

EVALUATION OF THE DIAGNOSTIC CRITERIA OF RESTLESS LEG SYNDROME IN HEMODIALYSIS PATIENTS

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Aim: In diagnosis of restless leg syndrome (RLS), seen frequently in hemodialysis patients, minimal criteria of International RLS Study Group have been commonly used. Our purpose is to investigate the significance of minimal criteria of International RLS Study Group for the diagnosis of RLS in hemodialysis patients in our district.

Methods: We investigated the criteria of International RLS Study Group in 68 hemodialysis patients in three dialysis units of Afyonkarahisar city center. Twenty four patients were excluded due to absence of first criteria. Forty four patients answered positively to first question were evaluated for the diagnosis of RLS according to minimal criteria including 4 questions and neurological examination.

Results: Among 44 (20 men, 24 women) hemodialysis patients mean age was 51+/-16.1 years and dialysis period was 25 (3-190) months. According to minimal criteria for diagnosis of RLS number of patients considered as positively responded to all four questions was 15 (%34.1); however number of real patients determined on neurological examination was 31 (%70.5). In the same group difference between RLS prevalence determined according to these two criteria was statistically significant (P = 0.001).

Conclusion: All patients answered positively to at least first question for diagnosis of RLS, which affects quality of life, morbidity and mortality in HD patients through sleep disorders, should be evaluated in detail.

Key words: Restless leg syndrome, hemodialysis

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INTRODUCTION

Restless legs syndrome (RLS) is a disorder of lower extremities characterized by marked discomfort and refers to symptoms of spontaneous, continuous leg movements associated with unpleasant paresthesias. The symptoms occur only at rest and cause sleep disorder (1). RLS is common among dialysis patients with a reported incidence of 6.6 to 58.3 percent (2-8). In dialysis patients with restless leg syndrome quality of life is decreased and risk of mortality is increased, this adds to importance of the disorder (9).

Restless leg syndrome is a clinical diagnosis rests on subjective symptoms in the presence of a normal neurological examination. The International Restless Legs Study Group proposed the following four features as minimal criteria for the

diagnosis of RLS: 1- desire to move the extremities, often associated with discomfort and restlessness, 2- occurrence or worsening of symptoms at rest, 3- relief of symptoms completely or partly during activity, 4- occurrence or worsening of symptoms only in the evening or at night (10). However in end-stage renal failure peripheral neuropathy related to uremia is frequently seen (12). Consequently neurological examination is also important in hemodialysis patients for diagnosis of RLS. In fact Crignotta et al reported in their studies that in patients with chronic dialysis, sensitivity and specificity of diagnostic criteria of International Study group was low (7). However this is the only study in this patient group. Our purpose in this study is to investigate the significance of minimal criteria of International RLS Study

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Table 1. Demographic characteristics and laboratory findings of patients*

Variables	RLS positive (n:31)	RLS negative (n:13)	Total (n:44)	p value
Male no.(%) [†]	15 (48.4)	5 (38.5)	20 (45.5)	0.546
Age (year)	51.4±16.4	53.0±15.8	51.9±16.1	0.780
Dialysis duration (month) [‡]	24 (6-180)	40 (6-190)	25 (3-190)	0.471
BMI (kg/m ²) [‡]	21.9 (16.0-31.3)	21.7 (16.9-28.4)	21.8 (16.0-31.3)	0.938
Hb (g/dl)	10.1±1.7	10.4±1.5	10.2±1.6	0.589
Creatinin (mg/dl) [‡]	8.2 (2.7-14.6)	8.1 (6.9-12.2)	8.1 (2.7-14.6)	0.252
CaxP (mg ² /dl ²)	42.2±15.4	47.9±11.8	43.9±14.6	0.241

* All parameters were shown as mean values (SD) and t-test was used if not mentioned an other method.

[†] Ki-square test was used.

[‡] Parameters were shown as average values (min-max) and Mann-Whitney U test was used.

BMI; body mass index, Hb; hemoglobin, CaxP; calcium phosphorus product

Group for the diagnosis of RLS in hemodialysis patients in our district.

MATERIALS AND METHODS

We have conducted our study in three dialysis units in city center of Afyonkarahisar. In these dialysis units 68 hemodialysis patients have fulfilled informed consent forms. Socio-demographic characteristics and laboratory values of patients were provided from hospital registries and measurements in last month were used.

We investigated each of the criteria of International RLS Study Group for the diagnosis of RLS in each participant. Twenty four patients replied the first question negatively, RLS was not considered in these patients, so other three questions were not asked and questionnaire was finished. Forty four hemodialysis patients replied the first question positively, questionnaire for minimal criteria for the diagnosis of RLS including 4 questions was completed and neurological examination was planned. All patients were examined by the same neurologist.

Table 2. Distribution of prevalence of patients diagnosed as RLS on neurological examination

Questionnaire Results	Patients with RLS, n(%)	p
+1 (n:15)	10 (66.7)	0.667
+2 (n:4)	2 (50.0)	
+3 (n:10)	7 (70.0)	
+4 (n:15)	12 (80.0)	

+1: Positively respondents to only first question.

