Research advances in pathogenesis of attention deficit hyperactivity disorder

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Abstract

Both of genetic and environmental factors play important roles in the pathogenesis of attention deficit hyperactivity disorder (ADHD), and genetic factors can increase the susceptibility of individuals to environmental risk factors. There are extensive and various structural and functional abnormalities of the brain in patients with ADHD. Given the close functional relationship between brain areas, exploration has also been expanded to the dysfunction of brain network in recent years. As for the biochemical mechanism underlying ADHD, monoamine neurotransmitters are still most valued, and abnormalities of brain-derived neurotrophic factors and glutamic acid/γ-aminobutyric acid imbalance may also be present. Due to the abnormal neuroendocrine function and connectivity between brain areas caused by the synergistic effect of genetic and environmental factors, the prefrontal cortex loses control of the lower brain areas, so that the basal ganglia and amygdala affect normal behavioral and emotional reactions. Dysfunction of the endocrine axes may further aggravate neuroendocrine disorder. The above process may eventually lead to changes in brain structure and function, which may be associated with the development of ADHD. However, considering the heterogeneity of ADHD, its pathological process may not be the same, and the exact mechanism needs to be further clarified.