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ORIGINAL ARTICLE

Uremic Pruritis in Patients of End Stage Renal Disease on Thrice-Weekly Hemodialysis

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ABSTRACT

Objective: To determine the frequency of uremic pruritus in ESRD patients on thrice-weekly maintenance hemodialysis.
Study Design: Cross-sectional analytical study
Place and Duration of Study: Department of Nephrology, Sir Ganga Ram Hospital, Lahore from 1st Mar 2018 to 15th February 2019.
Methodology: Sixty five adult patients on hemodialysis for >3 months duration were included whereas patients on hemodialysis for acute kidney injury duration <3 months and exhibiting clinical or laboratory features of other conditions as chronic skin disease, cholestasis, and malignancies were excluded from the study.
Results: The mean age was 48±13.29 years, 46 (70.8%) were males and 19 (29.2%) were females. The mean BMI of patients was 23.73 kg/m^2. Thirty one (47.1%) was diabetics and 34(52.9%) was nondiabetics. Hypertension was found in 61(93.9%) while 4(6.2%) were normotensive, 3 (4.6%) were on HD from 6 months to 1 year, while 19(29.4%), 43(66.0%) were on HD for 1 to 3 years and >3 years respectively.
Conclusion: The frequency of uremic pruritis in patients on thrice-weekly MHD is 23.1% in our population.
Key words: Uremic pruritis, Hemodialusis, End stage renal disease

INTRODUCTION

Hemodialysis (HD) is a renal substitution treatment for patients who require it temporarily for acute kidney injury or as a long-term support treatment for end-stage renal disease (ESRD). Patients on HD encounter a high burden of both physical and mental side effects, that have an antagonistic impact on their quality of life (QOL).[1] Hemodialysis, on one hand, improves uremic symptoms and reduces mortality but on other hand, it brings some debilitating symptoms to patients. One of the serious problems is Sleep disturbance which affects almost 60% of HD patients. Aches and pains secondary to osteodystrophy, electrolyte imbalance, anemia, etc. are prevalent in 56% of individuals. Eating disorders including Anorexia and Nausea are disturbing for 46% and 56% respectively for dialysis-dependent persons. Financial, social, and physical disease burdens bring depression to up to 23% of patients. Cranky feelings in the legs especially at night time are referred to as Restless legs syndrome is experienced by 10%–20% of HD patients. Uremic pruritus is also present in a significant number of patients (40.6%).[2]

Pruritus regularly alluded to as 'tingle or itch', is one of the most annoying side effects for patients with ESRD.[3] The most far-reaching epidemiologic information for uremic pruritus is from DOPPS, in which 41.7% of patients revealed moderate to outrageous pruritus.[4] Whereas JDOPPS study published from Japan mentioned 44% severe pruritus in CKD patients.[5] It is supposed to be related to diminished QOL and severe depression and is an autonomous indicator of mortality, furthermore enhances sleep disturbances that further disables QOL and increases morbidity.[6,7]

Pruritus in HD patients can be because of the direct effect of uremic toxins or due to causes unrelated to uremia. Hepatitis C virus infectivity and bacterial infections evidenced by high CRP levelsare strongly linked to uremic pruritus.[8] Certain biochemical disorders like hypercalcemia, hyperphosphatemia, hyperferritinemia, and hypoalbuminemia are strongly associated with uremic pruritus.[9] Hemodialysis inadequacy, old age, male gender, and smoking history are linked to uremic pruritus.[10]

Pruritus can only be considered as uremic pruritus when all other dermatological and medical illnesses that cause itching is ruled out, thus making it a diagnosis of exclusion.[11]

MATERIALS AND METHODS

This single-center cross-sectional analytical study was conducted at the dialysis unit of Sir Ganga Ram Hospital, Lahore from 1st March 2018 to 15th February 2019. Using the non-probability sampling technique and the sample size of 65 was calculated with the expected percentage of 41.7 of moderate to severe uremic pruritus at a 5% level of significance and 12% margin of error. Adult patients on HD for >3 months duration were included in the study whereas patients on HD for acute kidney injury duration <3 months and exhibiting clinical or laboratory features of other conditions as chronic skin disease, cholestasis, and malignancies were excluded from the study.

After approval from the Institutional Review Board, informed consent was taken from each subject, biodata of patients and duration of maintenance hemodialysis were recorded. Uremic pruritus was labeled as per operational definition.[12] Data was analyzed in SPSS-23. Data was stratified for age, gender, BMI, duration of dialysis, DM, HTN, and smoker to address effect modifiers. The post-stratification chi-square test was applied with a p≤0.05 considered as statistically significant.

