

Restless legs syndrome in a primary contact setting: a case report

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Objective: *To describe the diagnostic features of a patient who presented to a chiropractor with restless legs syndrome (RLS), a common but often under-diagnosed condition.*

Clinical Features: *A 42-year-old male patient presented with twitching and deep pressure in the legs bilaterally; described also as an uncomfortable urge to move the legs that followed a circadian rhythm occurring in the evening. The symptoms were initiated after periods of rest and they were relieved by movement. Physical examination was non-contributory which is common in RLS except in secondary forms of the condition.*

Discussion: *The pathophysiology of RLS is still unknown but several treatments have been studied. Non-pharmacologic treatment options include education on improving sleep hygiene, decreasing alcohol and caffeine intake, moderate exercise and supplements. Pharmacological treatment options are available, with L-dopa being the most effective.*

Conclusion: *The symptoms of RLS were 65% resolved in the case presented in one month. Awareness and proper diagnosis by all primary contact practitioners is necessary for effective management of RLS.*
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KEY WORDS: restless leg, chiropractic, primary contact

But : *Décrire les caractéristiques diagnostiques d'un patient qui s'est présenté à un chiropraticien avec un syndrome des jambes sans repos (SJSR), une condition commune, mais souvent sous-diagnostiquée.*

Caractéristiques cliniques : *Un patient de 42 ans a présenté des secousses musculaires et une forte pression bilatérale dans les jambes. Il a également décrit une forte envie désagréable de bouger les jambes suivant un rythme circadien se produisant dans la soirée. Les symptômes ont commencé après des périodes de repos et ont été soulagés par le mouvement. Un examen physique s'est révélé non contributif, ce qui est commun avec le SJSR, à l'exception des formes secondaires de la condition.*

Discussion : *La pathophysologie du SJSR est encore inconnue, mais plusieurs traitements ont été étudiés. Les options de traitement non pharmacologique comprenant des renseignements pour l'amélioration de l'hygiène du sommeil, la réduction de la consommation d'alcool et de caféine, les exercices modérés et les suppléments. Il existe des options de traitement pharmacologique, L-dopa étant la plus efficace.*

Conclusion : *Les symptômes du SJSR ont été résolus à 65 % en un mois pour le cas présenté. La sensibilisation de tous les praticiens de soins de santé primaires et un diagnostic exact de leur part sont nécessaires à la gestion thérapeutique du SJSR.*
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MOTS CLÉS : jambe sans repos, chiropratique, soins de santé primaires

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Introduction

Restless legs syndrome (RLS) is a common sensorimotor disorder that can have a profound effect on sleep, cognitive function and quality of life.¹⁻³ The symptoms of this condition have been described for some time, but research and clinical interest has only increased in the recent years. Diagnostic criteria, based on the clinical interview questions, were developed in 1995 and modified in 2003.¹ Although RLS is common with a general population prevalence of 5–15%,⁴⁻⁸ it is frequently undiagnosed or misdiagnosed in primary medical settings.^{9,10} Studies have not been performed to determine the prevalence of RLS diagnosis in non-medical primary contact settings; nevertheless, it is essential that all primary contact practitioners be aware of this condition to ensure proper and efficient management. A case report of a patient presenting to a chiropractor in a multidisciplinary clinic is presented with a discussion of current diagnostic and treatment options.

Case Presentation

A 42-year-old male presented to a chiropractic clinic with a complaint of twitching in his legs. He reported nightly discomfort for the past two years. He noted that it occurred once he was in a semi-reclined supine position watching television in bed for a period of time. Other initiating factors were sitting on the chairlift when going skiing and sitting in the movie theatre for 2–3 hours. The discomfort was described as a “pressure” without pain or paresthesia, occurring more frequently in his right leg. This feeling occurred with an associated urge to move the limb that resulted in a twitch or the leg moving on its own if he did not move it voluntarily. He reported that it was difficult to describe the sensation except that it was a deep pressure. The presenting complaint sometimes caused him to wake up at night and roll over in bed. He denied progression of the condition except that he had noticed an increase in the frequency of symptoms. Relieving factors included shifting positions and “shaking out the leg.” The location was described to start in the buttocks and to “accumulate” down the leg. He denied having cold feet, oedema, erythema or cramps in the legs. He denied taking any medications.

