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ORIGINAL ARTICLE

Epidemiology of restless legs syndrome in the Iranian population

Mohammad Reza NAJAFI, Mohammad SAADATNIA, Abbas SAFFARIFARD, Kiandokht KEYHANIAN and Vahid DAVOUDI

Neurology Department, Isfahan University of Medical Sciences, Alzahra Hospital, Isfahan, Iran

Abstract

As one of the most common neurological disorders, restless legs syndrome (RLS) is generally underdiagnosed and undertreated. Considering the lack of knowledge regarding the world-wide epidemiology of this common neurological disorder, we carried out a study to estimate the distribution of RLS in Isfahan, a city in the center of Iran. During the one-month period from 8 August 2007 to 8 September 2007, patients older than 18 years referred to eight neurology clinics were asked to fill out two questionnaires. The first questionnaire was derived from the diagnostic criteria for RLS outlined by the International RLS Study Group (IRLSSG). The second covered sociodemographic conditions and some other parameters concerning the clinical characteristics of RLS. Of the 2099 responding patients, 168 (8.00%) fulfilled all four IRLSSG diagnostic criteria for RLS. Their mean age was 43.4 ± 16.63 SD and the prevalence in women (69.64%) was higher than in men (30.36%), with a female-to-male ratio of 1.75. We estimated the RLS prevalence to be 8% in the population of patients referred to the neurology clinics. Moreover, the sex-specific prevalence was 9.06% in females and 5.75% in males, results identical to previous observations in western countries.

Key words: epidemiology in Iran, epidemiology in Middle East, restless legs syndrome, RLS, sleep disorder.

INTRODUCTION

Restless legs syndrome (RLS), also known as Ekbom's syndrome, is a common movement disorder occupying the limbs which generally occurs during sleep and quiet wakefulness.[1,2] As one of the most common neurological disorders, RLS is generally underdiagnosed and undertreated. In addition, affected populations show a large variation in the severity of symptoms.[3] RLS may reveal itself at any age, but genetic issues differ by the age of RLS development.[4,5] It may be idiopathic, or may result from abnormal conditions such as iron deficiency, pregnancy and renal disease.[6–11] Since the accompanying conditions are widely varied, it is possible that the underlying pathophysiology is multifactorial.[12] In the most well-known assessment of the epidemiological status of RLS, Ekbom suggested the rate of prevalence to be 5%.[1] Since then, several studies have been conducted to show the prevalence of RLS in the general population. Most have shown relatively high prevalence rates, but the actual numbers have varied considerably from one to another. In western countries, the prevalence of RLS has been found to vary from 5 to

Correspondence: Assoc Prof Mohammad Saadatnia, Isfahan Neurosciences Research Center, Isfahan University of Medical sciences, Isfahan, Iran. Email: mosaadatnia@yahoo.com

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15%, being more prevalent in elderly individuals.[13–16] There is also a gender-related distinction in RLS prevalence, with the rate among women estimated to be twice as high as the rate among men.[2,16] However, the prevalence of RLS in Asian countries is thought to be lower (0.1% to 3.19%) than in western countries, with the exception of a 7.5% prevalence in South Korea, based on a nationwide telephone survey.[17–20] It is also the case that these studies are not based on an authorized questionnaire.[17,19,21] Considering the lack of knowledge of the world-wide epidemiology of this common neurological disorder, we carried out this study to estimate the distribution of RLS in the central Iranian city of Isfahan.

METHODS

Through a cross-sectional study and a biphasic cluster sampling, we evaluated the prevalence of RLS in patients who were referred to eight neurology clinics. The clinics were randomly selected from all 28 active private and public neurology clinics in Isfahan. During the one-month period from 8 August 2007 to 8 September 2007, patients older than 18 years who were referred to these selected neurology clinics were asked to fill out two questionnaires. Patients with cognitive disorders such as dementia, with verbal disorders like dysphasia and delirium, and with decreased consciousness were excluded from the study. We also omitted subjects who were amputees. Patient with the diagnoses of headache, vertigo, depression, and anxiety enrolled in our study, and within the questionnaire we recorded whether the patients were pregnant or suffered from diabetes, hypothyroidism, uremia, anemia, venous insufficiency, multiple sclerosis, Parkinsonism or other types of neuropathy which may cause secondary RLS.

The first questionnaire was derived from the diagnostic criteria for RLS outlined by the International RLS Study Group (IRLSSG), which contains the following four conditions: (i) urge to move the legs, frequently accompanied by leg discomfort; (ii) symptoms become worse or begin during periods of inactivity; (iii) movement relieves the symptoms; and (iv) symptoms are more disturbing in the evening or night, compared the rest of the day, and sometimes only occur at these times of the day.[3]

Subjects who had all four of the above conditions were considered to have RLS, and were subsequently asked to answer the second questionnaire. The second questionnaire covered sociodemographic conditions and the following parameters concerning clinical characteristics of RLS: severity of symptoms, sleep disturbance patterns, family history in first-degree relatives, experience of symptoms in other parts of the body, and the time of the day at which patients suffer from symptoms. The severity of symptoms was evaluated by sorting into four separate groups: mild, moderate, severe, and very severe (according to the IRLSSG scale).[22] To estimate the quality of sleep in RLS patients, various sleep-disturbance patterns were recorded: difficulty in sleep initiation, repeated awakening, and feeling sleepless during the night. Furthermore, we studied whether patients experienced their symptoms just at bedtime, during the night, or throughout the day.

