

NAIL CHANGES IN CHRONIC KIDNEY DISEASE PATIENTS UNDERGOING HAEMODIALYSIS

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ABSTRACT

BACKGROUND

Chronic kidney disease is defined as evidence of kidney damage over a period of 3 months with or without reduction of glomerular filtration rate revealed by clinical assessment, abnormal urinary finding, abnormal renal imaging or histologically proven disease. CKD is known to be associated with various nail pathologies. They may be related to the renal condition itself or its complication or due to therapy.

The aim was to study the frequency and spectrum of various nail changes in CKD patients undergoing haemodialysis.

MATERIALS AND METHODS

This study was conducted over a period of 6 months from May 2016 to Nov 2016 in a tertiary health care centre of Rajasthan. Total 100 patients of CKD undergoing haemodialysis were examined for nail changes like nail dyschromia, absent lunula and others.

RESULTS

In our study, most common finding was nail dyschromia (49%) comprising various colours like brown, black, yellowish discolouration of nail plate followed by longitudinal melanonychia (44%). Other findings were absent lunula (35%), subungual hyperkeratosis (32%) and onycholysis (28%). Males (84%) were affected more than females (16%) and most of our patients were in age group of >40 years (41%).

CONCLUSION

We conclude that various nail changes are observed in haemodialysis patients and these findings emphasise the significance of nail assessment as a part of physical examination in Haemodialysis patients.

KEYWORDS

Chronic Kidney Disease, Haemodialysis, Nail Changes, Dyschromia.

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BACKGROUND

Chronic kidney disease (CKD) is defined as kidney damage or glomerular filtration rate (GFR) <60 mL/min/1.73 m² for 3 months or more, irrespective of cause. CKD is a long-term kidney disease, thus it is different from acute kidney disease (Acute kidney injury) as the reduction in kidney function is present for 3 months or more.¹

Hypertensive patients, diabetics and blood relatives of CKD patients are at higher risk to develop CKD. Other diseases like systemic erythematous lupus, amyloidosis, chronic glomerulonephritis and some hereditary diseases (Polycystic kidneys) may affect kidney function. In normal individuals, the glomerular filtration rate is between 110 and 120 mL/min., but this rate may fall to 10 or even 5 mL/min. in patients with advanced CKD at which time dialysis and kidney transplantation may be indicated. CKD also affects many other

systems of the body causing neurological, gastrointestinal, cardiovascular, pulmonary, haematological, endocrine-metabolic and dermatological disorders.^{1,2}

Skin changes are known to occur in chronic kidney disease patients and in those with end-stage renal disease (ESRD) on haemodialysis. Various nail changes have been reported in CKD patients from time to time. Among them, half-and-half nail is a typical finding in CKD patients. Nail pathologies have been reported to occur in 86% of CKD patients undergoing haemodialysis; the most common disorders being half and half nails, absent lunula.² In half and half nails, the proximal nail appears white and pale and the distal part of nail appears brownish.

In absent lunula the visible part of nail matrix is lost. Our aim was to study the frequency and spectrum of various nail changes in CKD patients undergoing haemodialysis.

MATERIALS AND METHODS

It was a hospital based observational study conducted in Department of Dermatology, Venereology and Leprology and Department of Nephrology, Mahatma Gandhi Medical College Jaipur over a period of six months from May 2016 to November 2016. Total 100 patients of CKD undergoing haemodialysis were examined for nail changes. Patients with features suggesting of any congenital or primary skin disorders contributing to any nail changes were not included in our

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study. All the patients included in the study had a history of at least three months of CKD and at least two months of haemodialysis. Out of 100 patients 84 were male and 16 were female. The blood work including Complete blood count, Serum creatinine and blood urea measurements was obtained.

All the 20 nails were examined. During examination, the structure, colour, lunula and the thickness of the nails were assessed. The nails of the patients on haemodialysis were examined and photographed using a 13.0 megapixel digital camera. Data on the clinical history, physical and nail examination, were collected using a standard questionnaire.

In patients with subungual hyperkeratosis, KOH mount and fungal culture was done to rule out any fungal infection. All procedures were performed and data were collected after taking written consent from the haemodialysis patients.

RESULTS

Out of 100 patients, 84 were male and 16 were female. Maximum number of patients were seen in age group of >40 years (41%) followed by 31 - 40 years (29%). The mean age of the patients included in the study was 43.4 (ranged from 17 to 67 years). These patients were on haemodialysis over a period ranging from 2 months to 8 years.

Majority of the patients were field workers (58%) followed by office workers (32%). In our study, 84% of haemodialysis patients had at least one nail pathology. Most common finding in our study was nail dyschromia (49%) comprising various colours like brown, black, yellowish discolouration of nail plate followed by longitudinal melanonychia (44%). Other major findings were absent lunula, subungual hyperkeratosis, onycholysis, beau's line, nail dystrophy, leuconychia.