Past medical history revealed that he had psoriasis, a slightly elevated blood pressure and an appendectomy. He reported mild low back pain but no other medical con-

ditions and no diabetes in the family. He had prior chiropractic treatment directed at the psoas muscle and sacroiliac joints. His lifestyle included skiing on weekends occasionally; otherwise, he described his lifestyle as mainly sedentary. He had a 15 pack-year smoking history but had been a non-smoker for the past 12 years.

On physical examination, he had a normal gait, tandem gait and heel- and toe-walking bilaterally. Romberg’s test was unremarkable. Upper and lower limb neurological examination was within normal limits with no loss of vibration sense in the big toes and a down-going plantar reflex bilaterally. Calf girth was equal bilaterally. The cranial nerve screen was unremarkable. Straight leg raise did not produce any nerve root tension signs and the Herron-Pheasant test produced no changes in the Achilles reflexes.

The patient was referred to his medical doctor for further investigation and management. He was lost to follow-up and no information was obtained on the medical treatment administered. No treatment was provided by the chiropractor. The patient also self-initiated naturopathic therapy two weeks after initial presentation. The naturopathic treatment was based on a dietary assessment and included magnesium supplementation and dietary advice. He reported that after taking magnesium supplements, decreasing coffee and increasing protein intake, his leg symptoms improved approximately 65% at the two week follow-up.

Discussion

Restless legs syndrome is a sensorimotor disorder characterized by the urge to move the legs.¹ It is common in the general population with a prevalence of 10–15% that increases linearly with age⁴⁻⁸ and has a female preponderance.^{3-6,8} The exact pathophysiology of this condition is still largely unknown but theories and new knowledge are developing with the recent increased research interest. While studies have demonstrated a lack of awareness among primary medical practitioners,^{9,10} 65% of patients with RLS also reported using complementary and alternative services in one report.¹¹ Although studies have not determined the prevalence of RLS awareness within other health care disciplines, it is important that all primary contact practitioners be aware of this common disorder.

Diagnostic Criteria

Diagnosis of restless legs syndrome is based on a set of

Table 1 *Diagnostic Criteria for Restless Legs Syndrome (RLS) developed and modified by the International RLS Study Group¹*

Essential Diagnostic Criteria of RLS	
1	An urge to move the legs, usually accompanied or caused by uncomfortable and unpleasant sensations in the legs (sometimes the urge to move is present without the uncomfortable sensations and sometimes the arms or other body parts are involved in addition to the legs)
2	The urge to move or unpleasant sensations begin or worsen during periods of rest or inactivity such as lying or sitting
3	The urge to move or unpleasant sensations are partially or totally relieved by movement such as walking or stretching, at least as long as the activity continues
4	The urge to move or unpleasant sensations are worse in the evening or night than during the day or only occur in the evening or night (when symptoms are very severe, the worsening at night may not be noticeable but must have been previously present)
Supportive Clinical Features of RLS	
1	Positive family history
2	Response to dopaminergic therapy (L-dopa and agonists)
3	Periodic limb movements (during wakefulness or sleep)
Associated Features of RLS	
1	Natural clinical course (chronic, progressive; usually insidious early-onset, more abrupt/severe late-onset)
2	Sleep disturbance (common major morbidity, often the reason people seek help)
3	Medical evaluation/physical examination (generally non-contributory except in 2° RLS)

symptoms identified through the clinical interview. The International Restless Legs Syndrome Study Group (IRLSSG) has recently updated the criteria for restless legs syndrome (see Table 1).¹ The first of four essential criteria include the urge to move the legs. The patient in this case report presented with the complaint of having a discomfort in his legs that requires him to move in order to experience relief. The sensation would occur most consistently once in bed watching television in a semi-reclined supine position for a period of time. Without voluntary movement to relieve the sensation, his legs would move involuntarily. The second, third and fourth essential criteria include the discomfort occurring at rest, at night or evening, and relief occurring with movement, as this patient experienced. Although it is more common in the

lower limbs, the symptoms of restless legs syndrome can occur in the upper limbs and very rarely in the torso; therefore, more appropriate terminology would be restless limbs syndrome.^{12,13} Patients often experience difficulty describing their symptoms but commonly they describe them as deep in the leg and having a sense of movement within the leg. Some of the other terms often used to describe the sensation include creepy-crawly, ants crawling, jittery, pulling, worms moving, electric current and soda bubbling in the veins.¹ The location of the sensation in the leg and the progression patterns vary considerably among patients.¹