The questionnaire was designed to be answered by the patient, but whenever patients could not participate in the survey (because of illiteracy, for example, or visual problems), interviewers helped them. The interviewers were the secretaries of the eight clinics, who were taught how to interview the patients.

Informed consent was obtained from all participants and the study was approved by the Ethical Committee of the Faculty of Medicine, Isfahan University of Medical Sciences. Statistical analysis was performed using SPSS (Version 15).

RESULTS

Of 2099 patients referred to neurology clinics in Isfahan, 168 (8.00%) fulfilled all four IRLSSG diagnostic criteria for RLS. Their mean age was 43.4 ± 16.63SD and the prevalence in women (69.64%) was higher than in men (30.36%), with a female-to-male ratio of 1.75. The prevalence of RLS was highest in the group containing patients with ages 60–79 (*P*-value 0.001), though no patients older than 80 took part in the study. (Table 1)

Secondary RLS was estimated to make up 18.45% of the RLS cases (31 patients), and by omitting these cases the RLS prevalence was calculated to be 6.52%.

Table 1 Relative abundance distribution of restless legs syndrome (RLS) in different age groups

Sex	Age Group	Positive	Total
Female	18–39	51 (7.6%)	674
	40–59	31 (10.9%)	349
	60–79	28 (15.5%)	181
	80 and older	0	9
Male	18–39	25 (4.9%)	509
	40–59	16 (6.5%)	246
	60–79	10 (7.8%)	128
	80 and older	0	3

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Table 2 Sex distribution of severity of symptoms in patients with restless legs syndrome (RLS)

	Severity of symptoms			
Sex	Mild	Moderate	Severe	Very severe
Female	15.4%	45.3%	30.8%	8.5%
Male	23.5%	47.1%	25.5%	3.9%
Total	17.9%	45.8%	29.2%	7.1%

According to the IRLSSG scale, severity of symptoms was reported as "mild" or "moderate" in about two-thirds of patients. Although the "moderate" group was the largest group in both genders, females reported more "severe" and "very severe" symptoms than males (*P* value 0.001), as shown in Table 2.

36.1% of patients mentioned that they have experienced symptoms in other parts of the body, including the trunk, arms or neck. Furthermore, 53.6% had a positive family history (first-degree relatives) of experiencing the same symptoms. Sleep disturbance was as common as 94.6%, which was categorized as follows: difficulty in sleep initiation (61.6%), repeated awakening during night (26.2%) and feeling sleepless (12.2%). The time of day at which RLS symptoms occurred was not the same in all patients. 52.4% complained of symptoms beginning at bedtime, whereas 8.9% experienced them during the night while sleeping, and 38.7% suffered them throughout the day.

DISCUSSION

We estimated the RLS prevalence to be 8% in the population of patients referred to the neurology clinics, with sex-specific prevalences of 9.06% in females and 5.75% in males. To date, only a few studies have been conducted in non-western populations, which were notable due to the reports they made about the lower prevalence of RLS in Asia than in Caucasian populations.[23]

On the one hand, our study was limited because of the selection bias inherent in choosing patients referred to a neurology clinic as the study population, even though we tried to eliminate this problem by excluding patients with cognitive disorders or delirium. In addition, we enrolled patients with diagnoses of headache, vertigo, depression, and anxiety disorder which may not cause problems for interpreting the results. However, we estimated occurrence of the secondary type of RLS to be 18.45%.

On the other hand, epidemiological studies of RLS may encounter two basic limitations: first; patients suffering from RLS often do not seek medical care, so for studies based on outpatients or clinical patient populations this selection could lead to an underestimation; second, RLS is commonly misdiagnosed in consequence of its sensory-motor manifestations, which are frequently considered to be insomnia, stress, muscle cramps, arthritis, aging, or even psychological disorders. Furthermore, it is worsened by the absence of any classical objective findings such as nerve conduction studies or electromyography for helping with diagnosis.[24,25]

Females were more at risk of RLS development than males. The female-to-male ratio was 2.29, and this ratio was relatively consistent in all age groups in our study. Also, the severity of symptoms was higher in women and the elderly, the underlying explanation of which remains to be elucidated.

In our study, more than 94% of patients with RLS reported distress during sleep. Nevertheless, difficulty in sleep initiation and repeated awakening during the night were the first and second most prevalent complaints, respectively, which was in accordance with a previous study in Japan showing a strong association of RLS with difficulty during sleep initiation.[26] About half of the patients reported that their symptoms usually began at bedtime, but 38.7% suffered from leg disturbance while awake throughout the day.

Other parts of the body, including the trunk, arms or neck, were affected in 36.1% of patients, compared to the French population in which 15.6% of patients displayed symptoms in upper limbs.[16] Nevertheless, the frequency of disturbance in other parts of the body was not still clarified.

Within our findings, 53.6% had a positive family history in first-degree relatives of experiencing the same symptoms, which may confirm the genetic hypothesis demonstrated in previous genetic studies and is similar to the 40.6% reported to have a positive family history in the French study.[16,23]

However, further studies are needed to establish the prevalence of this common and distressing syndrome that has a great deal of impact on the patient's quality of life. The lack of a large population-based study is seen in the Asian population.

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