FREQUENCY OF RESTLESS LEG SYNDROME IN PATIENTS OF END STAGE RENAL DISEASE ON HEMODIALYSIS

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ABSTRACT

Objective: The main objective of study was to determine the frequency of restless leg syndrome in End stage Renal Disease patients on Hemodialysis in our setup.

Material and methods: This descriptive cross sectional study was conducted at Department of Nephrology, Khyber Teaching Hospital for duration of six months from June 2014 till December 2014. As a sample size,Total of 241 patients were observed, by using 6% prevalence with 95% confidence level and 3% margin of error using WHO software for sample determination. Patients were selected through non probability convenient sampling technique. Results are presented in charts.

Results: Patients included were in the range of 25 to 65 years with mean of 48 years with standard deviation of 11.3. Majority of patients were of age more than forty years. Frequency of restless leg syndrome was found to be around 30% with slight male dominance.

Conclusion: Frequency of restless leg syndrome was found to be around 30%.Restless leg syndrome is one of the common co morbidity found in patients undergoing hemodialysis due to multiple factors like iron deficiency anemia, under-dialysis, malnutrition and infections. Regular evaluation for the detection of RLS in patients undergoing HD for ESRD, their early diagnosis and prompt treatment can improve the quality of life.

Key Words: Restless leg syndrome, End stage Renal Disease, Hemodialysis

INTRODUCTION

Restless legs syndrome (RLS) is one of the most commonly encountered sleep disorders, and it is diagnosed when the following essential criteria are met: the urge to move the legs, usually with unpleasant sensations, the appearance of symptoms during inactivity or rest, relief with movement; and worsening of symptoms in the evening or at night.[1]

RLS sufferers represent 2 to 3% of the general population in Western countries. Supportive criteria include a family history, the presence of periodic-leg movements (PLM) when awake or asleep and a positive response to dopaminergic treatment.[2]

RLS is either primary or secondary. Primary RLS is considered idiopathic or with no known cause. Secondary RLS is often associated with medical conditions including Iron deficiency and uremia secondary to advanced kidney failure.

RLS is one of the most unpleasant complaints in patients undergoing chronic hemodialysis (HD) [3] and can lead to impaired quality of life in end stage renal disease patients.[4] The prevalence of RLS in uremic patients is estimated to range between 6 and 60%[5].

Although this syndrome is frequent among dialysis patients, RLS often remains undiscovered because the symptoms may not be recognized as a typical clinical entity. The underlying cause of RLS, however, remains to be identified. A number of risk factors have been identified. In a recent study significant positive correlations with female gender, Iron deficiency, diabetes mellitus, coffee intake and RLS were found.[6]

Specific DSM-5 criteria for RLS are as follows[7]:

An urge to move the legs that is usually accompanied by or occurs in response to uncomfortable and unpleasant sensations in the legs, characterized by all of the following: (1) the urge to move the legs begins or worsens during periods of rest or inactivity; (2) the urge is partially or totally relieved by movement; and (3) the urge to move legs is worse in the evening or at night than during the day or occurs only in the evening or at night

Symptoms occur at least 3 times per week and have persisted for at least 3 months

Symptoms cause significant distress or impairment in social, occupational, educational, academic, behavioral or other areas of functioning

The symptoms cannot be attributed to another mental disorder or medical condition (e.g., leg edema, arthritis, leg cramps) or behavioral condition (e.g. po-

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sitional discomfort, habitual foot tapping)

The disturbance cannot be explained by the effects of a drug of abuse or medication

The US Food and Drug Administration (FDA) has given commercial clearance to the first device (Relaxis) for improvement of sleep quality in patients with primary RLS. The device, a vibrating pad, delivers vibratory counter stimulation to the patient's legs as an individual lies in bed. Approval was based on 2 randomized studies that showed greater improvements in sleep quality with the device than with a placebo pad.

Diagnosis

All patients with symptoms of RLS should be tested for iron deficiency[8,9]. If a secondary cause of RLS is suspected on the basis of history, abnormal findings on neurologic examination, or poor response to treatment, other laboratory tests should be done. These include a complete blood count (CBC) Blood urea nitrogen (BUN), Fasting blood glucose, Thyroid-stimulating hormone (TSH), Vitamin B-12, Folate.

OBJECTIVE

Aim of this study was to explore the burden of Restless-legs syndrome (RLS) in patients of End stage Renal Disease (ESRD) on Hemodialysis in our setup. RLS is an under-diagnosed condition, especially in patients on regular hemodialysis. Application of diagnostic criteria for RLS will lead to correct diagnosis of the disease and timely management. This will help our already compromised patients of End stage Renal Disease in reducing the burden of their morbidity related to Restless-legs syndrome.

MATERIAL AND METHODS

The study was conducted at Department of Nephrology, Khyber Teaching Hospital.

