Tidsskriftet Tidsskrift for Den norske legeforening

Restless legs syndrome – a study from general practice

ORIGINAL ARTICLE

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BACKGROUND

The prevalence of restless legs syndrome (RLS) among adults in the general population is around 5–10 %. Few studies have been conducted on the prevalence among patients who consult their general practitioner. There are also few studies on associations between RLS and other common complaints such as irritable bowel syndrome (IBS), chronic fatigue (CF) and chronic muscle and back pain (CMBP).

MATERIAL AND METHOD

The study was conducted as a questionnaire survey at medical offices in Southern and Western Norway in the autumn of 2017 and spring of 2018, when patients waiting to see their general practitioner (GP) were invited to participate. A total of 2 634 people took part (62.2 % women, average age 49.6 years). The response rate was 86.8 %. Restless legs syndrome (RLS) was defined on the basis of international criteria. Associations between RLS and IBS, CF and CMBP were analysed by means of chi-squared tests and logistic regression.

RESULTS AND INTERPRETATION

The proportion of patients with RLS was 14.3 %. Of the patients with RLS, 44.8 % reported that their symptoms were moderately to very distressing, and 85.8 % that they did not use medication for it. The proportion of patients with RLS was significantly higher among patients with IBS (21.8 % versus 13.6 %, $p = 0.009$), CF (18.2 % versus 13.1 %, $p = 0.003$) and CMBP (23.2 % versus 12.2 %, $p < 0.0005$). GPs should be aware that many patients have RLS and that the condition is associated with other common complaints.

Main findings

The prevalence of restless legs syndrome among patients consulting their general practitioner was 14.3 %.

Around half of them reported substantial and frequent problems, but only a few used pharmacological therapy.

RLS was more prevalent among patients with other problems such as irritable bowel syndrome (adjusted odds ratio (OR) 1.73), chronic fatigue (OR 1.48) and chronic muscle and back pain (OR 2.06), compared to patients without these conditions.

The typical signs of RLS are prickling and uncomfortable sensations in the legs accompanied by an urge to move (1, 2). This urge to move arises when one is at rest and is relieved partly or wholly with movement. The urge to move also varies distinctly in the course of the day, with symptoms in the evening and at night, and not early in the day (2). Because of the association with evening and

night, RLS is regarded as a sleep-related movement disorder (2, 3). However, the condition is also classified as a neurological disorder, which often arises in adulthood and is a lifelong condition (1, 2).

Surveys in several Western countries indicate the prevalence of the diagnosis restless legs syndrome to be 5–10 % (1, 3, 4). In a 2005 Norwegian population survey, 14.3 % of adults met the criteria for RLS, and about half of them described their distress as moderate or severe (5). The majority of those reporting the problem are women, and prevalence increases with age (3). Although the condition is common, it often remains undiagnosed and untreated (3, 4, 6).

There is a higher prevalence of RLS in patients with kidney failure or anaemia or who are pregnant or use certain medications (3, 7, 8). The mechanisms underlying RLS are unknown, but impaired functioning of the dopaminergic system has been found (1). Impaired iron metabolism also appears to play a part (1, 8). Genetic factors are involved, and 40–50 % of the patients with this diagnosis know other family members with similar complaints (3, 8).

The treatment of RLS depends on the severity of the symptoms. In cases of slight or rare discomfort, non-pharmacological treatment is recommended. The symptoms are alleviated by movement, and massage of the leg musculature can also help. Good sleep hygiene is important (3, 9). The circadian rhythm should be as stable as possible. Caffeine-containing drinks should be avoided in the evening. Alcohol and nicotine can trigger or exacerbate RLS in predisposed patients. The disorder may also arise as an adverse reaction to some medications (such as antidepressants and antipsychotics), and a change of medication or the time of taking it may be advisable.

