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Prevalence of Restless Legs Syndrome in a Georgian Primary Healthcare Setting: A Pilot Study

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Key Words
Epidemiology · Insomnia · Periodic limb movements of sleep · Sleep disorders

Abstract
Background: The prevalence of restless legs syndrome (RLS) is approximately 10% in Western Europe, but unknown in Georgia. This pilot study aimed to assess RLS prevalence in a focused Georgian population. ***Methods:*** An RLS epidemiological questionnaire [Allen et al.: Sleep Med 2003;4:101–119] was filled out by patients in five primary healthcare centers in two Georgian cities between March and September 2006. Additionally, questions related to RLS symptom onset, family history, treatment, sleep disturbance and history of iron deficiency were included. RLS diagnosis was based on an expert interview and an epidemiological questionnaire for RLS. ***Results:*** The total number of respondents was 115 (75% women/25% men); mean age was 47 years (range 18–85). Thirteen subjects (11.3%) reported RLS symptoms (9 women/4 men); mean age was 52 years (range 32–83). Eleven (85%) had a positive family history of RLS. All subjects had sleep disturbance and none had a history of known iron deficiency. ***Conclusion:*** The prevalence of RLS in a focused Georgian population is in line with other RLS epidemiologic studies performed in clinical settings. However, the prevalence rate of RLS in a studied group might not be representative for the general Georgian population. Further population-based epidemiological studies are required.

Introduction

The prevalence of restless legs syndrome (RLS) has been established to be approximately 10% in the Caucasian populations of Western Europe and North America [1–5]. It has been reported to be lower in some South-Eastern European countries like Turkey (3.2%) [6] and Greece (3.9%) [7]. These differences might be explained by variations in study methods, different study populations as well as genetic, racial and environmental factors.

Despite numerous epidemiological studies related to RLS, further exploration of its prevalence in the regions located between high and low prevalence areas would be of some interest. We sought to investigate the prevalence of RLS in a pilot study in Georgia, a small country located between Europe and Asia with a large southern border

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with Turkey. This study also enabled us to compare the sensitivity of a single diagnostic question [8] with the standard diagnostic criteria of RLS [9].

Methods

Ethical Issues

The study was approved by the internal review board at the Institute of Neurology and Neuropsychology, Tbilisi, Georgia. All study participants signed their informed consent.

Study Population and Survey Location

The study was performed in five primary healthcare centers in two cities in Georgia. Four healthcare centers were located in Tbilisi (capital) and one in Borjomi – a small town in central Georgia close to the Turkish border. The investigated population (study participants) was Caucasian with a heterogeneous genetic background, especially in the capital Tbilisi where inhabitants have a mixed, mainly Georgian, Armenian, Azerbaijani or Russian background.

Data Collection

Study participants were recruited randomly in primary healthcare centers by four neurologists (study team) specialized in movement disorders. The study was performed between March and September 2006. Study participants were interviewed by the study team after explaining the purpose of the study and acquiring the consent of the study participants.

The epidemiological questionnaire for RLS [9] was completed by the study team during the interview of study participants. The questionnaire was based on the current four essential diagnostic criteria of the International RLS Study Group [9]:

(1) Do you have unpleasant sensations in your legs (e.g. pins and needles, ants crawling, burning, pulling, worms moving, electric current, throbbing, scratching) combined with an urge or need to move your legs?
(2) Do these unpleasant sensations in the legs and urge to move occur mainly or only at rest (e.g. while sitting, lying)?
(3) Do these unpleasant sensations in the legs and the urge to move improve when you move your legs (at least as long as movement continues)?
(4) Are these unpleasant sensations in the legs worse in the evening or night than in the morning?

RLS diagnosis was based on an expert interview and an epidemiological questionnaire for RLS. A patient was categorized as 'reported RLS' if answers to all four questions were affirmative; if the answer to at least one of the four questions was negative, the patient was categorized as 'non-RLS'.

The questionnaire was translated into Georgian and country-specific wording was used to describe the unpleasant sensations usually experienced by RLS patients. The translation was validated by back translation (from the Georgian version back into English which was compared with the original questionnaire).

In addition to the above four diagnostic questions, a single diagnostic question [8] was also included in the questionnaire: when you try to relax in the evening or sleep at night, do you ever have unpleasant, restless feelings in your legs? (answer: yes/no).

Questions related to the onset of RLS symptoms, family history, treatment, sleep disturbance and history of iron deficiency were also asked.

Analysis and Statistics

We analyzed demographic data (sex and age), family history of RLS (first-degree relatives), sleep disturbances and iron deficiency in all study participants and compared RLS and non-RLS patients with regard to the aforementioned parameters.

Fisher's exact test was used for comparison of categorical data. The Mann-Whitney test was used as a nonparametric test for comparison of mean age in the RLS and non-RLS groups. $p < 0.05$ was regarded as significant.

