

Association of Sensory Polyneuropathy with Restless Legs Syndrome

Jawwad us Salam¹, Akhtar Ali², Umer Khan², Mohammad Masroor², Munir Hussain Siddique³ and Masood Hameed Khan²

ABSTRACT

Objective: To determine the prevalence of restless legs syndrome (RLS) in elderly patients with pure sensory polyneuropathy and correlate the findings with other clinical features.

Study Design: Observational / cross sectional study.

Place and Duration of Study: This study was conducted at the Dow University Hospital and Civil Hospital Karachi from 2013 to 2015.

Materials and Methods: 48 patients with Restless leg syndrome were evaluated in our multicenter, prospective study in 2 years for evidence of pure sensory neuropathy either they have demyelinating or axonal type.

Patients were evaluated according age at which symptoms started, the severity of symptoms, typical clinical findings and laboratory investigations.

Results: In 21 of the 48 (43.7%) patients, peripheral neuropathy was detected. Ten patients had pure sensory polyneuropathy and remaining have mixed sensory motor polyneuropathy. The pure sensory neuropathy group had comparatively intense and frequent symptoms of Restless leg syndrome. Some of them have family history of Restless leg syndrome. Patients with Mixed sensory motor polyneuropathy did not have similar strong symptoms of Restless leg syndrome and pain in legs.

Conclusion: The result suggests that Restless leg syndrome is triggered by painful paresthesias is primarily related with pure sensory neuropathy. Patients with mixed sensory motor neuropathy have less intense feature of restless leg syndrome. So the treatment options should be focused on medicines used for neuropathic pain.

Key Words: Neuropathy, Restless Leg Syndrome, elderly patients.

Citation of article: Salam J, Ali A, Khan, Masroor M, Siddique MH, Khan MH. Association of Sensory Polyneuropathy with Restless Legs Syndrome. Med Forum 2016;27(6):7-9.

INTRODUCTION

Restless legs syndrome (RLS), also known as Willis-Ekbom's disease, is a clinical syndrome described as a constant craving to move the lower limbs, often associated with paresthesias or muscle ache like sensations, restlessness¹. The relationship between RLS and peripheral polyneuropathy is a universal fact. The thought that patients with predominant sensory symptoms complain intense symptoms of RLS, impelled this study.

Majority of cases are idiopathic, though the disorder is sometimes hereditary and may be related to some of the medical disorders, like chronic kidney disease, hypothyroidism and iron deficiency anemia^{2,3}.

The pathophysiology of RLS is due to dysfunction of the dopaminergic system, perhaps on the level of striatal or spinal cord dopamine receptors, and the A-11

neuron group located in the hypothalamus⁴. These neurons control spinal excitability, variations of which in turn alter the sensory processing primarily of lower limbs afferents in brain stem^{5,6}.

RLS is a clinical diagnosis depends on the history of the patient. The six important features are: unpleasant lower limb sensations, sensations triggered by rest and comforted by activity, compelling motor restlessness, and the symptoms are more during the evening or at night, ensuing insomnia, and association with periodic limb movements of sleep (PLMS).⁷

Restless legs syndrome is responsive to various medicines, including levodopa, dopamine agonists, benzodiazepines, opioids, pregabalin and sometimes to carbamazepine⁸.

MATERIALS AND METHODS

This study was conducted at DUHS Karachi from January 2013 to March 2015. It was a cross sectional study. Forty eight patients were included in this study and sample size is calculated scientifically with confidence interval of 95%. The patients included in our study, were diagnosed cases of Restless leg syndrome.

Assessment and Data Collection: Data was collected on a pretested self-administered Performa after taking permission from ethical committee of the hospital. The

¹. Department of Neurology / Medicine², Dow International Medical College, Karachi.

³. Department of Medicine, Civil Hospital Karachi.

Correspondence: Dr. Jawwad us Salam, Assistant Professor of Neurology, Dow International Medical College, Karachi.

