Growth factors (GFs) are cytokines that regulate the neural development. Recent evidence indicates that alterations in the expression level of GFs during embryogenesis are linked to the pathophysiology and clinical manifestations of attention-deficit/hyperactivity disorder (ADHD) and autism spectrum disorders (ASD). In this concise review, we summarize the current evidence that supports the role of brain-derived neurotrophic factor, insulin-like growth factor 2, hepatocyte growth factor (HGF), glial-derived neurotrophic factor, nerve growth factor, neurotrophins 3 and 4, and epidermal growth factor in the pathogenesis of ADHD and ASD. We also highlight the potential use of these GFs as clinical markers for diagnosis and prognosis of these neurodevelopmental disorders.