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CHRONIC KIDNEY DISEASE;
PREVALENCE OF NAIL CHANGES

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ABSTRACT… Objectives: The objective of the study was to find out the prevalence of types of nail changes in chronic kidney disease. **Settings:** Nephrology department, Mayo Hospital Lahore. **Duration of Study:** From July 2016 to March 2017. **Study Design:** Descriptive Cross sectional study. **Methodology:** A structured questionnaire was filled for data collection. 220 CKD patients were recruited. Basic demographic information like age and gender was obtained from cases. Examination of nails of both hands and feet was done under bright light and any abnormalities were noted on the structured performa. Nail changes were recorded as per operational definition. **Results:** In our study, out of 220 cases, 61.36% (n=135) cases were between 15-50 years of age while 38.64% (n=85) were between 51-85 years of age, mean+sd was calculated as 48.11+8.11 years, 57.27% (n=126) were male and 42.73% (n=94) were females, 16.36% (n=36) had half and half nails, 21.82% (n=48) had Koilonychia, 2.73% (n=6) had Beau's lines, 48.64% (n=107) had Absent lanula, 1.36%(n=3) had Leuconychia, 5% (n=11) had Pitting, 1.82% (n=4) had Onycholysis, 2.27% (n=5) had Onychomycosis. **Conclusion:** We concluded that the frequency of nail changes in chronic kidney disease is significantly higher while absent lanula is a leading nail disorder followed by koilonychias and half and half nails in these cases. Some other trials are required to validate our findings.

Key words: Chronic Kidney Disease, Nail Abnormalities, Absent Lanula, Koilonychias, Half and Half Nails.

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INTRODUCTION

Chronic kidney disease (CKD) is defined as glomerular filtration rate (GFR) below 60ml/min per 1.73 m^2 for three months or more.[1,2] GFR is estimated from serum creatinine levels with the help of modification of diet in renal disease (MDRD) formula.[3] The incidence of end stage renal disease who are dependent on dialysis in Pakistan is approximately 100 per million and prevalence of patients alive on renal replacement therapy is approximately 40 patients per million.[4]

The prevalence of nail pathology in patients with CKD is variable in different studies and most studies have included patients undergoing hemodialysis. Choudhary SV et al found half and nails in 9.26%, koilonychia in 31.48% and onychomycosis in 1.85%.[5] In another study by Martinez MA et al found absent lanula in 62.9% and half and half nails in 14.4%[6] while in a local study Sonija MI et al found half and half nails in 36%.[7]

We planned this study to find out the prevalence of nail changes in chronic kidney disease patients in local population. Most of the previous studies done outside Pakistan have focused on dialysis patients whereas this study included chronic kidney patients with and without dialysis. So our study may provide estimate of nail changes among chronic kidney disease patients by which we may assess the magnitude of the problem and provide the patients early diagnosis and treatment to reduce the morbidity.

Material and Methods

Settings

Nephrology department, Mayo Hospital Lahore.

Duration of Study
From: July 2016 to March 2017.

Study Design
Descriptive Cross sectional study.

We included 220 chronic kidney disease patients for at least 3 months of either gender between 15-85 years of age while those presenting with acute kidney injury (patient having GFR below 60ml/min per 1.73 m2 for less than three months) and those having amputated limbs were excluded from the study. These cases were recruited from outpatient department. A structured questionnaire (attached) was filled for data collection. Basic demographic information like age and gender was obtained from cases. Examination of nails of both hands and feet was done under bright light and any abnormalities were noted on the structured performa. Nail changes i.e. half and half nails, absent lunula, koilonychias, leukonychia, onycholysis, onychomycosis, and pitting were recorded as frequency and percentage.