Contact No.: 0301-3509128

E-mail: akhtarali80@hotmail.com

Received: February 27, 2016; Accepted: April 03, 2016

purpose, risks and benefits of the study were explained to the patients and informed consent was taken.

The diagnosis of RLLS was established using the criteria defined by the International Restless Legs Syndrome Study Group: **1)** A desire to move the legs, related to unpleasant sensations in the legs; **2)** the urge to move or beginning or the worsening of unpleasant sensations during periods of inactivity, such as lying or sitting; **3)** the urge to move or unpleasant sensations that are partially or completely relieved by motor activity, such as walking or stretching the limbs; and **4)** the urge to move or unpleasant sensations that are worse in the evening or night than during the day or occur only in the evening or at night **5)** The above symptoms are noted associated with other medical conditions like myalgias, venous stasis, arthritis, leg cramps or habitual foot tapping.⁹

Polyneuropathy was diagnosed clinically according to published criteria¹⁰, along with the Electrophysiological test.

Data Analysis: The data was entered by two persons to control the bias and analyzed with the help of SPSS Program version 18.0.

Frequency and percentage was calculated for categorical variables like Age group, sex, and presence of metabolic syndrome. Confounding effect was controlled through stratification of age and gender.

RESULTS

Out of 48 patients 30(62.5%) were male and 18 (37.5%) were female (Table No: 1). Mean age was 42.23 ± 8.7 .

Out of 48 patients 21 have proven peripheral neuropathy clinically and electrophysiologically (Table No. 2). Other possible medical conditions related to restless leg syndrome were excluded through the investigations.

Ten patients(47.6%) had pure sensory neuropathy and remaining (52.4%) have mixed sensory motor neuropathy (Table no 3). The pure sensory neuropathy group had comparatively intense symptoms of RLLS, and they reported pain in their feet with RLLS more frequently. Some of the also have family history of RLLS. Patients with Mixed sensory motor polyneuropathy did not have similar strong symptoms of Restless leg syndrome and pain in lower limbs.

Table No.1: Frequency of Gender: Total No: 48

Gender	Frequency
Male	30 (62.5%)
Female	18 (37.5%)

Table No.2: Causes of Restless leg syndrome:

Causes	Frequency
Peripheral Neuropathy	21 (43.7%)
Other causes eg, Iron Deficiency, Hypothyroid etc	12 (25.0%)
Idiopathic	15 (32.1%)

Table No.3: Type of Neuropathy:

Neuropathy	Frequency
Mixed Sensory Motor	11 (52.4%)
Pure Sensory	10 (47.6%)

DISCUSSION

Restless leg syndrome is a common neurologic disorder, was first estimated to occur in 5 to 7 % in general population^{12,13} The diagnosis is mostly based upon patient's history and some investigations that exclude the other causes of leg cramps. The first criterion is continuous craving to move the lower limbs because of abnormal sensations.

Some studies have revealed that RLLS is more common in females. Berger et al. reported that RLLS affected females ten times as compare to males; while in our study it is more prevalent in males¹¹. In addition, the role of estrogen in women, or iron deficiency should be noted. Some other risk factors such as old age, senile neuropathy and drugs consumption including dopamine antagonists, tricyclic antidepressants, serotonin reuptake inhibitors, excessive caffeine or alcohol intake, and nicotine may aggravate the symptoms in males too.

The causes of restless leg syndrome are Iron deficiency, hypothyroidism, lumbosacral polyradiculopathy dopamine antagonist drugs or peripheral neuropathy^{13,14, 15}, similarly one fourth of total patients in our study have causes other than polyneuropathy.

Restless leg syndrome is frequently associated with peripheral polyneuropathy¹⁶. In our study 21 patients found to have mixed sensory motor polyneuropathy. In studies done in past restless syndrome can be associated with pure sensory polyneuropathy (Devigili, et al. 2008) and some time with sub clinical sensory polyneuropathy^{17,18}. While in our study about 47% of total patients with polyneuropathy have pure sensory neuropathy and it was observed that they have more intense paresthesias as compare to the others.

