Cutaneous Manifestations in Patients with End Stage Renal Disease on Hemodialysis

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ABSTRACT

Introduction: Cutaneous alterations in patients with End Stage Renal Disease (ESRD) are frequently found but are variable. They present with multiple skin abnormalities which have a significant impact on the quality of life of patients. The objective was to study the incidence of various cutaneous manifestations in patients on dialysis.

Material and Methods: A hospital based cross sectional study was conducted which included 100 consecutive cases of ESRD on hemodialysis for at least a period of 1 month. Cases were classified as ESRD on the basis of Cockroft-Gault formula, abnormal urinary imaging and urinary abnormality. Complete mucocutaneous examination was done in all patients. Investigations including renal function tests (RFT) and serum electrolytes were done in all patients.

Results: 98% of cases had atleast one cutaneous finding attributable to to ESRD. The maximum number of cases was in the 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%). Among infections fungal infections (11%) were more common than bacterial infections (4%). In nail changes half and half nails (21%) and longitudinal ridging (20%) were frequently seen followed by leuconychia (15%), onycholysis (7%), Beau's lines (7%), koilonychia (2%), Mees' lines (2%) and Meuhrcke's lines (2%). Hair changes such as sparse scalp hair (7%) and lustreless hair (7%) were seen. Oral changes such as angular cheilitis (4%), uremic breath (2%) and macroglossia (1%) were present. Iatrogenic manifestations like gynaecomastia (1%) and A-V shunt dermatitis (1%) were also observed.

Conclusion: Dermatological manifestations increase with increasing duration of renal disease. Our observations necessitate a joint effort between dermatologists and nephrologists for the early recognition and management of these dermatoses which may reduce the morbity and significantly improve the quality of life of patients.

Keywords: Chronic Kidney Disease, Dialysis, Cutaneous Manifestations

INTRODUCTION

The number of patients with ESRD on regular haemodialysis has increased exponentially over the recent years. Studies report the prevalence of Chronic kidney disease (CKD) to be 17.3% in India.[1] Mucocutaneous manifestations are commonly observed among patients with End stage renal disease (ESRD) undergoing dialysis. An earlier study by Udaykumar et al[2] reported all patients with ESRD on hemodialysis to have atleast one skin manifestation. Certain skin changes may also be observed in patients with CKD before progression to ESRD. Rarely skin manifestations may be the first sign of kidney disease.[3] 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. Some of the manifestations may be as a result of dialysis and immunosuppressive drugs used.

The aim of the study was to analyse the mucocutaneous manifestations in patients with ESRD on hemodialysis. An effort was made to correlate the biochemical parameters of renal function tests and cutaneous findings in patients with ESRD.

MATERIAL AND METHODS

A hospital based cross sectional study was conducted on 100 consecutive cases of ESRD (CKD stage 5) on hemodialysis for atleast a period of 1 month. Cases were classified as ESRD and were included in the study on the basis of Cockroft-Gault formula, abnormal urinary imaging and urinary abnormality. After obtaining the ethical approval from IRB an informed consent was obtained from all patients. Detailed history regarding duration of renal failure, duration for which the patient has been on dialysis and details of onset of skin lesions was elicited. Complete mucocutaneous examination was done in all patients and the details were recorded in a pre-structured proforma. Investigations including renal function tests (RFT) and serum electrolytes were done in all patients. Other relevant investigations such as potassium hydroxide (KOH) mount, Gram stain and skin biopsy were done wherever indicated. Patients who had undergone renal transplantation, peritoneal dialysis or had serious comorbidities such as malignancy were excluded.

STATISTICAL ANALYSIS

Statistical analysis was done using Chi-square test to find associations between various cutaneous manifestations. Biochemical values were expressed as mean. To explore the relationship of cutaneous findings and biochemical parameters the unpaired t test was used. A p value of less than 0.05 was considered significant.

RESULTS

98% of patients recruited in this study had at least one cutaneous manifestation. Of the 100 patients 26 were females