RESULTS
In our study, out of 220 cases, 61.36% (n=135) cases were between 15-50 years of age while 38.64% (n=85) were between 51-85 years of age, mean+sd was calculated as 48.11+8.11 years. (Table-I) Patients were distributed according to gender showing that 57.27% (n=126) were male and 42.73% (n=94) were females. (Table-II) Frequency of nail changes in CKD was calculated as 16.36% (n=36) had half and half nails, 21.82% (n=48) had Koilonychia, 2.73% (n=6) had Beau's lines, 48.64% (n=107) had Absent lanula, 1.36% (n=3) had Leuconychia, 5% (n=11) had Pitting, 1.82% (n=4) had Onycholysis, 2.27% (n=5) had Onychomycosis. (Table-III)

Age(in years)	No. of patients	%
15-50	135	61.36
51-85	85	38.64
Total	220	100
Mean+SD	48.11+8.11	

Table-I. Age distribution (n=220)

Gender	No. of patients	%
Male	126	57.27
Female	94	42.73
Total	220	100

Table-II. Gender distribution (n=220)

Nail changes	No. of patients	%
Half and half nails	36	16.36
Koilonychia	48	21.82
Beau's lines	6	2.73
Absent lanula	107	48.64
Leuconychia	3	1.36
Pitting	11	5
Onycholysis	4	1.82
Onychomycosis	5	2.27
Total	220	100

Table-III. Frequency of nail changes in CKD (n=220)

DISCUSSION
Dermatological disorders including nail changes are the commonest complications of cases suffering with Chronic Kidney Disease. It may be due to kidneys condition or treatment of this morbidity, it may lead to pruritus, xerosis, calcinosis, perforating dermatosis, hyperpigmentation and nail disorders. We planned this study as no local study address this issue while the international studies recorded nail disorders in patients undergoing dialysis only while we included those cases also who were not on dialysis, our findings may be helpful for the nephrologists and patients with CKD as well.

In our study, out of 220 cases, 61.36% (n=135) cases were between 15-50 years of age while 38.64% (n=85) were between 51-85 years of age, mean+sd was calculated as 48.11+8.11 years, 57.27% (n=126) were male and 42.73% (n=94) were females, 16.36% (n=36) had half and half nails, 21.82% (n=48) had Koilonychia, 2.73% (n=6) had Beau's lines, 48.64% (n=107) had Absent lanula, 1.36% (n=3) had Leuconychia, 5% (n=11) had Pitting, 1.82% (n=4) had Onycholysis, 2.27% (n=5) had Onychomycosis.

Choudhary SV et al revealed half and nails in 9.26%, koilonychia in 31.48% and onychomycosis

in 1.85%.[5] Our results are consistent for onychomycosis but half and half nails and Koilonychia were higher than the above study.

In another study by Martinez MA et al found absent lanula in 62.9% and half and half nails in 14.4%[6] these findings are similar to our results, while in a local study Sonija MI et al found half and half nails in 36%,[7] it shows higher rates of the morbidity than reported in our study.

In half and half nails, the proximal half is white, while the distal portion is red to brown.[8] Absent lunula is a condition known as the absence of the visible part of nail matrix, whereas splinter hemorrhages are seen as filiform, dark red, longitudinal lines in distal area of the nail plate. It may also be correlated with anti-phospholipid antibody syndrome, trichinosis, bacterial endocarditis external trauma and onychomatricoma.[9,10]

Dyachenko P and others[11] compared the rate of nail disorders in cases presented with chronic renal failure and those undergoing hemodialysis treatment with healthy population, and evaluated the association between nail changes and numerous demographic, medical and laboratory parameters in these patients, they recorded that 44 cases (60.3%) with chronic renal failure and 48 cases (62.3%) undergoing hemodialysis treatment had at-least one type of nail pathology. The commonest nail alterations were recorded in patients with chronic renal failure and those undergoing hemodialysis were half-and-half nails (HHN) and absence of lunula (AL). The rate of nail disorders among cases with chronic renal failure was significantly influenced by PTH level (P value= 0.03). They concluded that the patients with chronic renal failure and that undergoing hemodialysis therapy had higher prevalence of nail disorders when compared to the control group i.e. healthy population.

Another study[12] evaluated the disorders in chronic kidney disease with and without Maintenance Hemodialysis and their association with sex, age, severity and duration of chronic kidney disease and dialysis and concluded that dermatological disorders are present in all chronic kidney disease cases with significantly lower nail and hair changes in maintaining hemodialysis.

However, the results of our study are primary in our population and showing a guideline for the nephrologists and patients to reduce the morbidity.

CONCLUSION

We concluded that the frequency of nail changes in chronic kidney disease is significantly higher while absent lanula is a leading nail disorder followed by koilonychias and half and half nails in these cases. Some-other trials are required to validate our findings.

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– Unknown –

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