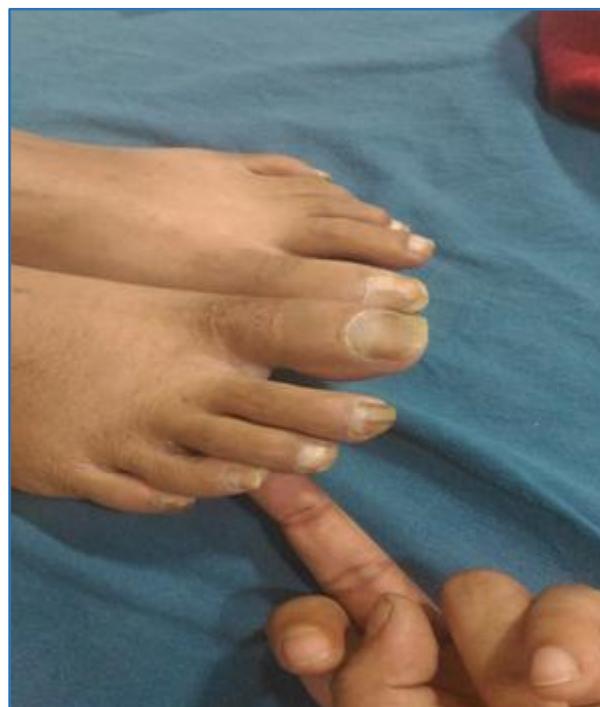


Figure 1. Half and Half Nail

Nail dyschromia is defined as an abnormality in the colour of the substance or the surface of the nail plate or subungual tissue.⁵ The discolouration specifically due to the deposition of melanin is labelled as nail pigmentation.⁶ In our study, most common finding is nail dyschromia (49%) comprising various colours like brown, black, yellowish discolouration of nail plate.

Nail Changes	Percentage
Nail Dyschromia	49
Longitudinal Melanonychia	44
Absent Lunula	35
Subungual Hyperkeratosis	32
Onycholysis	28
Beau's Line	27
Nail Dystrophy	23
Leuconychia	21
Longitudinal Ridging	21
Cuticle Rupture	20
Half and Half Nail	17
Mees' line	14
Pitting	13
Nail Pallor	8
Koilonychia	3
Clubbing	2
Nail Findings in Descending Order	



Figure 2. Nail Dyschromia

Melanonychia is a brown or black pigmentation of the nail unit. Melanonychia commonly presents as pigmented band arranged lengthwise along the nail unit, and this presentation is known as longitudinal melanonychia. We observed longitudinal melanonychia in 44% of CKD patients undergoing haemodialysis which is much higher than Marcos et al² who reported melanonychia in 9.3% cases of haemodialysis.

DISCUSSION

CKD is known to cause various pathologies of nails. Marcos et al² reported at least one type of nail pathology in 86% of haemodialysis patients. In a study by Salem et al,³ 76% patients had nail involvement. In our study, 84% of haemodialysis patients had at least one nail disorder. In a study by Arshad et al,⁴ half and half nail was the most common finding (26%) in patients undergoing haemodialysis. Similar result was observed in a study by Salem et al³ (20%). In our study, half and half nail was seen in 17% patients.



Figure 3. Longitudinal Melanonychia

Lunula is a whitish and crescent shaped area representing the distal most part of the nail matrix visible through nail plate. Absent lunula was seen in 35% cases in our study. In a previous study by Marcos and group,² they reported absent lunula in 62.9% cases.



Figure 4. Absent Lunula in a Haemodialysis Patient

Subungual hyperkeratosis was seen in 32% cases, in contrast to study by P Udaykumar et al⁷ who reported it in 12% cases. Onycholysis is defined as a distal or distal lateral separation of the nail plate from the underlying and/or lateral supporting structures (Nail bed, hyponychium, lateral nail fold),⁸ was seen in 28% of haemodialysis patients. In previous studies, it was reported in the range of 6 to 43% cases.^{2,9,10}



Figure 5. Subungual Hyperkeratosis

Beau's lines are transverse depressions in the nail plate that occur after a stressful event that temporarily interrupts nail formation was seen in 27% patients. Dinah et al¹⁰ reported Beau's lines in only 4% cases. Nail dystrophy was seen in 23% cases. Leuconychia is a white discolouration appearing on nail. In previous studies, it was seen in 4 to 30%^{2,10} of CKD patients undergoing haemodialysis, we observed leuconychia in 21% patients.



Figure 6. White Nails

Mees' line is characterised by a single, transverse, narrow whitish line that runs the width of nail plate and is seen on multiple nails. In our study, it was seen in 14% cases in contrast to study by P Udaykumar et al⁷ who reported it in 7% cases.

Pitting (13%), nail pallor (8%), koilonychias (3%), clubbing (2%) were other minor findings in this study.

CONCLUSION

Frequent nail changes are observed in CKD patients undergoing Haemodialysis. Nail dyschromia, longitudinal melanonychia and absent lunula are the most common findings in our study. We conclude that various nail changes are observed in Haemodialysis patients and these findings emphasise the significance of nail assessment as a part of physical examination in Haemodialysis patients.

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