

Uremic Pruritus In End-Stage Renal Disease Patients Receiving Three Times Weekly Hemodialysis a Multi-Center Study

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ABSTRACT

Objective: To quantify the prevalence of uremic pruritus in ESRD patients receiving maintenance hemodialysis three times per week.

Study Design: Analytical cross-sectional research

Place and Duration of Study: Institute of kidney diseases Peshawar from May 1, 2021, to April 25, 2022.

Methodology: A total of 32 adult patients receiving hemodialysis for a period more significant than three months were included in the study, while those receiving hemodialysis for acute kidney injury for less than three months or displaying clinical or laboratory signs of other conditions, such as chronic skin disease, cholestasis, and malignancies, were excluded.

Results: There were 9 (28.1%) females and 23 (71.9%) men, with a mean age of 45, 13.29 years. The patients' average BMI was 23.73 kg/m². 15 (46.9%) of the participants had diabetes, whereas 17 (53.1%) did not. 27 (84.4%) were discovered to have hypertension, while 3 (9%) were normotensive, 2 (6.2%) were taking HD for six months to a year, while 9 (28.1%), 23 (71.9%), and >3 years were the appropriate HD treatment durations.

Conclusion: Uremic pruritus affects 23.1% of individuals receiving thrice-weekly MHD in our study.

Keywords: End-stage renal disease, uremic pruritus, and hemodialysis

INTRODUCTION

Patients who need renal replacement therapy momentarily due to acute kidney damage or as a long-term support therapy for end-stage renal illness may get it via hemodialysis (HD) (ESRD). Patients with HD have a heavy weight of adverse physical and mental side effects that adversely affect their quality of life (QOL).¹ Hemodialysis helps patients' uremic symptoms and lowers mortality. However, it also causes specific incapacitating symptoms. Sleep disruption, which affects roughly 60% of HD patients, is one of the significant issues. In 56% of people, aches and pains brought on by osteodystrophy, electrolyte imbalance, anemia, etc., are common. For 46% and 56%, respectively, of dialysis-dependent individuals, eating problems such as anorexia and nausea are concerning. Depression is brought on by financial, social, and physical illness in up to 23% of patients. Restless legs syndrome, characterized by twitching sensations in the legs, is something that 10% to 20% of HD patients report having. Also prevalent in a significant proportion of individuals (40.6%) is uremic pruritus.²

One of the most bothersome side effects for ESRD patients is pruritus, sometimes referred to as "tingle or itch."³ The DOPPS survey, in which 41.7% of patients reported moderate to severe itching, provides the most comprehensive epidemiologic data on uremic pruritus.⁴ In contrast, Japanese research called JDOPPS reported that 44% of those with CKD had severe pruritus.⁵ It is thought to be associated with poor quality of life (QOL) and severe depression and is a standalone predictor of death. It also worsens sleep problems, which further impair QOL and raise morbidity.^{6,7}

direct effects or from other factors unrelated to uremia. Uremic pruritus has a significant association with hepatitis C virus infectivity and bacterial infections indicated by elevated Patients with HD may have pruritus owing to uremic toxins' CRP levels.⁸ Uremic pruritus is closely related to several biochemical conditions, including hypercalcemia, hyperphosphatemia, hyperferritinemia, and hypoalbuminemia.⁹ Uremic pruritus is associated with inadequate hemodialysis, advanced age, male gender, and smoking history.¹⁰

It is only possible to diagnose uremic pruritus after ruling out all other dermatological and medical conditions that cause itching, making it a diagnostic of exclusion¹¹

MATERIALS AND METHODS

The Institute of Kidney Diseases in Peshawar performed this single-center cross-sectional analytical investigation from May 2, 2021, to April 25, 2022. The sample size of 32 was estimated using the non-probability sampling method with a due proportion of 40.8 of moderate to severe uremic pruritus at a significance level of 5% and a margin of error of 12%. The research did not include adult patients with acute kidney damage who had been on HD for less than three months and those with clinical or laboratory signs of other illnesses such as chronic skin disease, cholestasis, and malignancies

After Institutional Review Board clearance, informed permission was obtained from each participant, and patient biodata and maintenance hemodialysis duration were documented. According to the operational definition, uremic pruritus was classified. In SPSS-23, data analysis was done. To account for impact modifiers, data were stratified by age, gender, BMI, dialysis duration, diabetes, high blood pressure, and smoking. When using the post-stratification chi-square test, a p-value of 0.05 was deemed statistically significant.

