



MUCOCUTANEOUS MANIFESTATIONS AND NAIL CHANGES IN PATIENTS OF NEPHROPATHY ON HEMODIALYSIS

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ABSTRACT

Background: Cutaneous manifestations in Chronic kidney disease can be due to its etiology, complication or treatment and can affect the quality of life. Present study was aimed to study mucocutaneous manifestations and nail changes in patients of nephropathy on hemodialysis. **Material and Methods:** Present study was cross sectional, observational study, conducted in patients of nephropathy undergoing dialysis, underwent detailed dermatological examination. **Results:** In present study, total patients enrolled were 90. Age ranging from 17 - 85 years, with mean age of 46.1 years. Hemodialysis duration was ranging from 1 month to 20 yrs. Hemodialysis sessions were ranging from 2 to 176. Pallor was seen in 47 patients. Common causes of nephropathy were hypertension (56.67 %) & diabetes mellitus (21.11 %). In 85.56% patients at least one mucocutaneous manifestation is recorded. Common Mucocutaneous manifestations were xerosis (58.89 %), pruritus (47.78 %), hyperpigmentation (exposed area > legs > back) (23.33 %), other (folliculitis, purpura, eczema, pitted keratolysis) (8.89 %) & mucosal changes (hyperpigmentation of tongue, coated tongue, buccal hyperpigmentation, tongue sign of uremia) (5.56 %). Majority had mild pruritus (24.44 %), followed by severe (14.44 %) & moderate pruritus (8.89 %). In present study, majority had moderate xerosis (30 %) followed by severe xerosis (16.67 %) & mild xerosis (12.22 %). In 84.4% patients nail changes are noticed. Common nail manifestations were longitudinal melanonychia (51.11 %), shiny nails (17.78 %), half and half nails (16.67 %), brittle nails (8.89 %), longitudinal ridging (7.78 %) & beaus lines (7.78 %). Statistically significant association found between pruritus and hyperpigmentation ($p=0.022$) **Conclusion:** In 85.56% patients at least one mucocutaneous manifestation is recorded. In 84.4% patients nail changes are noticed.

KEYWORDS : mucocutaneous manifestations, nail changes, dialysis, chronic nephropathy

INTRODUCTION

Over the past few decades, the improvement in the field of Nephrology has drastically improved the life expectancy of patients with chronic kidney disease, which resulted in dramatic increase in the number of patients with chronic kidney disease (CKD). Hemodialysis is effective in prolonging the survival of these patients, persistent metabolic alterations and the risk of the dialysis procedure results in continued morbidity, skin changes associated with it and dialysis may cause discomfort to the patients.^{1,2}

Cutaneous manifestations in CKD can be due to its etiology, complication or treatment and can affect the quality of life.^{3,4} The skin manifestations may be due to the fact that at present dialysis is not as efficient as a normal kidney and cannot replace its endocrine function resulting in electrolyte imbalance and build-up of uremic substances.

The prevalence of mucocutaneous manifestations is high among dialysis patients. According to previous studies 85% to 100% patients undergoing hemodialysis had at least one mucocutaneous manifestation.^{3,4,5} But these manifestations may differ on the basis of race, geographic location, socioeconomic status, status of patients and accuracy of patient's examination. Present study was aimed to study mucocutaneous manifestations and nail changes in patients of nephropathy on hemodialysis.

MATERIAL AND METHODS

Present study was cross sectional, observational study, conducted in department of dermatology, at MIMSR medical college & hospital, Latur, India. Study duration was of 3 months (November 2021 to January 2022). Study approval was obtained from institutional ethical committee.

Inclusion Criteria

- All patients of nephropathy undergoing dialysis, either

gender, willing to participate in present study

Exclusion Criteria

- Patients undergoing hemodialysis after renal transplantation or after acute kidney injury
- Patients undergoing peritoneal dialysis were excluded.

Study was explained to patients in local language & written consent was taken for participation & study. Data was collected from patient's history, hospital files and examination of patient in adequate light with necessary tools. Symptoms started or appeared after starting hemodialysis are taken into consideration.

A detailed clinical history, nature of onset and progression of cutaneous symptoms, history regarding renal disease, treatment history, history of any skin disease, and history of any comorbid condition were recorded. A detailed physical and dermatological examination was done in all cases. Dermatological manifestations such as Pruritus, xerosis, pigmentation disorders, and half and half nails (Lindsay's nails) were observed & documented.

Variables included in the study were gender, age, cause of nephropathy, duration of nephropathy, duration of hemodialysis, pruritus, xerosis, hyperpigmentation, pallor, any other changes & mucosal changes.

Data was collected and compiled using Microsoft Excel, analysed using SPSS 23.0 version. Statistical analysis was done using descriptive statistics.

RESULTS

In present study, total patients enrolled were 90. Age ranging from 17 - 85 years, with mean age of 46.1 years. Majority were male (74.44 %). Hemodialysis duration was ranging from 1 month to 20 yrs. Hemodialysis sessions were ranging from 2 to 176. Pallor was seen in 47 patients. Common causes of

nephropathy were hypertension (56.67 %) & diabetes mellitus (21.11 %).

