Systemic Inflammation during the First Postnatal Month and the Risk of Attention Deficit Hyperactivity Disorder Characteristics among 10 year-old Children Born Extremely Preterm.


Abstract

Although multiple sources link inflammation with attention difficulties, the only human study that evaluated the relationship between systemic inflammation and attention problems assessed attention at age 2 years. Parent and/or teacher completion of the Childhood Symptom Inventory-4 (CSI-4) provided information about characteristics that screen for attention deficit hyperactive disorder (ADHD) among 793 10-year-old children born before the 28th week of gestation who had an IQ ≥ 70. The concentrations of 27 proteins in blood spots obtained during the first postnatal month were measured. 151 children with ADHD behaviors were identified by parent report, while 128 children were identified by teacher report. Top-quartile concentrations of IL-6R, TNF-α, IL-8, VEGF, VEGF-R1, and VEGF-R2 on multiple days were associated with increased risk of ADHD symptoms as assessed by a teacher. Some of this increased risk was modulated by top-quartile concentrations of IL-6R, RANTES, EPO, NT-4, BDNF, bFGF, IGF-1, PIGF, Ang-1, and Ang-2. Systemic inflammation during the first postnatal month among children born extremely preterm appears to increase the risk of teacher-identified ADHD characteristics, and high concentrations of proteins with neurotrophic properties appear capable of modulating this increased risk.