

## Alleviation of Severe Restless Legs Syndrome (RLS) Symptoms by Cigarette Smoking

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Cigarette smoking is in general considered an aggravating factor for restless legs syndrome (RLS). The author presents a case in which cigarette smoking has produced for many years a consistent and effective alleviation of RLS symptoms.

**Keywords:** Restless legs syndrome, RLS, cigarette smoking, nicotine, Parkinson disease

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Smoking and drinking coffee, have generally been considered to aggravate restless legs syndrome (RLS) symptoms; and thus, quitting smoking and avoiding drinking coffee have been included in the health treatment recommendations to RLS patients.<sup>1</sup> However, the relationship between smoking and RLS is still uncertain. In 1985, Mounfield JA<sup>2</sup> described in a case report the relief of RLS symptoms one month after abrupt smoking cessation in a 70-year-old woman who had smoked 25 cigarettes /day for about 50 years.

Lavigne et al.<sup>3</sup> in a nationwide survey of 2,019 Canadian adults found no differences in RLS prevalence or RLS symptoms and periodic leg movements (PLMS) sleep indices between smokers and nonsmokers patients and stated that “it appears that cigarette smoking does not influence RLS/PLMS.” Moreover, in a recent epidemiological study of the Sleep Heart Health Study, searching for the association between RLS and cardiovascular disease in 3254 adults,<sup>4</sup> no differences were observed in the percentages of current and former smokers between subjects with or without RLS. However, others<sup>5</sup> have found a higher incidence of smokers in RLS patients, and recently, an increased prevalence of nocturnal smoking was found in 100 RLS patients in Northern Italy.<sup>6</sup>

### REPORT OF CASE

A 77-year-old woman has been suffering from restless legs syndrome (RLS) for more than 4 decades. The severity of the syndrome increased during the last 10 years. From the beginning until the present, she could not cover her lower legs with anything, included the sheets, because of very disagreeable sensations. Thus, she sleeps with her legs uncovered, independent of room temperature. For many years she has avoided going to movies, theater, and concerts because of her symptoms. At first she tried to get used to it; however, when symptoms became worse, she consulted several physicians, who did not know or did not understand the issue that she was talking about. Others even stated that this could be a psychosomatic syndrome and suggested a psychiatric evaluation.

When symptoms aggravated she was looking for different ways to obtain relief and found some short-term alleviation in putting her legs on a cold surface, or applying cold water. Also, the application of a cold wet towel on her lower legs would also produce short relief of symptoms.

She has never been a heavy smoker. She used to smoke 3-4 cigarettes for pleasure, but surprisingly she found out, that smoking a cigarette provided a partial but significant alleviation of RLS symptoms. During the last years she has been managing these disagreeable symptoms mainly by smoking a cigarette whenever the severity of the disturbing sensations increased, usually in the afternoon hours but mainly in the early evening and night. The relief of symptoms with smoking lasts about 20-30 minutes, with a decrease in the severity of the symptoms. Today she smokes about 5-7 cigarettes /day, most of them from 19:00–01:00 hours, the worst hours of the day. In order to improve the quality of sleep, but mainly to avoid awakenings and subsequent inability to return to sleep, she goes to bed at 01:00; she wakes up between 05:00 and 06:00 due to the unbearable legs sensations and the urge to walk around. This patient clearly met the four essential criteria for RLS.<sup>7</sup> There was no family history of RLS; her parents and brother did not complain about this disease. Some years ago she had a neurological examination without positive results.

For many years she has been taking Flunitrazepam (Rohypnol), fortunately the same dose (2 mg) that according to her is her salvage. Up to now, she has not been offered a polysomnographic evaluation.

In the past years, although she was in general reluctant to use other drugs, she tried few medications traditionally used to relieve this condition, but without good results. This was the case with Clonazepam some years ago and lately of Ropinirole. Clonazepam was stopped after a few days because she got very sleepy during daytime hours. Ropinirole gave a nice improvement during the first weeks, but she felt terribly tired and groggy. Later, she felt a need to increase the dose from 0.25 to 0.5 and even 1.0 mg, but this escalation did not produce major improvement. On the contrary, the severity of the symptoms worsened, affecting also the arms. In addition, the appearance

of the symptoms began much earlier, frequently in the early afternoon hours in comparison to the regular evening time. Because of this augmentation of symptoms and her unpleasant fatigue, she stopped this medication and struggled to manage her RLS symptoms with cigarette smoking.

## DISCUSSION

The consistent and long-term improvement of RLS symptoms by cigarette smoking of this case report is of interest. The mechanism responsible for the alleviation of severe RLS symptoms by smoking is unclear. However, similarly to what is suggested for Parkinson disease (PD), the positive effect of smoking on RLS symptoms is probably mediated by the stimulation of nicotine acetylcholine receptors in similar neuronal dopaminergic populations.

In six patients with early onset of PD, Ishikawa and Miyatake<sup>8</sup> showed that smoking reduced tremor, rigidity, bradykinesia, and gait disturbance; these effects lasted for 10-30 min, and relieved Parkinson symptoms in the off period, similarly to the alleviation effect of smoking on RLS symptoms described in the present case. Several retrospective and prospective epidemiological studies have shown that cigarette smoking is consistently associated with a lower risk of PD,<sup>9</sup> but whether this association is causal or not remains controversial.<sup>10</sup> PD and RLS are two different clinical entities: both are associated with disturbances in the central dopaminergic system, and both are effectively treated by dopaminergic medications.<sup>11</sup> It appears that stimulation of nicotinic acetylcholine receptors in the striatum by nicotine may be a strategy of neuroprotection and symptomatic treatment in PD<sup>12</sup> and perhaps represent the basis of the alleviation of RLS symptoms by smoking observed in the patient of the present report.

In a recent study,<sup>6</sup> an increased prevalence of nocturnal smoking was found in 100 RLS patients in Italy. The prevalence of nocturnal smoking in RLS patients was 12% compared to only 2% in control subjects, but there was not higher prevalence of diurnal smoking in RLS patients. Since nicotine has some stimulating dopamine effects, the authors also suggest that “it could be that nicotine intake during the night could ease the symptoms and signs of RLS.”

This is only a case report and theoretically the possibility of a placebo effect could not be excluded completely; however, the fact that cigarette smoking has produced for many years a consistent and effective alleviation of RLS symptoms makes the option of a placebo effect very unlikely.

The described positive results on alleviation RLS symptoms by smoking in the present report, and the fact that RLS patients smoked more during nighttime—perhaps for the alleviation

of RLS symptoms<sup>6</sup>—provides further good arguments for the implementation of a qualified research on this topic.

## A Note of Caution

The detrimental effects of smoking on health are enormous. The fact that in this case smoking alleviates RLS symptoms does not infer by any means considering smoking as a treatment alternative. Conversely, the report of this case should motivate a serious evaluation of nicotine-related compounds in the treatment of RLS.

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