Periodic leg movements of sleep in restless legs syndrome show specific changes throughout the lifespan

Raffaele Ferri,[1] Lourdes M. DelRosso,[2,3] Alessandro Silvani,[4] Filomena I.I. Cosentino,[1] Daniel L. Picchietti,[5] Paola Mogavero,[6] Mauro Manconi,[7] Oliviero Bruni,[8]

[1]Sleep Research Centre, Department of Neurology I.C., Oasi Research Institute - IRCCS, Troina, Italy; [2]Seattle Children's Hospital, Seattle, WA, USA; [3]University of California, San Francisco, CA, and Benioff Children's Hospital Oakland, CA, USA; [4]Department of Biomedical and Neuromotor Sciences (DIBINEM), University of Bologna, Bologna, Italy; [5]University of Illinois School of Medicine and Carle Foundation Hospital, Urbana, IL, USA; [6]Istituti Clinici Scientifici Maugeri, IRCCS, Scientific Institute of Pavia, Italy; [7]Sleep and Epilepsy Center, Neurocenter of Southern Switzerland, Civic Hospital (EOC) of Lugano, Dept. Of Neurology, Bern University, Faculty of biomedical Sciences, Università della Svizzera Italiana, Lugano, Switzerland; [8]Department of Social and Developmental Psychology, Sapienza University, Rome, Italy;

Objectives: The aims of this observational study were to analyze the age-related changes of periodic leg movements of sleep in a cohort of patients with restless legs syndrome (RLS) using the newest international scoring rules, to expand past analyses, including patients in the pediatric age range, and to analyze the changes of short-interval and isolated leg movements during sleep throughout the lifespan.

Methods: One-hundred and sixty-five patients (84 women) with RLS were retrospectively included in the following age groups: 16 preschoolers (≤5 years of age), 29 school-age (6-12 years), 19 adolescents (13-17 years), 17 young adults (19-40 years), 47 adults (41-60 years), and 37 seniors (>60 years). Additionally, in order to confirm age-related changes, the subjects were also divided by decade. Total (TLMS), periodic (PLMS), short-interval (SILMS), and isolated leg movements of sleep (ILMS), and periodicity index were obtained by polysomnography.

Results: TLMS index showed (quartic polynomial interpolation) a decrease before 10 years, followed by a steady increase up to 30 years, a relatively stable period until 60 years, and a final increase up to 80 years. This course was almost entirely due to changes in PLMS. ILMS did not change significantly and SILMS showed only an increase in seniors.

Conclusions: Our study indicates that, in RLS, TLMS index has a peculiar and unique course throughout the lifespan, mainly due to PLMS. These age-related changes may mirror developmental changes in network complexity known to occur in cortical/subcortical dopaminergic circuits. These data further confirm the need to better assess the periodicity of leg movements of sleep during the human development period in order to obtain clinically useful information.