RESULTS

Seven (21.9%) were in the 18 to 29-year age range, followed by 9 (28.1%) in the 30-45 year range, 12 (37.5%) in the 46 to 60-year range, and 4 (12.5%) in the above 60-year range. The average age was 45 + 13.29. There were 23 men (71.9%), nine women (28.1%), and extensive 2 (6.2%) on HD for six months to 1 year, 5 (15.6%), 14 (43.75%) for 1 to 3 years, and 3 (9.4%) and 8 (25%) for more than 3 years, respectively. Fifteen patients (46.9%) were average weight, compared to 12 who were overweight (37.5%) and five who were underweight (15.6%). The patients' average BMI was 23.73 kg/m². 15 (46.9%) of the participants had diabetes, whereas 17 (53.1%) did not. 27 people (84.4%) had hypertension, whereas five people (15.62%) had normal blood pressure. HD lasted an average of 4.7 years. 8 (25%) of the patients showed uremic pruritus, whereas 24 (75%) did not have any uremic significance (p-value 0.296). Regarding age, 2 of the nine patients with uremic pruritus were between the ages of 30-45, 4 were between the ages of 46 and 60, and 2 were beyond 60. However, there was no statistically significant difference between the age groups for these patients (p-value 0.219). Statistically insignificant, 1 of the nine patients with uremic pruritus had a BMI of less than 20

kg/m², 3 had a BMI of between 21 and 25 kg/m², and 5 had a BMI of more than 25 kg/m² (p-value 0.459). Three out of nine individuals with pruritis are diabetic. When data were stratified by gender, 6 of the nine patients with uremic pruritis were male, and three were female, with no statistically significant difference between the number of patients with diabetes and those with uremic pruritis.

Without regard to statistics (p value 0.496). Blood pressure revealed that 9 out of 9 people with uremic pruritis had hypertension. However, there was no statistically significant difference (p-value 0.258). Regarding smoking status, there was no statistically significant difference between the three smokers and the six nonsmokers among the nine patients with uremic pruritis (p-value 0.350). Regarding the length of MHD treatment, 2 of the nine patients with uremic pruritis were on MHD for six months to 1 year, 3 were in the category of 1-3 years, and 4 were on MHD for more than 3 years. However, there was no statistically significant difference between these groups (p-value 0.818) [Table 1].

Table 1: stratification of many factors about uremic pruritis

Variable	Uremic pruritis		P value
	Yes	No	
Gender			
Male	6 (18.75%)	17 (53.1%)	0.296
Female	3 (9.4%)	6 (18.75%)	
Age (years)			
18-29	1 (3.1%)	6 (18.8%)	0.219
30-45	2 (6.3%)	7 (21.9%)	
46-60	4 (12.5%)	8 (25%)	
>60	2 (6.3%)	2 (6.3%)	
Body mass index (kg/m²)			
Underweight	2 (6.3%)	3 (9.4%)	0.459
Normal	4 (12.5%)	11 (34.4%)	
Overweight	3 (9.4%)	9 (28.1%)	
Hypertension			
Yes	9 (28.1%)	18 (56.3%)	0.258
No	-	5 (15.62%)	
Diabetes			
Yes	4 (12.5%)	11 (34.4%)	0.496
No	5 (15.6%)	12 (37.5%)	
HD duration			
6 months -1 year	1 (3.1%)	1 (3.1%)	0.818
1-3 years	5 (15.6%)	14 (43.75%)	
>3 years	3 (9.4%)	8 (25%)	
Smoker			
Yes	3 (9.4%)	6 (18.75%)	0.350
No	6 (18.75%)	17 (53.1%)	

DISCUSSION

Researchers in renal medicine often underreport¹² Recently, a Canadian advisory committee of patients, family members, and clinicians compiled a list of the top 10 disorders that substantially impair CKD patients' quality of life and need urgent study. The inclusion of uremic pruritis on this list was made possible by our growing knowledge of its pathophysiology and our ability to provide effective treatments.¹³ The reported incidence varies by nation; it is most significant (50%) in England and lowest (36) in France, while other small-scale studies conducted across the globe have shown prevalence rates in the range of 5-75%.¹⁴ In HD patients, uremic pruritis occurred 23.1% of the time, according to our research.

Recently, it has been shown that uremic toxins change central sensory nerve system processes in a way that is resistant to antihistamine therapy.¹⁵ The uremic milieu has imbalanced opioid receptor distribution in the peripheral sensory system. 55% of people with uremic pruritis have dry skin, also known as xerosis; the water and lipid content of the stratum corneum has decreased, and sweat production has also decreased.¹⁶ Some research revealed a probable relationship between IL-6 and pruritus, suggesting that uremic pruritis is caused by immune system dysfunction.¹⁷ It is thought that an important pathogenetic reason for the uremic itch is the infectivity of the Hepatitis B&C virus,

which is extremely frequent in HD patients and raises the likelihood of pruritis. Most patients describe nighttime itching on their backs and arms, which worsens with activity, a change in body temperature, and HD. Among the treatment choices for uremic pruritis are local emollients, antihistamines, pregabalin, tacrolimus, Capsaicin creams, and UV light therapy.¹⁸

CONCLUSION

In our population, 23.1% of patients receiving thrice-weekly MHD experience uremic pruritis.

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