While historical interview questions are diagnostic of RLS, special investigations may contribute to the clinical presentation but none have been found to be necessary or

conclusive in the diagnosis of RLS.¹⁴ Along with the essential criteria, the IRLSSG has developed supportive and associated clinical features (Table 1). In this patient's case, he was not questioned about the supportive clinical features that would help resolve any diagnostic uncertainty. Supportive clinical features include a positive family history, response to dopaminergic drugs and periodic limb movement.^{1,15,16} A positive family history with an autosomal dominant inheritance¹⁷ is common and should be assessed in insidious early-onset cases of RLS. Late-onset RLS is less associated with a positive family history and more with secondary causes of the disorder.^{15,16,18} The practitioner should inquire about previous therapies and response to low-dose dopaminergic drugs since that has been found to be supportive of the RLS diagnosis.^{1,19} Controlled studies have shown that low-dose dopaminergic medications improve both sensory and motor symptoms of RLS at least initially but this response is not maintained universally and needs to be further established through research.^{1,21,22} Finally, periodic limb movements may be present during wakefulness or sleep; therefore, the patient should be asked about his/her awareness of the presence of these movements or the awareness of his/her partner of kicking/moving during sleep.

The IRLSSG also developed associated features that may not support the diagnosis but are often present in patients with RLS and that the practitioner should inquire about. In the presented clinical case, the patient started experiencing RLS symptoms around the age of 40 with a more insidious onset. Patients that present with an onset after 50 years of age often experience more abrupt, severe symptoms and co-morbidities or disorders resulting in secondary RLS.^{1,3,6,18} The patient did not complain of sleep deprivation, in this case, but his symptoms did delay his time of sleep onset. Sleep-related symptoms are often the presenting complaint in many patients.^{9,10}

The physical examination is often non-contributory in patients with RLS.^{1,14} Only the presence of comorbid or secondary causes can contribute to the diagnosis of RLS when based on the physical examination and special tests. The patient in this case presented with all the associated features of RLS including an insidious early onset, a delay in sleep onset and a non-contributory physical examination. Diagnostic criteria based on expert opinion have also been developed for special populations that

may not be able to verbally describe their symptoms, including children and cognitively-impaired elderly.¹

Differential Diagnoses

Restless legs syndrome can be both primary, with an insidious onset, and secondary occurring due to the presence of another condition. The causes of secondary RLS and symptoms associated with differential diagnoses should be identified in the clinical interview or with diagnostic testing. Conditions found to be associated with or causing secondary RLS include iron deficiency, pregnancy, end-stage renal disease, neuropathies, diabetes, rheumatoid arthritis and Parkinson's disease.^{3,6,13,18-22} RLS symptoms due to these conditions usually resolve with the treatment of the contributing conditions.²¹ Management and/or exclusion of these secondary conditions may warrant a referral to the patient's primary medical practitioner.

Several conditions may mimic the symptoms of RLS and need to be differentiated from RLS. These differentials may be excluded if they do not satisfy all four of the essential diagnostic criteria or have other exclusive features. Nocturnal muscle cramps are defined by a characteristic discomfort in the legs associated with locally-contracted muscles that may satisfy all four of the essential clinical features but they are usually intensely painful, occur in discrete bouts and are relieved subsequently without voluntary movement.^{14,21} In contrast, the RLS symptoms are more diffuse, less painful and require voluntary or involuntary movement of the limb for relief.

Myoclonus also needs to be differentiated from RLS. It is an involuntary, short, muscle twitch in a body segment. Different types of myoclonus can occur during the transition from wakefulness to sleep and during sleep but they are not associated with the irresistible urge for movement and they can have physical signs if associated with spinal cord lesions.²¹

Positional discomfort or ischemia in the limbs is associated with specific positions that may compress nervous tissue or vasculature and are not associated with the circadian rhythm of symptom appearance.^{14,21} Moving toes painful leg syndrome has pain as the dominant symptom; it is not aggravated by rest or suppressible by movement, and the involuntary toe flexion/extension tends to disappear in sleep.²¹ Habitual limb jiggling or shaking does not follow a circadian rhythm and the urge to move is not associated with an intense discomfort.¹⁴

Multiple sclerosis has associated spasticity that increases with inactivity but it is not rapidly reversed with movement.²³ The location of dysesthesiae resulting from multiple sclerosis differs from RLS; they are mostly found around the ankles. They are also not associated with the urge to move and are more constant than in RLS.²³ Furthermore, multiple sclerosis may be a secondary cause or a common comorbidity of RLS based on the findings that RLS is prevalent in patients with multiple sclerosis.^{23,24} Hypotensive or neuroleptic-induced akathisia is a disorder that includes the urge to move but it is not worse in a supine position, it is associated with a generalized inner restlessness and it does not disturb sleep or occur in a circadian rhythm. The symptoms appear more quickly with the aggravating position than in RLS and they are associated with other symptoms of hypotension or extrapyramidal signs with neuroleptic use.^{18,21,25} Peripheral neuropathy or radiculopathy symptoms in the legs will have a positive physical examination, no circadian rhythm, only positional relief of symptoms and no urge to move the limb.²¹ Periodic limb movements and the related syndrome often accompany RLS and are supportive of it but, on their own, do not satisfy all four of the essential clinical features.