Pharmacological treatment is normally recommended for frequent and more severe distress. Iron supplement may be effective (9) and is recommended when ferritin levels fall below 50 µg/L (10). For many years, the first-line therapy for RLS has been drugs that stimulate the dopamine receptors in the brain (dopamine agonists) (3, 9, 11). These often prove very effective, and if they have no effect, the diagnosis should be reassessed. There are often few initial side effects, but one problem with dopamine agonists is waning efficacy and a risk of symptom augmentation over time. There are alternatives to dopamine agonists, the most relevant being alpha-2-delta ligands (gabapentin and pregabalin), and these drugs have also been proposed as first-line therapy for RLS (1).

Little is known of the prevalence of RLS in Norwegian general practice. A Norwegian study revealed that the prevalence of other sleep-related disorders, such as insomnia, is more than twice as high among patients at the general practitioner's (GP's) office compared with that in population surveys, because insomnia is more widespread among persons with other illnesses and disorders for which patients consult their GP (12). It is uncertain whether this also applies to RLS. It is also unclear whether this disorder is associated with other common complaints seen in general practice.

The aim of this study was therefore to investigate the prevalence of RLS amongst patients who consult their GP. We also wanted to study the severity, and whether patients used medications for their symptoms. In addition we

wanted to study whether the prevalence of RLS was associated with other common conditions about which patients consult their GP, such as irritable bowel syndrome (IBS), chronic fatigue (CF) and chronic muscle and back pain (CMBP).

Material and method

Data were collected at general practices in Western and Southern Norway that accepted sixth year medical students during their practice period from the University of Bergen in autumn 2017 and spring 2018.

In the study in question, each medical student was instructed to invite 20 consecutive patients in the waiting room to complete a one-page questionnaire. Apart from the fact that patients had to be over 18 years old, there were no inclusion or exclusion criteria. The patients were not informed in advance of the content of the questions on the form. The questionnaire (see Appendix) was handed out either by the student or by the medical office staff. Completed forms were returned to the student/staff in sealed envelopes. No direct personal identification data were collected.

In total, 150 students distributed 2 979 questionnaires. Each student distributed an average of 19.9 forms (range of from 11 to 28). 2 585 completed questionnaires were handed in, representing a response rate of 86.8 %. A further 115 questionnaires were submitted by seven students who did not report how many forms they had handed out. Of the total of 2 700 completed questionnaires, 66 were excluded because the patients were under 18 years old. The data material for the study therefore consists of a total of 2 634 responses. The questionnaire contained questions about age, sex, country of birth and education. The primary outcome in the study was RLS, the presence of which was defined according to international criteria (2) (Box 1).

Box 1 The questions that were used to diagnose restless legs syndrome, based on international guidelines (2). If the patient answers yes to all four questions, the criteria for the diagnosis have been met.

1. Do you have an urge to move your legs, usually associated with discomfort or an indeterminate prickling or crawling sensation in the legs?
2. If the answer is yes, does this urge start or increase when you are at rest, for example when you are lying or sitting?
3. Is the urge to move or are the uncomfortable prickling sensations absent or partly absent when you are moving, for example when you walk or stretch?
4. Is the urge to move or are the uncomfortable prickling sensations worse late in the day or at night than during the rest of the day?

Patients who responded yes to all four questions were diagnosed as having RLS according to the guidelines (2). Patients with RLS were asked to describe how distressing the urge to move was on a 4-point scale, while frequency was established by the patient reporting this on a 5-point scale (Appendix). The form included questions about the use of medication for RLS.

The patients also answered questions regarding the following complaints: CF, CMBP and IBS, on 5-point Likert scales (Appendix). The two questions on CF were taken from the Fatigue Questionnaire (13), and we chose these questions because they correlated best with 'chronic fatigue' in the control group in a previous study (14). If the patient answered 'over 6 months' to both questions, we defined their complaint as CF. The questions on CMBP have not been validated in earlier studies, but were selected on the basis of clinical judgement with a view to capturing extensive pain. We set the same requirement of duration here as for CF for the distress to be classified as chronic. The IBS questions were designed to identify patients with IBS according to the Rome IV criteria of 2016 (15).

The project was approved by the Regional Committee for Medical and Health Research Ethics (REK), with reference number 2017/961.

The statistical software package SPSS (version 27) was used for statistical analyses. Associations between RLS and different patient variables were analysed by means of chi-squared tests and logistic regression in univariate and regression analyses adjusted for age and sex. The level of significance was set at 0.05.