Study Design: Descriptive Cross sectional.

Duration: Six months (June 2014 till December 2014).

Sample Size: Sample size was 241, using 6% prevalence, with 95% confidence level and 3% margin of error using WHO software for sample determination.

Sampling Technique: Non probability, consecutive sampling.

Sample Selection:

Inclusion Criteria:

Adult patients from 18 to 65 years of age and either gender, diagnosed End-stage renal disease on regular hemodialysis.

Exclusion criteria:

- Patients with acute renal failure on hemodialysis.
- Patients who were confused have dementia and are unable to communicate.
- Patients with known neurological deficit involving limbs e.g. Stroke, paraplegia, which was diagnosed on the basis of history and physical examination.

They above factors were confounders and would make the study result biased if include.

DATA COLLECTION PROCEDURE

The study was started after seeking the approval of hospital research ethical committee. Written informed consent was taken from participants fulfilling the inclusion criteria. The aims, nature and procedures of the study were fully explained to the potential study population. The RLS standard IRLSSG Criteria was used to confirm the diagnosis of RLS in end-stage renal disease patients undergoing hemodialysis. A specially designed proforma was used to note patient's age, gender whom were diagnosed as having RLS.

RESULTS

This study was conducted at Department of Nephrology, Khyber Teaching Hospital. Duration of the study was 6 months in which a total of 241 patients were observed to determine the frequency of restless leg syndrome in End stage Renal Disease patients on Hemodialysis and the results were analyzed as:

Age distribution among 241 patients showed 46(19%) patients were in age range of 25-35 years, 55(23%) patients in age range of 36-45 years, 68(28%) patients in age range of 46-55 years, and 72 (30%) patients were in age range 56-65 years. Mean age was 48 years with SD ± 11.34. (Figure No 1)

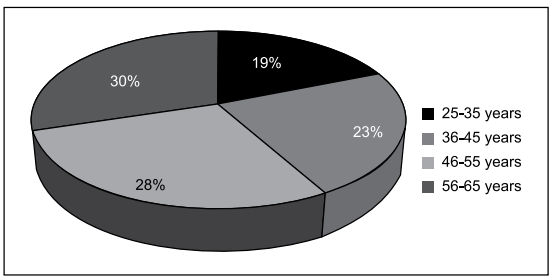
Gender distribution among 241 patients was analyzed as 133(55%) patients were male and 108(45%) patients were female. (Figure No 2)

Frequency of restless leg syndrome among 241 patients was analyzed. It showed 72(30%) patients had restless leg syndrome while 169(70%) patients didn't have restless leg syndrome. (Figure No 3)

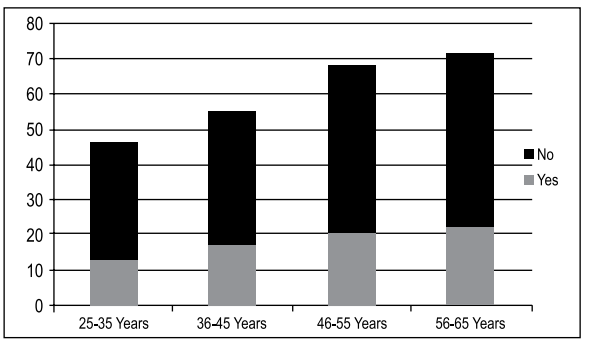
DISCUSSION

The present study shows that 19% patients were in age range 25-35 years, 23% patients were in age range 36-45 years, 28% patients were in age range 46-55 years, and 30% patients were in age range 56-65 years. Mean age was 48 years with SD ± 11.34. Fifty five percent patients were male while 45% patients were female. More over 30% patients of ESRD on dialysis had restless leg syndrome in our study.

In different studies done all over world the frequency of RLS in general population is reported to be between 10 to 15%[11,12] and in patients of ESRD on HD is 13.3 to 28%.[13,14,15] In our analysis there are three major



