

Public Abstract

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Title:PUPILLARY LIGHT REFLEX IN CHILDREN WITH AUTISM SPECTRUM DISORDERS

Pupillary light reflex (PLR) refers to the phenomenon that pupil constricts in response to a light flash. PLR is a noninvasive, functional test which can reveal information about the autonomic nervous system (ANS). Atypical PLR in children with autism spectrum disorders (ASDs) was previously reported in a small population. In this research, this was confirmed in a large population: 107 children with typical development (TD), 152 with ASD, and 36 with other neurodevelopmental disorders (NDDs). Specifically, in children with ASD and NDD, the pupil reaction to a light flash was delayed and reduced. In addition, our results revealed age-dependent trends in PLR parameters in the TD group. These trends were not observed in the ASD and NDD groups, suggesting abnormal developmental trajectory in neurodevelopmental disorders. To study the potential involvement of ANS dysfunction, we measured simultaneously the heart rate variability, a common ANS measure. The ASD and NDD groups had faster heart rate than the TD group. The average heart rate decreased with age in both the ASD and TD groups. PLR constriction was negatively correlated with average heart rate in children with ASD, but not in children with typical development. ANS is also involved in regulating sensory behavior which was abnormal in children with ASD. PLR constriction was correlated with sensory behavior in the ASD group, but not in the TD group. These results indicate that PLR pathway is affected in ASD and suggest ANS dysfunction being one of the potential underlying mechanisms.