The prevalence and correlates of periodic leg movement in sleep in two population-based studies from Germany

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Introduction

Even though periodic leg movements in sleep (PLMS) are frequent motor phenomena, PLMS have been scarcely assessed in the general population. Our aim was to measure the prevalence of PLMS and to determine the factors associated with PLMS among individuals undergoing full sleep laboratory investigation in two independent German population-based studies.

Materials and methods

Polysomnographic (PSG) data of 1107 subjects (mean age: 52.9 ± 13.9 years, 54.1% men) from the SHIP-TREND study (Greifswald, Germany) and of 248 participants (mean age: 57.5 ± 7.9 years, 50.4% men) from the BiDirect study (Münster, Germany) recruited from the general population were analysed. The study protocol included assessment of socio-demographic data, behavioural risk factors, medical history, cardiovascular profile, and current medication. RLS was assessed with a validated questionnaire based on the RLS minimal criteria. A single-night, sleep laboratory-based PSG was performed. Sleep and PLMS were scored according to the criteria of the American Academy of Sleep Medicine.

Results

The median PLMS-index (PLMSI) was 6.3/h in the SHIP-TREND study and 5.1/h in the BiDirect study. The prevalence of PLMSI > 15/h was 32.6% (SHIP-TREND) and 36.7% (BiDirect). In multivariate models, age (OR = 1.05 per +1 year, 95% CI: 1.03 – 1.06, $p < 0.001$), male gender (OR = 2.22, 95% CI: 1.62 – 3.05, $p < 0.001$), RLS (OR = 2.30, 95% CI: 1.61 – 3.28, $p < 0.001$), physical inactivity (OR = 1.50, 95% CI: 1.10 – 2.05, $p = 0.01$), current smoking (OR = 1.54, 95% CI: 1.02 – 2.33, $p = 0.04$), antidepressant use (OR = 2.14, 95% CI: 1.15 – 4.00, $p = 0.02$), and diabetes (OR = 2.31, 95% CI: 1.49 – 3.58, $p < 0.001$) were significantly associated with PLMSI > 15/h in SHIP-TREND. In BiDirect, age (OR = 1.13 per +1 year, 95% CI: 1.08 – 1.18, $p < 0.001$), BMI (OR = 1.11 per +1 kg/m^2, 95% CI: 1.03 – 1.20, $p < 0.01$), and RLS (OR = 8.16, 95% CI: 1.99 – 33.55, $p < 0.01$) were significantly associated with PLMSI > 15/h.

Even though hypertension, stroke, and lower glomerular filtration rate were significantly more common in subjects with PLMSI > 15/h, these factors were not independent predictors of high PLMSI.

Conclusions

PLMS are frequent in the German population, especially among the elderly. Age, male gender, RLS, physical inactivity, current smoking, diabetes, antidepressant use, and higher BMI were independently associated with PLMSI > 15/h in at least one of the two cohorts.