Results

Table 1 shows demographic data and the prevalence of RLS, IBS, CF and CMBP. The sample was 62.2 % female, and the average age was 49.6 years (range 18–95 years). A total of 89.6 % reported their country of birth as Norway, while the most common other countries of birth were Poland (26 persons), Sweden (18), Germany (17), Denmark (15) and Iceland (11).

Table 1

Demographic data and prevalence of restless legs syndrome among 2 634 included patients who consulted general practitioners in Southern and Western Norway in autumn 2017 and spring 2018.

Variable	No. (%)	Valid percentage[1]
Sex		
Female	1 634 (62.0)	62.2
Male	994 (37.7)	37.8
Data not available	6 (0.2)	
Age (years)		
18–29	456 (17.3)	17.4

Variable	No. (%)	Valid percentage[1]
30–39	441 (16.7)	16.9
40–49	412 (15.6)	15.8
50–59	419 (15.9)	16.0
60–69	448 (17.0)	17.1
70–79	333 (12.6)	12.7
80+	106 (4.0)	4.1
Data not available	49 (0.7)	
Country of birth		
Norway	2 359 (89.6)	90.1
Other countries	259 (9.8)	9.9
Data not available	16 (0.6)	
Education		
Primary and lower secondary	267 (10.1)	10.3
Upper secondary school	1 257 (47.7)	48.7
Tertiary education	1 056 (40.1)	40.9
Data not available	54 (2.1)	
IBS		
No	2 337 (88.7)	93.9
Yes	152 (5.8)	6.1
Data not available	145 (5.5)	
CF		
No	1 848 (70.2)	76.0
Yes	583 (22.1)	24.0
Data not available	203 (7.7)	
CMBP		
No	1 938 (73.6)	80.0
Yes	485 (18.4)	20.0
Data not available	211 (8.0)	
RLS		
No	2 134 (81.0)	85.7
Yes	355 (13.5)	14.3
Data not available	145 (5.5)	

[1]Incomplete questionnaires were excluded when calculating the percentage.

Of the participants with valid responses, 14.3 % met the diagnostic criteria for RLS, and 44.8 % of them reported that the symptoms were moderately or very distressing (Table 2). Of those with restless legs, 20.2 % reported that they experienced it 'daily' and 34.2 % that they experienced it '2–6 days a week'. A large majority (85.8 %) reported that they had not used medications for this discomfort, while 4.8 % and 8.5 % had used medications 'now and then' and 'daily', respectively.

Table 2

Severity of restless legs syndrome among 355 of 2 634 included patients who attended general practices in Southern and Western Norway in autumn 2017 and spring 2018.

Variable	No. (%)	Valid percentage[1]
Severity		
Not distressing	24 (6.8)	6.8
Slightly distressing	171 (48.5)	48.4
Moderately distressing	103 (29.0)	29.2
Very distressing	55 (15.5)	15.6
Data not available	2 (0.6)	
Frequency		
Never	1 (0.3)	0.3
Occasionally	85 (23.9)	24.2
1 day a week	74 (20.8)	21.1
2–6 days a week	120 (33.8)	34.2
Daily	71 (20.0)	20.2
Data not available	4 (1.1)	
Use of pharmacological drugs		
No	301 (84.8)	85.8
Yes, now and then	17 (4.8)	4.8
Yes, daily	30 (8.5)	8.5
Don't know	3 (0.8)	0.9
Data not available	4 (1.1)	

[1]Incomplete questionnaires were excluded when calculating the percentage.

There were significantly more women than men with RLS (Table 3). There was no clear correlation between age and having RLS. Nor was the condition significantly associated with level of education or country of birth. The percentage with RLS was significantly higher among patients with IBS, CF and CMBP than among patients without these conditions.

Table 3

Prevalence of the diagnosis restless legs syndrome among 2 634 included patients who consulted general practices in Southern and Western Norway in the autumn of 2017 or spring of 2018, by sex, age, education, country of birth, irritable bowel syndrome, chronic fatigue and chronic muscle and back pain.