CONCLUSION

The result suggests that RLLS is triggered by agonizing paresthesias is mainly related to pure sensory neuropathy is not an uncommon cause. Patients with mixed sensory motor neuropathy have less intense feature of restless leg syndrome. The authors assume that the patients with the pure sensory neuropathy will respond well to neuropathic pain medications, for example pregabalin, rather than conventional therapy.

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

1. Richard PA, Christopher JE. Restless Legs Syndrome: A Review of Clinical and

Pathophysiologic Features. *J Clin Neurophysiol* 2001;18:128-147

2. Walters, AS, Hickey, K, Maltzman, J, Verrico, T, Joseph, D, Hening, W, et al. A questionnaire study of 138 patients with restless legs syndrome: the'Night-alkers'survey. *Neurol* 1996; 46: 92-95
3. Walters, AS. (International Restless Legs Syndrome Study Group). Toward a better definition of the restless legs syndrome. *Mov Disord* 1995; 10: 634-642.
4. Trenkwalder C, Paulus W, Walters AS. The restless legs syndrome. *Lancet* 2005;4: 465-475.
5. Connor JR, Wang X, Allen RP, et al. Altered dopaminergic profile in the putamen and substantia nigra in restless leg syndrome. *Brain* 2009;132.
6. Allen R. Dopamine and iron in the pathophysiology of restless legs syndrome (RLS). *Sleep Med* 2004;5:385-91.
7. Diagnostic Classification Steering Committee: International Classification of Sleep Disorders: Diagnostic and Coding Manual. Rochester, MN, American Sleep Disorders Association, 2011.
8. Winkelmann J, Schadrack J, Wetter TC, Ziegelnäsberger W, Trenkwalder C. Opioid and dopamine antagonist drug challenges in untreated restless legs syndrome patients. *Sleep Med* 2001;2:57-61.
9. Lívia A. Lopes, MD, Camila de M.M. Lins, MD, Vanessa G. Adeodato. Restless Legs Syndrome and Quality of Sleep in Type 2 Diabetes. *Diabetes Care* 2005;28(11):2633-2636.
10. Culebras A, Restless leg syndrome: diagnosis and treatment. *Rev Neurol* 2001;32:281-283.
11. Behzad Einollahi, Neda Izadianmehr. Restless Leg Syndrome: A Neglected Diagnosis. *Nephrourol Mon* 2014;6(5).
12. Allen RP, Walters AS, Montplaisir J, et al. Restless legs syndrome prevalence and impact: REST general population study, *Archives of Int Med* 2005;165(11):1286-1292.
13. Berger K, Von Eckardstein A, Trenkwalder C, et al. Iron metabolism and the risk of restless legs syndrome in an elderly general population—the MEMO study. *J Neurol* 2002;249:1195-9.
14. Allen RP, Earley CJ. Restless legs syndrome. A review of clinical and pathophysiologic features. *J Clin Neurophysiol* 2001;18:128-47.
15. Ondo WG, Jankovic J. Restless legs syndrome: clinical-etiologic correlates. *Neurol* 1996;47: 1435-41.
16. Lannaccone S, Zucconi M, Marchettini P, Strambi LF, Nemni R, et al. Evidence of peripheral axonal neuropathy in primary restless legs syndrome. *Movement Disorders* 2004;10:2-9.
17. Polydefkis M, Allen RP, Hauer P, et al. Subclinical sensory neuropathy in late-onset restless legs syndrome. *Neurol* 2000; 55: 1115-21.
18. Gemignani F, Vitetta F. Sensory profile in primary restless legs syndrome and restless legs syndrome associated with small fibre neuropathy. *Brain* 2010; 134:4.