+2: Positively respondents to only first question along with one other question.

+3: Positively respondents to only first question along with two other questions.

+4: Positively respondents to all questions.

A questionnaire with additional 12 questions including clinical specifications of leg complaints and questioning relations between these complaints and sleep was applied. Subsequently, patients those have RLS according to questionnaire of 4 questions and gold standard neurological examination was studied.

SPSS 10.0 packet program was used for statistical analysis. All parameters were summarized by descriptive statistics. In comparison of continuous parameters in groups with or without restless leg syndrome T-test or Mann-Whitney U tests were used and for categorical comparison Chi-square test was used. To compare prevalence of RLS in the same study group according to questionnaire and neurological examination McNemar test was used. P values <0.05 were considered as statistically significant.

RESULTS

Among 44 (20 men, 24 women) hemodialysis patients mean age was 51±16.1 years and median dialysis period was 25 months (range 3-190 months). Socio-demographic characteristics and laboratory findings of patients were shown in Table 1. In neurological examination of these patients answered positively to first question of questionnaire including minimal criteria for diagnosis of restless leg syndrome 31 (%70.5) patients were accepted as RLS. Between patients with or without restless leg syndrome according to neurological examination, there were no significant differences for age, dialysis period and other characteristics (Table 1).

According to answers on questionnaire, patients were classified as positively respondent to first question along with one

other question, positively respondent to first question along with two other questions and positively respondent to all questions. Distributions of patients diagnosed as RLS on neurological examination in each group were shown in Table 2. There were no significant differences between RLS prevalence in groups ($p=0.667$).

According to minimal criteria for diagnosis of RLS number of patients considered as positively responded to all four questions was 15 (34.1%); however number of real patients determined on neurological examination was 31 (70.5%). In the same group difference between RLS prevalence determined according to these two criteria was statistically significant ($p = 0.001$).

DISCUSSION

RLS is frequently seen in chronic renal failure and hemodialysis patients. In diagnosis of RLS, easy and practical minimal criteria of International RLS Study Group were used. In studies with hemodialysis patients, prevalence of RLS was reported between 6,6% and 58,3% according to these criteria (2-8). In our study including 68 hemodialysis patients 22% of patients were diagnosed as RLS.

Even though minimal criteria of International RLS Study Group is frequently used for diagnosis of RLS in hemodialysis patients, Crignotta et al have shown that these criteria were not reliable for diagnosis of RLS in hemodialysis patients (7). In this study, in patients positively responded all four questions sensitivity and specificity of these criteria were %44.7 and %81.6 respectively. Sensitivity and specificity of these criteria were also low in patients positively responded to one, two or three questions. There is no other study investigating significance of minimal criteria of International RLS Study Group for diagnosis of RLS in hemodialysis patients.

When the distribution of patients diagnosed according to minimal criteria of International RLS Study Group and neurological examination was concerned, it was seen that the proportion of patients diagnosed as RLS on neurological examination was 2 times higher than the proportion of patients diagnosed as RLS on questionnaire (70,4% and 34,1% respectively). The reasons for the lower proportion of RLS diagnosis based on minimal criteria may be mild complaints and complaints not considered seriously by patients. Consequently, real RLS patients might erroneously assessed on questionnaire

and RLS diagnosis might be failed. RLS was diagnosed according to the neurological examination in 66% of patients answered positively only to first question, in 50% of patients answered positively to 2 questions, in %70 of patients answered positively to 3 questions and %80 of patients answered positively to all four questions. This result showed that minimal criteria of International RLS Study Group might give false negative and false positive results in HD patients for diagnosis of RLS.

Twenty percent of patients those answered positively to all four questions on questionnaire have not been diagnosed as RLS on neurological examination; the reason for this might be any other leg complaints such as paresthesias, pain, itching, cramps and peripheral neuropathy in these patients. This might lead to false positive RLS diagnosis.

In our study we confirmed that RLS has more frequently seen in HD patient group. In these patient groups, minimal criteria of International RLS Study Group frequently used for RLS diagnosis were shown to cause false negative and false positive results as in study of Crignotta et al. Based on questionnaire, in 31.4% of 44 patients RLS was diagnosed however on neurological examination %70.5 of these patients RLS was diagnosed. Therefore, we concluded that patients positively responded at least first question of minimal criteria of International RLS Study Group should also be assessed for RLS in detail.

The limitation of the present study was that we excluded the patients answered negatively to first question which was the basic one of the questionnaire. Studies including neurological examination of all patients by a neurologist should provide stronger information in this subject.

In conclusion, a true diagnosis is very important for RLS as it affects quality of life, morbidity and mortality in HD patients through sleep disorders. Therefore as well as patients positively responded all four questions, all patients answered positively to at least first question also should be assessed for RLS in detail including gold standart neurological examination.

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