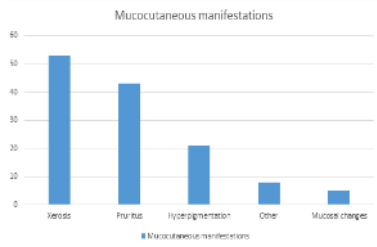
Table 1- General Characteristics

| Characteristics | No. of patients/ Mean | Percentage |
|---|--------------------------|------------|
| Mean age (years) | 46.1 | |
| Gender | | |
| Male | 67 | 74.44 |
| Female | 23 | 25.56 |
| Cause of nephropathy | | |
| Hypertension | 51 | 56.67 |
| Diabetes Mellitus | 19 | 21.11 |
| Unknown | 8 | 8.89 |
| Anatomical (renal aplasia, renal hypoplasia) | 8 | 8.89 |
| Obstructive (kidney stones, urethral stricture) | 4 | 4.44 |

In 85.56% patients at least one mucocutaneous manifestation is recorded. Common Mucocutaneous manifestations were xerosis(Fig.2) (58.89 %), pruritus (47.78 %), hyperpigmentation (exposed area > legs > back) (23.33 %), other (folliculitis, purpura, eczema, pitted keratolysis) (8.89 %) & mucosal changes (hyperpigmentation of tongue(Fig.1), coated tongue, buccal hyperpigmentation, tongue sign of uremia) (5.56 %).

Table 2- Mucocutaneous Manifestations

| Mucocutaneous manifestations | No. of patients | Percentage |
|---|-----------------|------------|
| Xerosis | 53 | 58.89 |
| Pruritus | 43 | 47.78 |
| Hyperpigmentation (Exposed area > legs > back) | 21 | 23.33 |
| Other (Folliculitis, Purpura, Eczema, Pitted keratolysis) | 8 | 8.89 |
| Mucosal changes (Hyperpigmentation of tongue, Coated tongue, Buccal hyperpigmentation, Tongue sign of uremia) | 5 | 5.56 |



Graph 1- Mucocutaneous Manifestations

Majority had mild pruritus (24.44 %), followed by severe (14.44 %) & moderate pruritus (8.89 %).

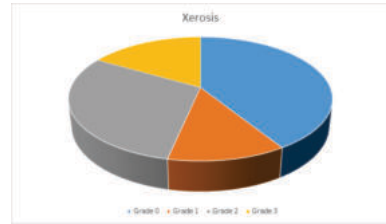
Table 3- Pruritus Grading

| Grade | Description | No. of patients | Percentage |
|----------|--|-----------------|------------|
| Mild | Pruritus is episodic and localized without disturbance in routine work and sleep | 22 | 24.44 |
| Moderate | Pruritus is generalized and continuous without sleep disturbances | 8 | 8.89 |
| Severe | Pruritus is generalized and continuous disturbing sleep | 13 | 14.44 |

In present study, majority had moderate xerosis (30 %) followed by severe xerosis (16.67 %) & mild xerosis (12.22 %).

Table 4- Severity Of Xerosis

| Grades | Severity | Description | No. of patients | Percentage |
|--------|----------|---|-----------------|------------|
| 0 | Absent | NO xerosis | 37 | 41.11 |
| 1 | mild | Xerosis localized over legs only | 11 | 12.22 |
| 2 | moderate | Xerosis localized over all extremities | 27 | 30 |
| 3 | severe | Xerosis generalized and ichthyosis like | 15 | 16.67 |

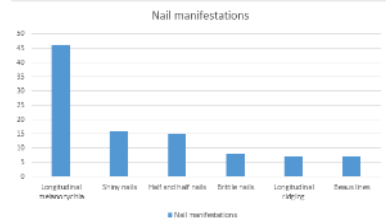


Graph 2- Severity Of Xerosis

In 84.4% patients nail changes are noticed. Common nail manifestations were longitudinal melanonychia(Fig.3) (51.11 %), shiny nails (17.78 %), half and half nails(Fig.4) (16.67 %), brittle nails (8.89 %), longitudinal ridging (7.78 %) & beaus lines (7.78 %).

Table 5- Nail Manifestations

| Nail manifestations | No. of patients | Percentage |
|---------------------------|-----------------|------------|
| Longitudinal melanonychia | 46 | 51.11 |
| Shiny nails | 16 | 17.78 |
| Half and half nails | 15 | 16.67 |
| Brittle nails | 8 | 8.89 |
| Longitudinal ridging | 7 | 7.78 |
| Beaus lines | 7 | 7.78 |

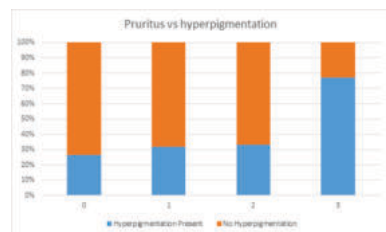


Graph 3- Nail Manifestations

Statistically significant association found between pruritus and hyperpigmentation (p=0.022)

Table 6- Pruritus Vs Hyperpigmentation

| Pruritus grade | No. of patients | No. of patients with hyperpigmentation |
|----------------|-----------------|--|
| 0 | 57 | 15 (26.32 %) |
| 1 | 22 | 7 (31.82 %) |
| 2 | 8 | 4 (50 %) |
| 3 | 13 | 10(76.92 %) |



Graph 4- Pruritus Vs Hyperpigmentation

Statistically significant association found between longitudinal melanonychia and hemodialysis sessions

($p=0.04$) & shiny nails and hemodialysis sessions ($p=0.007$).