Stratification of restless leg syndrome with age distribution



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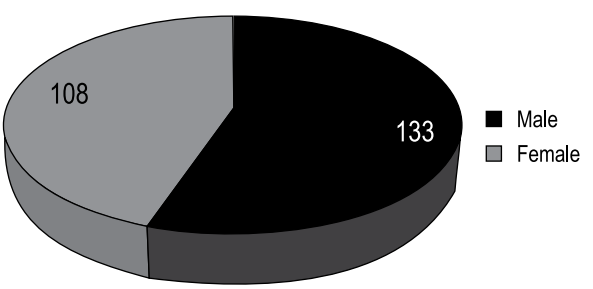
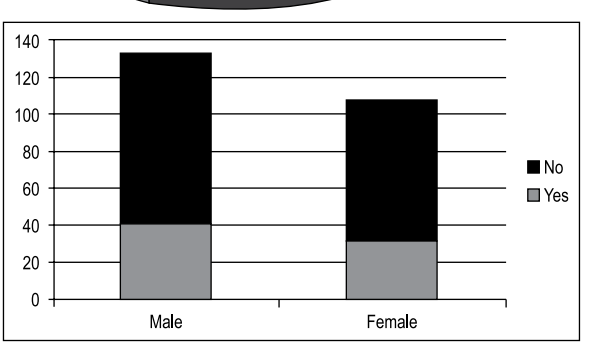
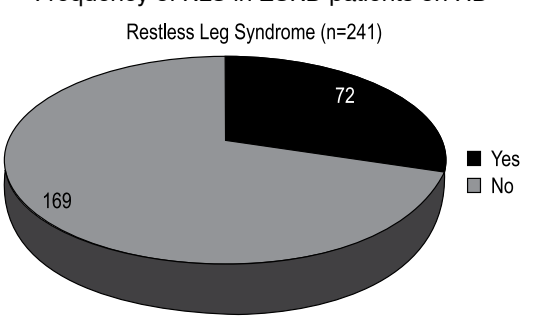




Frequency of RLS in ESRD patients on HD



reasons for this wide variation in frequency, first the heterogeneity of the study populations that is genetically variable, second the different definitions used for RLS and the tools used for diagnosis, third and the most important is the associated factors which could lead to the precipitation of RLS like Iron deficiency, diabetes mellitus, peripheral neuropathy and inadequacy of HD.[14,16]

When we compare our study with other studies that used the IRLSSG criteria, we still find significant differences[17]. The frequency of RLS was 30% in our study as compared to 6% in the Indian population,[18] 23% in Japanese population,[19] 20-50% in Saudi population[20] and 14-21% in Caucasians.[21,22] This suggests heterogeneity of the study populations that is genetically different, andthis may be the reason for wide variation reported in the frequency of RLS. Anemia, iron deficiency and serum calcium level have all been linked to RLS.[23]We found males more frequently suffering from RLS as compare to females. This may be related to sexhormone diffrences.[21] Aging is also believed to be a risk factor for idiopathic RLS.[24] However, some previous studies have shown that this is not always true in patients undergoing dialysis.[25,26]

Various Studies have been done to find out the associated risk factors which may have a role in the frequency of RLS. It revealed that smoking was associated with RLS whereas consumption of coffee and tea had a negative effect on RLS.[27] In a study by Gigli GL et al.[28] They made two groups of dialysis patients, one group was suffering from RLS and the other was not. Then they compared the characteristic of both and found that period of dialysis dependency was significantly lower in the group negative for RLS.

The percentage of RLS patients in our sample was 30%. Comparing patients of both groups we found that the two groups did not differ as to age, sex, weight, body mass index (BMI), and intake of nicotine and caffeine. Similarly, the two groups did not differ as to the etiology of ESRD, type of dialysis and frequency of HD. The use of drugs did not differ in the two groups. No patient was receiving specific treatment for RLS. RLS patients reported more fragmented, less restful sleep and more daytime somnolence and were more affected by anxiety or depression.

Causes of high frequency of RLS in our population seems to be inadequate HD, anemia and malnutrition. Providing adequate dialysis to the patient of ESRD is of utmost importance as inadequate dialysis leads to increased morbidity and mortality.[29] Adequacy of HD is measured in terms of Kt/V, minimum of 1.2 Kt/V is provided per HD session to all patients. Minimum three of such HD sessions per week are recommended. Inadequate dialysis (lower levels of Kt/V) was found to be associated with RLS.[30]

In Pakistan most of the dialysis centers are pro-

viding twice weekly HD with no measurement of Kt/V value and same is true in our case. This might be the major reason for the highest frequency of RLS in our patients as compared to other studies.

There were few limitations in our study which should be addressed in the future. We did not examine the patients for evidence of diabetic neuropathy, which may contribute to the severity of RLS[29,30]. Iron studies were not done because of the financial restrains. Finally, we did not obtain data on nerve conduction parameters because most of the patients did not agree to undergo such investigations. However, we attempted to exclude other diseases that could mimic RLS by performing a structured interview including peripheral neuropathy, Parkinson's disease, myalgia, venous stasis, leg edema, arthritis, leg cramps, positional discomfort and habitual foot tapping.

CONCLUSION

RLS is quite common in patients undergoing regular HD. It is more commonly seen in male. Inadequate HD, poor management of iron deficiency anemia are major causesfor the highest prevalence of RLS in our population. RLS is associated with poor quality of life and increase in morbidity. Regular evaluation for the detection of RLS in patients undergoing HD for ESRD is required. Early diagnosis and prompt treatment can improve the quality of life. Further studies are required to search its causative factors and treatment strategies.

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