Affective disorders such as anxiety and depression may also be associated with RLS. Individuals with anxiety may experience motor restlessness but it would not occur only at rest and it can often be accompanied by sympathetic overactivity, including excessive sweating and palpitations, not present in RLS. Depression may be a consequence of RLS and it needs to be identified.^{3,14,21} Arthritic, muscular or vascular disorders may have a different circadian appearance or not have one at all. They will likely have other clinical findings on physical examination and laboratory testing specific to each condition that is exclusive of RLS.²¹ Presence of symptoms other than the features listed in the diagnostic criteria and the presence of signs on physical examination should alert the practitioner to consider RLS differential diagnoses.

Management

An accurate diagnosis of restless legs syndrome is necessary in all primary contact settings in order to ensure proper management of the condition. The pathophysiology of this condition is still largely unknown and therefore, evidence of effective therapy is still being ac-

cumulated. Two Cochrane protocols are in the process of reviewing the existing literature on pharmacologic therapies.^{26,27}

Non-pharmacologic management of RLS may include education on improving sleep hygiene, avoiding caffeine and alcohol and maintaining moderate exercise daily.^{19,22,28,29} Controlling the sleep-wake cycle by maintaining regular sleep patterns and regular, undisturbed time in and out of bed may be helpful since sleep disturbance will contribute to more severe RLS symptoms and other sleep-related symptoms such as a lack of concentration, malaise and general decrease in normal function.^{2,22} Avoiding tea, caffeine and alcohol, and participating in moderate exercise and pre-sleep relaxation techniques also contributes to improved sleep hygiene and, in turn, attenuates RLS symptoms.^{21,22,28} A Cochrane protocol is also currently in progress to review the evidence on acupuncture as a treatment for restless legs syndrome.³⁰

Secondary causes of RLS need to be identified and treated accordingly. Non-medical practitioners may play a role in identifying dietary mineral and vitamin deficiencies with recommendations on supplement therapy. Iron deficiency should be treated,^{21,22,28,31,32} possibly even if the ferritin levels are normal.³³ Evidence for other vitamin and mineral deficiency treatments is limited but a dietary assessment should be part of the RLS assessment including magnesium deficiency assessment since some evidence exists that there may be an association with RLS that could be effectively treated.³⁴ Referral to the primary medical practitioner is necessary for co-management of other forms of secondary RLS.

Most of the available evidence is focused on pharmacologic effectiveness and it shows that dopaminergic medications in low doses are most effective; other medications are also used as adjunct therapy.^{19,21,22,28} No scientific literature was found on the treatment of RLS using a search with chiropractic-specific terms. A search in Medline, CINAHL, Index to Chiropractic Literature, AMED, and the Biomedical Reference Collection using MeSH terms or keywords "Chiropractic," "Manipulation, Chiropractic," "Restless legs" and "Restless Legs Syndrome" in combination yielded no results. Scientific literature on the topic of chiropractic management of restless legs syndrome is encouraged.

The patient in this case report had a good outcome and he attributed it to the naturopathic intervention including

magnesium supplements and dietary modifications. Without information on the medical treatment administered, it is not possible to determine which intervention may have contributed to the positive outcome since multiple concurrent interventions may have been administered.

Conclusion

Many studies have been published on the epidemiology of RLS and the pathophysiology is slowly being determined as literature on different contributing factors is produced. Further randomized, controlled studies should be performed to determine the effectiveness of pharmacologic and non-pharmacologic therapies for different severity levels of RLS. Future studies need to establish the exact pathophysiology and determine the most effective management strategies in all severities of the condition.

Effective management of RLS depends on the awareness, appropriate exclusion of differential conditions and a correct diagnosis by the primary contact health practitioner. The diagnosis is based on the clinical interview questions and the absence of signs on physical examination as well as symptoms attributable to other conditions.

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