Variable	No, n (%)	Yes, n (%)	*P*-value
Sex (n = 2 485)			0.036
Male	826 (87.7)	116 (12.3)	
Female	1 305 (84.6)	238 (15.4)	
Age (n = 2 472)			0.141
18–29 years	392 (89.1)	48 (10.9)	
30–39 years	360 (84.9)	64 (15.1)	
40–49 years	343 (86.2)	55 (13.8)	
50–59 years	331 (83.0)	68 (17.0)	
60–69 years	353 (83.6)	69 (16.4)	
70–79 years	262 (87.9)	36 (12.1)	
80+ years	79 (86.8)	12 (13.2)	
Education (n = 2 447)			0.514
Primary and lower secondary school	203 (83.2)	41 (16.8)	
Upper secondary school	1 016 (86.0)	165 (14.0)	
Tertiary education	876 (85.7)	146 (14.3)	
Country of birth (n = 2 477)			0.052
Norway	1 899 (85.3)	327 (14.7)	
Other countries	226 (90.0)	25 (10.0)	
Irritable bowel syndrome (n = 2 387)			0.009
No	1 935 (86.4)	305 (13.6)	
Yes	115 (78.2)	32 (21.8)	
Chronic fatigue (n = 2 328)			0.003
No	1 538 (86.9)	231 (13.1)	
Yes	457 (81.8)	102 (18.2)	
Chronic muscle and back pain (n = 2 325)			< 0.0005
No	1 629 (87.8)	227 (12.2)	

Variable	No, n (%)	Yes, n (%)	*P*-value
Yes	360 (76.8)	109 (23.2)	

Table 4 shows that patients with IBS had a greater probability of having RLS (adjusted odds ratio (OR) 1.73 (1.15–2.63)). Patients with CF also had a greater probability of having RLS (adjusted OR 1.48 (1.14–1.91)). The strongest association was that between CMBP and RLS (adjusted OR 2.06 (1.58–2.67).

Table 4

Unadjusted and adjusted logistic regression analysis with the diagnosis restless legs syndrome as a dependent variable among patients who attended general practices in Southern and Western Norway in autumn 2017 and spring 2018. OR = odds ratio, CI = confidence interval.

	Unadjusted analysis, OR (95 % CI)[1]	Adjusted analysis, OR (95 % CI)[2]
Sex (n = 2 (n = 2 485)		
Male	Reference	
Female	1.30 (1.02–1.65)	
Age (n = 2 472)	1.00 (1.00–1.01)	
Irritable bowel syndrome (n = 2 369–2 387)		
No	Reference	Reference
Yes	1.77 (1.17–2.66)	1.73 (1.15–2.63)
Chronic fatigue (n = 2 310–2 328)		
No	Reference	Reference
Yes	1.49 (1.15–1.92)	1.48 (1.14–1.91)
Chronic muscle and back pain (n = 2 308–2 325)		
No	Reference	Reference
Yes	2.17 (1.68–2.81)	2.06 (1.58–2.67)

[1]Separate unadjusted logistic regression analyses for each independent variable.

[2]Separate logistic regression analyses for each independent variable adjusted for sex and age.

Discussion

The percentage of patients in the study population who reported restless legs was 14.3 %, and half of them experienced moderate or severe distress. Every fifth patient reported daily distress. Only 13.3 % used pharmacological treatment to alleviate the distress. In addition, we found that the percentage with restless legs was higher among patients with IBS, CF and CMBP than among patients without such complaints.

Most studies in the Western world have found a restless legs prevalence of 5–10 % among adults (1, 3, 4). Our study from general practice shows a higher prevalence, which can be explained by the fact that patients who consult their GP generally have more health problems and symptoms than people who do not do so, and that there is an association between restless legs and other complaints. We found that the prevalence of restless legs was significantly higher among patients with common complaints such as IBS, CF and CMBP, consistent with such an interpretation. However, the prevalence of restless legs in our study was the same as that reported in a Norwegian population survey from 2005 (5). This contradictory finding can be explained by the fact that the diagnostic criteria were a little different in the older study. The fact that we found a higher prevalence of restless legs among patients with other common complaints points to a higher prevalence among patients in general practice than in the Norwegian population in general.