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and 74 were males. The age of patients ranged from 15-78 years with the mean age being 50.32 years. Majority of the patients belonged to the age group of 45-65 years. Diabetes mellitus (DM) was the most common cause (45%) of renal dysfunction followed by hypertension (HTN) in 35% cases and glomerulonephritis in 4% cases (Table 1). The duration for which patients were on dialysis ranged from 1 to 10 years with a mean duration of 20.52 months. The observed cutaneous manifestations and their incidence are summarised in Table 2. Xerosis was the most common cutaneous finding and was reported in 67% cases. Pallor of skin due to anaemia was observed in 65% and hyperpigmentation in 26% patients respectively. Pruritus was observed in 15% cases and ecchymosis in 9% cases. Among infections fungal infections (11%) were more common than bacterial infections (4%). Among nail findings half and half nails or Linday's nails was seen in 21% cases and longitudinal ridging in 20 % cases. Other findings were leuconychia (15%), onycholysis (7%), Beau's lines (7%), koilonychias (2%), Mee's lines (2%) and Meuhrcke's lines (2%).The nail findings are summarised in Figure 1. Hair changes such as sparse scalp hair and lustreless hair were seen in 7 cases each. Few oral changes such as angular cheilitis (4%) uremic breath (2%) and rare iatrogenic manifestations like gynaecomastia and A-V shunt dermatitis were observed in 2 patients. There was no significant association between biochemical parameters and various cutaneous findings (p>.05). There was no significant association between duration of dialysis and cutaneous manifestations (p>.05).

Etiology	Male	Female	Total cases
Diabetes	33	12	45
Hypertension	29	6	35
Glomerulonephritis	2	2	4
Polycystic kidney disease	4	2	6
Obstruction	3	0	3
Others	3	4	7

Table-1: Etiology of Chronic renal failure

Manifestation	Number of cases
Xerosis	67
Pallor	65
Hyperpigmentation	26
Pruritus	15
Ecchymosis	9
Fungal infection	11
Bacterial infection	4
Viral infection	1
Half and half nails	21
Longitudinal ridging	20
Mee's lines	2
Muehrcke's lines	2
Koilonychia	2
Absence of lunula	6
Beau's lines	7
Leukonychia	15
Onycholysis	7
Macroglossia	1
Lusterless hair	7
Diffuse alopecia	7
Papules with keratotic plug	2
Angular cheilitis	4
Uremic breath	2
SEB keratosis	1
IGH	1
Gynaecomastia	1

Table-2: Skin manifestations and their incidence

DISCUSSION

ESRD represents a clinical state where there is irreversible loss of endogenous renal function. Xerosis was the most commonly encountered cutaneous manifestation. It was seen in 67% of cases and this was similar to the incidence reported by previous studies. Reported incidence ranged from 46-90%.[2-4] Xerosis is graded into grade 0, grade 1 and grade 2 based on the grading by Morton.[5] Of the 67 cases of xerosis 13 were classified as grade 2 xerosis. It can be correlated with decreased sweating and lowered levels of lipids in the skin surface. The decreased sweating may be due to a decrease in the size of the eccrine duct.[2,6] Pallor of the skin due to anemia was observed in 65% of patients. This was consistent with the findings of Udaykumar et al who reported it in 60% of patients.[2] The anemia may be due to anoxia and decreased erythropoiesis due to reduced erythropoietin secretion by the kidney.[7] Skin hyperpigmentation is another common finding in patients with ESRD. In our study 15% of cases had hyperpigmentation. Similar incidence was observed by Tawade and Gokhale[8] and Pico et al.[6] This may be attributed to the accumulation of Melanocyte Stimulating Hormone (MSH) due to failure of kidneys to excrete it. Extremities and photoexposed areas were more severely affected. Pruritus is one of the most distressing cutaneous symptoms seen in patients on dialysis. It was observed in 15% of cases. In most of our patients it affected the quality of sleep and daily activities. In a study done by Tawade and Gokhale[8] it was reported in 34% of patients while Udaykumar et al[2] reported an incidence of 53%. Recent studies have reported a decline in the incidence

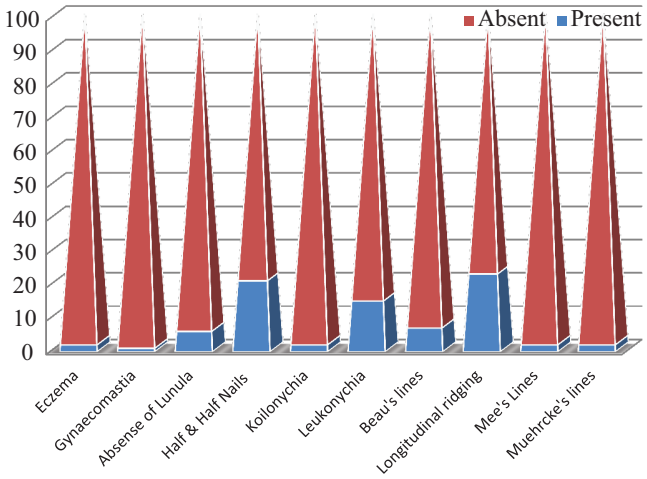

Figure-1: Incidence of various nail findings

of pruritus possibly due to better dialysis techniques.[9] Uremic pruritus is defined as pruritus which appears just prior to dialysis or any time after that and cannot be explained by any other disease process. The pruritus may be due to pruritogen-

