic group. Therefore in CRF patient's cutaneous marker in the absence of a primary dermatological problem causes so early diagnosis to rule out by kidney disease is necessary by investigations like hematological, urine, and radiological investigations.

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