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# An imaging review of the hippocampus and its common pathologies

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## Abstract

The hippocampus is a complex structure located in the mesial temporal lobe that plays a critical role in cognitive and memory-related processes. The hippocampal formation consists of the dentate gyrus, hippocampus proper, and subiculum, and its importance in the neural circuitry makes it a key anatomic structure to evaluate in neuroimaging studies. Advancements in imaging techniques now allow detailed assessment of hippocampus internal architecture and signal features that has improved identification and characterization of hippocampal abnormalities. This review aims to summarize the neuroimaging features of the hippocampus and its common pathologies. It provides an overview of the hippocampal anatomy on magnetic resonance imaging and discusses how various imaging techniques can be used to assess the hippocampus. The review explores neuroimaging findings related to hippocampal variants (incomplete hippocampal inversion, sulcal remnant and choroidal fissure cysts), and pathologies of neoplastic (astrocytoma and glioma, ganglioglioma, dysembryoplastic neuroepithelial tumor, multinodular and vacuolating neuronal tumor, and metastasis), epileptic (mesial temporal sclerosis and focal cortical dysplasia), neurodegenerative (Alzheimer's disease, progressive primary aphasia, and frontotemporal dementia), infectious (Herpes simplex virus and limbic encephalitis), vascular (ischemic stroke, arteriovenous malformation, and cerebral cavernous malformations), and toxic-metabolic (transient global amnesia and opioid-associated amnestic syndrome) etiologies.

**Keywords:** epilepsy; hippocampus; imaging; neuroradiology; pathology.

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