Figure-1: Half and half nails

ic substances such as Histamine.[10] Among nail changes Lindsay's nails (21%) and longitudinal ridging (20%) were the most commonly encountered findings. This was comparable to the results of other studies.[2] Lindsay's nails also known as half and half nails are characterized by a proximal white part and a distal reddish pink part that does not fade on pressure. These two zones show a sharp demarcation between them. An increase in the prevalence of bacterial, viral and fungal infections has been reported among ESRD patients.[11] This may be due to the poor immunity as a result of decreased immune surveillance, decreased B cell activity and altered T lymphocyte activity. In our study fungal infections were seen in 11% of cases and bacterial infections in 4% cases. Among fungal infection dermatophyte infections (5%) were the most common followed by onychomycosis in 4% of cases. Sultan et al reported an incidence of 33% for fungal infections[12] and Udaykumar et al reported bacterial infections in 13% of cases.[2] Hair changes such as sparse scalp hair was seen in 7% cases and lustreless hair in 7% cases. Dry lustreless hair may be due to decreased secretion of sebum.[2] Rare iatrogenic manifestations reported include gynaecomastia and arteriovenous shunt dermatitis in one case each. Udaykumar et al reported gynecomastia in 1% of cases and arteriovenous shunt dermatitis in 8% of patients.[2]

CONCLUSION

The reported prevalence rates of various cutaneous findings vary in different studies. Our observations necessitate a joint effort between dermatologists and nephrologists for early recognition and management of these comorbidities of ESRD which may significantly improve the quality of life of patients. This is of greater importance in the present scenario where larger numbers of patients with ESRD survive for longer periods on maintenance haemodialysis.

REFERENCES

1. Singh AK, Farag YM, Mittal BV, Subramanian KK, Reddy SR, Acharya VN, et al. Epidemiology and risk factors of chronic kidney disease in India-Results from the SEEK (Screening and Early Evaluation of Kidney Disease) study. BMC Nephrol. 2013;14:114.
2. Udayakumar P, Balasubramanian S, Ramalingam KS, Lakshmi C, Srinivas CR, Mathew AC. Cutaneous manifestations in patients with chronic renal failure (CRF) on hemodialysis. Indian J Dermatol Venereol Leprol. 2006;72:119-25.
3. Hajheydari Z, Makhlough A. Cutaneous and mucosal manifestations in patients on maintenance hemodialysis. Iran J Kidney Dis. 2008;2:86-90.
4. Bencini PL, Montagnino G, Citterio A, Graziani G, Crosti C, Ponticelli C. Cutaneous abnormalities in uremic patients. Nephron. 1985;40:316-21.
5. Ponticelli C, Bencini PL. The skin in uremia. In: Massry SG, Glassock RJ, editors. Massry's and Glassock's Textbook of Nephrology. 2nd ed. Williams and Wilkins: Baltimore; 1989. p. 1422-6.
6. Pico MR, Lugo-Somolinos A. Cutaneous alterations in patients with chronic renal failure. Int J Dermatol. 1992;31:860-3.
7. Goddard J, Turner AN, Cumming AD, Stewart LH. Kidney and urinary tract diseases. Davidsons principles and practice of medicine. 20th edition. Churchill Livingst-Elsevier. 2006;455-518.
8. Tawade N, Gokhale BB. Dermatologic manifestation of chronic renal failure. Indian J Dermatol Venereol Leprol. 1996;62:155-6.
9. Pauli Magnus C, Mikus G, Alscher DM, Kirschner T, Nagel W, Gugeler N, et al. Naltrexone does not relieve uremic pruritus: results of a randomized, placebo-controlled crossover study. J Am Soc Nephrol. 2000;11:514-9.
10. Zucker I, Yosipovitch G, David M, Gafter U, Boner G. Prevalence and characterization of uremic pruritus in patients undergoing hemodialysis: Uremic pruritus is still a major problem for patients with end-stage renal disease. J Am Acad Dermatol. 2003;49:842-6.
11. Deshmukh SP, Sharma YK, Dash K, Chaudhari NC, Deo KS. Clinicoepidemiological study of skin manifestations in patients of chronic renal failure of hemodialysis. Indian Dermatol Online J. 2013; 4:18-21.
12. Sultan MM, Mansour HH, Wahby IM, Houdery AS. Cutaneous manifestations in Egyptian patients with chronic renal failure on regular hemodialysis. J Egypt Dermatol Soc. 2010; 7:49-55.

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