RESULTS

Eight (12.3%) were from the age group 18 to 29 years, while 16(24.6%) were from 30-45 years age group, 30(46.2) from the age group 46 to 60 years and 11(16.9%) were from age group more than 60 years. The mean age was 48±13.29 years. Forty six (70.8%) were males and 19(29.2%) were females, 43(66.2%) patients had normal weight, while 18(27.9%) were overweight and 3(6.2%) were under-weight. The mean BMI of patients was 23.73 kg/m^2. Thirty one (47.1%) was diabetics and 34(52.9%) was nondiabetics. The frequency of hypertension was 61(93.9%) while 4(6.2%) were normotensive, 3(4.6%) were on HD from 6 months to 1 year, while 19(29.4%), 43(66.0%) were on HD for 1 to 3 years and >3 years respectively. The mean duration of HD was 4.9 years. The frequency of uremic pruritis was 15(23.1%) while 50(76.9%) had no uremic pruritis. When data were stratified concerning gender, 9 patients out of 15 having uremic pruritis were male and 6 were females, with no statistical significance (p-value 0.296). Regarding age, 4 patients out of 15 having uremic pruritis had ages 18 to 29 years, 2 patients had age 30-45 years and 7 were from age group 40 to 60 years and 2 were above 60 years, with no statistical significance (p-value 0.219). According to BMI, 1 patient out of 15 having uremic pruritis had BMI <18 kg/m^2, while 8 patients out of 15 had BMI 0f 20-25 kg/m^2 and 6 patients out of 15 were having BMI of >25 kg/m^2, with no statistical significance (p-value 0.459). Concerning about diabetes status,6 patients out of 15 having uremic pruritis were diabetics and 9 were non-diabetics,

with no statistical significance (p value0.496). According to blood pressure, 15 out of 15 having uremic pruritis were hypertensive, with no statistical significance (p-value 0.258). Regarding smoking status,2 patients out of 15 having uremic pruritis were smokers and 13 were non-smokers, with no statistical significance (p-value 0.350). Regarding concerning of MHD duration, 1 patient out of 15 having uremic pruritis was on MHD for 6 months to 1 year, while 5 were from category 1-3 years and 9 were on MHD for more than 3 years, with no statistical significance (p-value 0.818) [Table 1).

Table 1: Stratification of different variables with uremic pruritis

Variable	Uremic pruritis		P value
	Yes	No	
Gender			
Male	9 (13.8%)	37 (56.9%)	0.296
Female	6 (9.2%)	13 (20%)	
Age (years)			
18-29	4 (6.1%)	4 (6.1%)	0.219
30-45	2 (3%)	14 (21.5%)	
46-60	7 (10.7%)	23 (35.3%)	
>60	2 (3%)	9 (13.8%)	
Body mass index (kg/m^2)			
Underweight	1 (1.5%)	3 (4.6%)	0.459
Normal	8 (12.3%)	35 (53.8%)	
Overweight	6 (9.2%)	12 (18.4%)	
Hypertension			
Yes	15 (23%)	46 (70.7%)	0.258
No	-	4 (6.1%)	
Diabetes			
Yes	6 (9.2%)	25 (38.4%)	0.496
No	9 (13.8%)	25 (38.4%)	
HD duration			
6 month -1 year	1 (1.5%)	2 (3%)	0.818
1-3 years	5 (7.6%)	14 (21.5%)	
>3 years	9 (13.8%)	34 (52.3%)	
Smoker			
Yes	2 (3%0)	3 (4.6%)	0.350
No	13 (20%)	47 (72.3%)	

DISCUSSION

Renal medical researchers regularly under-report the predominance of pruritus among CKD patients.[13] As of late, an advisory group of patients, relatives, doctors in Canada gathered a list of top 10 diseases seriously affecting QOL among CKD patients that needed research priority. Uremic pruritis gained a position in this list for understanding loopholes in pathogenesis and for the proposition of effective treatment.[14] Reported prevalence varies from country to country, highest (50%) in England, lowest (36) in France, whereas 5-75% range is seen in other small-scale studies worldwide.[15] Our study showed uremic pruritis frequency of 23.1% in HD patients.

Recently alteration of central sensory nervous system functions by uremic toxins have been identified that are non-responsive to antihistamine treatment.[16] Imbalanced opioid receptors distribution in the peripheral sensory system has been identified in the uremic milieu.[17] Dryness of skin often called Xerosis is seen in 55% of uremic pruritis patients; stratum corneum water and lipid content has been reduced along with decreased sweat production.[18] Certain investigations uncovered a potential connection between IL-6 and pruritus, signifying immune system malfunction as a cause of uremic pruritis.[19] Hepatitis B&C virus infectivity, which is quite common in HD patients increases the chances of pruritis, is considered an important pathogenetic cause of the uremic itch.[20]Most of the patients report itching at back and arms during night time which becomes worsen with change in body temperature, exercise while taking bath and during HD.[21] Treatment options for uremic pruritis are, local emollients, antihistamines, pregabalin, tacrolimus, Capsaicin creams, and UV light therapy.[12]

CONCLUSION

The frequency of uremic pruritis in patients on thrice-weekly MHD is 23.1% in our population.

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