Fig.1-hyperpigmentation Of Tongue



Fig.2- Xerosis



Fig.3- Longitudinal Melanonychia



Fig.4- Half And Half Nails

DISCUSSION

Dermatological manifestations in end stage renal disease(ESRD) are varied and can impair the quality of life. Prompt diagnosis may help to ensure treatment which, in turn, can reduce the disease associated morbidity. With increasing access to hemodialysis, the most frequent skin findings such as uremic frost and erythema palpatum uremicum encountered in the pre-dialysis era are rarely seen now. On the other hand, prolonged life expectancy of patients following prompt management provides time for the development of newer cutaneous manifestations.³

From the pathophysiologic point, these changes are caused by multiple factors such as accumulation of uremic toxins, volume overload, effects of dialysis equipment and

techniques such as needle insertion and subcutaneous bleeding during dialysis treatment, metabolic and immunologic derangements, nutritional factors, and side effects of drugs.⁵

Pruritus, xerosis, pigmentation disorders, and half and half nails (Lindsay's nails) are included under non-specific and acquired perforating disorders (APD), bullous dermatoses, calcifying disorders, and nephrogenic systemic fibrosis are included under specific manifestations of ESRD.⁷ Nails are not spared with many lesions like Lindsay's nails, fungal nail infections, leukonychia, koilonychia, subungual hyperkeratosis, onycholysis, Mees' lines, Merck's lines, Beau's lines. In addition to diffuse hair loss of the scalp.^{3,8}

With the advent of hemodialysis as a therapeutic modality for ESRD, some skin manifestations such as uremic frost and erythema papulatum uremicum have become rare, however, many other abnormalities of skin and appendages have emerged.⁹

Banavasi S G et al.,¹⁰ studied 100 consecutive cases of ESRD on hemodialysis, maximum number of cases were from age group of 55-65 years with a male to female ratio of 2.8:1. Xerosis was the most common finding and was observed in 67% of cases followed by pallor (65%), hyperpigmentation (26%), edema (17%), pruritus (15%), ecchymosis (9%) and elastosis (3%). In nail changes half and half nails (21%) and longitudinal ridging (20%) were frequently seen followed by leukonychia (15%), onycholysis (7%), Beau's lines (7%), koilonychia (2%) were also observed.

Sahadevan NV et al.,¹¹ studied 100 patients, common cutaneous manifestations were pallor (64%), xerosis (61%), pruritus (46%), diffuse hyperpigmentation (22%) and cutaneous infections (20%). Specific changes noted were acquired perforating dermatoses (7%) and nephrogenic systemic fibrosis (2%). Nail, oral mucosa, and hair were affected in 61%, 54%, and 29% cases, respectively. No significant association was noted between dermatological manifestations and modality of treatment.

Devi B et al.,¹² studied 100 diagnosed cases of chronic kidney disease, 57% were male, majority from age range of 41 to 60 years. 63 % patients were managed under conservative therapy and rest (37%) was on dialysis. Xerosis (72%) was the most common cutaneous manifestation followed by pallor (64%), pruritus (56%), hyperpigmentation (51%), yellowish hue (21%), dermatitis (10%) and others (24%). Infectious skin manifestations were present in 43% of study population, among which fungal, bacterial, viral disease constituted 19%, 17% and 7% respectively. Mucosal changes, hair changes and nail changes were reported in 77%, 68%, 119% cases respectively.

In study by Asokan S et al.,¹³ 82.8% of patients with severe CKD had more than one dermatoses compared to 60% of patients with mild CKD. Xerosis and hyperpigmentation were more prevalent in patients undergoing dialysis than those on medical management alone. The prevalence of xerosis and hyperpigmentation were higher in patients with longer duration of disease and increased as the severity of CKD increased. The prevalence of pruritus was independent of the duration and severity of CKD.

Some prophylactic measures can prevent some of the cutaneous manifestations, such as emollients for xerosis and pruritus, sun screens, avoidance of sun exposure and adequate clothing for pigmentary changes, and cutaneous malignancies. Prompt recognition and treatment of infection in patients with CKD, especially on maintenance dialysis is useful for improving the quality of life. Limitations of present study were small sample size, variable are not correlated with

blood investigations, cross-sectional nature of study & subjective information collected.

CONCLUSION

In 85.56% patients at least one mucocutaneous manifestation is recorded. In 84.4% patients nail changes are noticed. So, mucocutaneous involvement has high prevalence and these changes are medically, cosmetically and economically disturbing. Hence better knowledge of these manifestations in these patients can guide further management and significantly improve the quality of life of patients.

Conflict of Interest: None to declare

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