

PUPILLARY LIGHT REFLEX IN CHILDREN WITH AUTISM SPECTRUM DISORDERS

Chathuri Daluwatte

Dr. Gang Yao, Dissertation Supervisor

ABSTRACT

We studied pupillary light reflex (PLR) and heart rate variability (HRV) in 107 typically developing (TD) children, 152 children with autism spectrum disorders (ASDs), and 36 children with non-ASD neurodevelopmental disorders (NDDs). Our results showed that the pupil constriction was delayed and reduced in the ASD and NDD groups. The PLR latency decreased significantly with age in TD children from 6 to 9 years old, but this developmental trajectory was absent in the ASD and NDD groups. The ASD and NDD groups also had faster average heart rate (AHR) than the TD group. The AHR decreased with age in both ASD and TD groups. The PLR constriction amplitude was negatively correlated to AHR in children with ASD, but not in typically developing children. In addition we found a significant correlation between PLR constriction amplitude and sensory behavior in the ASD group, but not in typically developing children. This study produced solid evidence that pupillary pathway is affected in ASD and suggested that autonomic nervous system dysfunction may be one of the underlying mechanisms.