Many patients with restless legs in the study reported moderate or severe distress, and the majority reported that they experienced discomfort two or more days per week. A total of 20.2 % stated that they experienced discomfort every day. Nonetheless, only slightly more than 13 % of the patients used medications from time to time (4.8 %) or daily (8.5 %). This may be because patients had not taken up their problems with their GPs, that the GPs had not offered pharmacological therapy, or that the patients did not want this kind of treatment.

Other studies have also found that few patients receive pharmacological treatment (4, 7). Several studies reveal that knowledge about restless legs is limited among health professionals (4, 6, 7), and this may be a contributory factor. Dopamine agonists or alpha-2-delta ligands are recommended pharmacological treatment for RLS, and the effect is usually good initially but may wane (3, 11). Non-pharmacological measures are recommended for minor complaints, but in our study we found that many patients reported daily, severe distress, but did not use medications nonetheless. It is recommended that both patients and health personnel pay greater attention to RLS, as this diagnosis is clearly associated with reduced quality of life (4) and increased sickness absence (16).

Our study shows that the proportion of patients with RLS is markedly higher among patients with other common complaints than among patients without such complaints. This indicates the importance of being extra aware of RLS in patients with these conditions. The association between RLS and CF is not

surprising. Most patients with RLS sleep poorly (4, 17), and poor sleep is a known cause of physical and mental fatigue. The diagnostic criteria for RLS do not include a requirement regarding pain. Many patients report their distress as uncomfortable sensations rather than pain, but about half of patients with RLS nonetheless report that they experience painful prickling (2). Whether this can partly explain the association between RLS and CMBP is unclear. Other studies show a strong association between RLS and musculoskeletal pain (18). The association between RLS and IBS may be more surprising for clinicians, but a recently published systematic review and meta-analysis show a clear association between them (19). Visceral hypersensitivity is regarded as an important pathophysiological mechanism underlying IBS, and dopamine is one of a number of neurotransmitters involved in such sensitivity (20). Thus there may be overlapping pathophysiological mechanisms underlying RLS and IBS. RLS is associated with mental disorders such as depression (17). IBS (21), CF (22) and chronic pain (23) are also associated with mental disorders. It is therefore possible that the associations between RLS and IBS, CF and CMBP can be partly explained by comorbidity with mental disorders.

Our study has both strengths and weaknesses. One strength is the high number of patients and the high response rate. Earlier studies using the same method have also yielded a high response rate (12, 24). This shows that collecting data at general practices is a method that can provide good representativeness compared with studies where data are collected by telephone or by sending letters. A probable explanation for the high response rate is that a short questionnaire was used that was simple to complete while waiting for a consultation with the GP. Another strength was that the patients did not know in advance what sort of questions the form contained. This reduces selection bias.

Generalisability to other patients in general practice is regarded as high, with the reservation that our material contains few immigrants with a non-Western background.

One limitation is that the data are based on self-reporting, without a GP's clinical assessment. Definite diagnostics can naturally not be based on questionnaires alone, but are dependent on the GP conducting a clinical interview and often supplementary tests. Nor do we know anything about the reason for our subjects' consulting their GP. Another limitation is that we had no questions about mental disorders in this questionnaire. Many conditions other than IBS, CF and chronic pain are frequently seen at general practices. More studies are recommended on the relationship between RLS and somatic and mental disorders.

Conclusion

We found a relatively high prevalence of RLS among patients attending general practices. Many patients with RLS reported severe and frequent distress, but few used pharmacological treatment. The prevalence of RLS was significantly higher among patients who had IBS, CF or CMBP. It may be advisable to pay

particular attention to RLS in these groups. Whether underdiagnosing – and hence undertreatment – is a major problem, should be investigated in further studies.

We should like to thank the medical students and general practices for distributing and collecting the questionnaire forms. The article has been peer-reviewed.

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Publisert: 8 November 2021. Tidsskr Nor Legeforen. DOI: 10.4045/tidsskr.21.0333
Received 22.4.2021, first revision submitted 19.8.2021, accepted 20.9.2021.