Results

Study Participants

The total number of respondents was 115. The majority of subjects were women (86; 75%); the mean age was 47 years (range 18–85; SD ±15.7). The reasons for the visits to the primary healthcare centers were various: diabetes mellitus, arterial hypertension, headache, common flu and chronic bronchitis. The majority of respondents were recruited in Tbilisi (95/115; 83%) and the rest in Borjomi (20/115; 17%).

Comparison of Reported-RLS and Non-RLS Patients in the Study Group (table 1)

Reported-RLS and non-RLS patients in the study group did not differ with regard to sex, age and history of known iron deficiency. The rate of positive family history of RLS was significantly higher ($p < 0.0001$) in reported-RLS patients (11/13; 85%) compared to non-RLS patients (12/102; 12%). Sleep disturbance was present in all reported-RLS patients, whereas in non-RLS patients it was observed only in 14/102 patients (14%).

Prevalence of Reported RLS

The prevalence of reported RLS in the studied population was 11.3% (13/115). The majority of reported RLS patients were women – 9/13 (69%). The mean age of reported RLS patients was 52 years (range 32–83; SD ± 14.5). Eleven (85%) had a positive family history of RLS with the first-degree relative affected. The mean onset of reported RLS symptoms was during the third decade of life and the average frequency of reported RLS symptoms was 2–3 times a week. All but 2 subjects tried different treatments for reported RLS (e.g. venotonics, platelet antiaggregants, pain killers, hypnotics) with a short-term positive effect. However, none had been treated with drugs known to be efficacious for RLS, such as levodopa

Table 1. Comparison of subjects with reported RLS symptoms and without RLS

	Non-RLS (n = 102)	Reported RLS (n = 13)	Test	p
Sex (women/men)	77/25	9/4	Fisher	0.735
Iron deficiency (no/yes/unknown)	64/10/28	7/0/6	N/A	N/A
Mean age, years	47	52	M-W	0.301
RLS-positive family history (yes/no)	12/90	11/2	Fisher	<0.0001
Sleep disturbance (yes/no)	14/88	13/0	N/A	N/A

M-W = Mann-Whitney U test; Fisher = Fisher's exact probability test; N/A = not applicable (as in one of the cells the number equals '0').

or dopamine agonists. All suffered from sleep disturbance, and in 10 cases (77%) it was related to sleep initiation. None of the subjects had a known clinical history of iron deficiency.

Single Diagnostic Question

The specificity of the single diagnostic question was 38% (13/34); the sensitivity was 100%.

Discussion

In this pilot study, we found the prevalence of RLS in a focused Georgian population to be 11.3%, which is in line with other RLS epidemiologic investigations in Caucasian populations. This is in contrast to a study undertaken in Turkey – which shares a border with Georgia – where a surprisingly low prevalence of RLS has been reported (3.2%) [6]. This difference may be explained by genetic factors: Georgia had been isolated from Turkey for the last two centuries. We could also speculate that RLS prevalence was high in the studied population due to selection bias as the study population consisted of patients presenting at primary healthcare clinics. However, RLS diagnosis in our study was based on an expert interview which would minimize the number of conditions mimicking RLS. Nevertheless, the prevalence of RLS in Georgian primary healthcare setting is comparable to the RLS rates in similar populations of primary healthcare facilities in Europe (11.6%) [10, 11]. Similarly to other epidemiological studies [2, 12], we found RLS to be more than twice as frequent in women compared with men; this could be due to the higher representation of women among the study participants in general.

In this study, all patients with reported RLS symptoms suffered from sleep disturbances, which is not surprising given that they are part of the clinical presentation of RLS; other studies have also reported high rates (over 90%) of sleep disturbances, mainly insomnia [13, 14].

In our study population, we observed a high rate of a positive RLS family history (85%). Several studies have reported that approximately 50–60% of RLS patients have a positive family history. Genetic loci significant for the development of RLS have recently been identified, thereby suggesting a substantial genetic contribution in the etiology of this disorder [15–18]. We only interviewed index patients and did not have the possibility of contacting the relatives of these patients. This may explain the relatively high proportion of positive family history in our group: it has been reported that the rate of positive family history decreases if the relatives of index patients are interviewed and examined [16]. We acknowledge that the sample of our studied population was very small. This study was limited to the interview containing four diagnostic questions of RLS; the patients with reported RLS symptoms were not followed further for RLS differential diagnosis, for identifying secondary RLS, etc.

In our population, the specificity of the single diagnostic question was rather low – 38%: only 13 respondents of 34 who had answered the single question positively were RLS. In a different study, which validated single diagnostic question, its specificity (96.8%) and sensitivity (100%) were very high [8]. In Georgian, the single diagnostic question is very long and sounds complicated. It was not formally back translated for this study. These factors could contribute to its low specificity in this pilot study, which precludes further use of the single diagnostic question in epidemiological studies of RLS planned in Georgia.

Further population-based studies on the incidence and prevalence of RLS in Georgia will be of particular interest as numerous natural histories are expected due to the fact that dopaminergic drugs and particularly dopamine agonists have not yet been prescribed to RLS patients in Georgia. RLS is yet to be the subject for proper differential diagnosis and treatment in Georgia and it is hoped that research on RLS can also be established in the near future.

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