

Age-Dependent Anatomical Abnormalities of the Amygdala in Autism Spectrum Disorder and their Implications for Altered Socio-Emotional Development

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Abstract : The amygdala is one of various brain regions that tend to be pathological in individuals with autism spectrum disorder (ASD). ASD is a prevalent and heterogeneous developmental disorder affecting all ethnic and socioeconomic groups and consists of a broad range of severity, etiology, and behavioral symptoms. Common features of ASD include but are not limited to repetitive behaviors, obsessive interests, and anxiety. Neuroscientists view the amygdala as the core of the neural system that regulates behavioral responses to anxiogenic and threatening stimuli. Despite this consensus, many previous studies and literature reviews on the amygdala's alterations in individuals with ASD have reported inconsistent findings. In this review, we will address these conflicts by highlighting recent studies which reveal that anatomical and related socio-emotional differences detected between individuals with and without ASD are highly age-dependent. We will specifically discuss studies using functional magnetic resonance imaging (fMRI), structural MRI, and diffusion tensor imaging (DTI) to provide insights into the neuroanatomical substrates of ASD across development, with a focus on amygdala volumes, cell densities, and connectivity.

Keywords : autism, amygdala, development, abnormalities

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