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Characterizing Key Correlates of Sleep Problems Across Rare Neurodevelopmental Genetic Disorders

E K Baker [1], T W Frazier [2], J M Phillips [3], A Y Hardan [3], M Uljarević [3]

Affiliations + expand

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Abstract

Purpose: Sleep problems are common in neurodevelopmental genetic disorders (NGD), with impacts on daytime functioning amplified in these individuals. However, despite their prevalence and clinical impact, correlates of sleep difficulties in this group remain poorly characterized. This study used a large cohort of individuals with several rare NGDs to (i) characterize sleep phenotype across disorders; and (ii) examine predictors of poor sleep.

Methods: Parents of 173 individuals with rare NGDs including PTEN hamartoma tumor syndrome, SYNGAP1, NFIX, a mixed group of other NGDs (Mean age = 14.16 years, SD = 10.45) and 123 parents of neurotypical children (Mean age = 12.28 years, SD = 7.93) completed the Neurobehavioral Evaluation Tool (NET). The NET assessed sleep problems, social communication impairments, restricted and repetitive behaviors, executive functioning, and mood and anxiety symptoms.

Results: Group comparisons revealed that the SYNGAP1 group experienced the most severe sleep problems. Hierarchical regression models showed that the independent statistically significant predictors for each sleep problem varied. Depressed affect and emotion regulation predicted sleep initiation and maintenance difficulties, insistence on sameness and separation anxiety predicted bedtime resistance, age and depressed affect predicted early morning somnolence, while sensory sensitivities and anxiety symptoms predicted decreased sleep length.

Conclusions: Findings highlight the elevated severity of sleep problems in NGDs. Correlates of specific sleep problems vary, providing further evidence to suggest that accurate assessment and diagnosis of sleep problems, and evaluation of correlates of sleep difficulties, is required in order to provide targeted interventions in rare NGDs.

Keywords: Anxiety; Autism; Monogenic disorders; Neurodevelopmental disorders; Repetitive and restricted behaviors; Sleep.

Conflict of interest statement

Declarations. Conflict of interest: Dr. Frazier has received funding or research support from, acted as a consultant to, received travel support from, and/or received a speaker's honorarium from the PTEN Research Foundation, SYNGAP Research Fund, Malan Syndrome Foundation, ADNP Kids Research Foundation, Quadrant Biosciences, Autism Speaks, Impel NeuroPharma, F. Hoffmann-La Roche AG Pharmaceuticals, the Cole Family Research Fund, Simons Foundation, Ingalls Foundation, Forest Laboratories, Ecoeos, IntegraGen, Kugona LLC, Shire Development, Bristol-Myers Squibb, Roche Pharma, MaraBio, Scioto Biosciences, National Institutes of Health, and the Brain and Behavior Research Foundation, has equity options in MaraBio, and Springtide, and has an investor stake in Autism EYES LLC, iSCAN-R and AI-Measures. Dr. Hardan has received funding or research support from, and acted as a consultant to, from the PTEN Research Foundation, Quadrant Biosciences, Autism Speaks, Beaming Health F. Hoffmann-La Roche AG Pharmaceuticals, Simons Foundation, IntegraGen, and National Institutes of Health, and has equity options in Quadrant Biosciences, and has an investor stake in iSCAN-R, AI-Measures, and ParenteAI. Dr. Uljarević has received funding or research support from, acted as a consultant to, received travel support from, and/or received a speaker's honorarium from the PTEN Research Foundation, Autism Speaks, Simons Foundation, Australian Research Council, National Institutes of Mental Health, and has an investor stake in iSCAN-R and AI-Measures. Ethical Approval: IRB approval was obtained for all of the qualitative and quantitative procedures of the study, including administration of the final NET scales. Informed Consent: Parents/legally-authorized representatives and adult patients provided informed consent prior to completing any study procedures. Assent for minors was also obtained, where appropriate.

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