Viruses and Prions

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Viral and prion diseases of the brain, while uncommon are increasingly being recognized as causes of significant morbidity and mortality.

From a diagnostic imaging perspective it is useful to divide viral CNS infections into 3 categories: herpetic infections, topographic viral infections, and HIV. Characteristic imaging abnormalities occur with each of these 3 categories of infection, which although not specific, are often highly suggestive of the diagnosis, especially with herpes simplex infection. The MRI findings of cortical hyperintensity in the temporal lobes and insula, often bilateral and with some hemorrhage, is highly characteristic of HSV infection.

Prion diseases are rare. They are uniformly fatal, regardless of treatment. The great value of imaging is the accuracy and rapidity of diagnosis, obviating a large number of other tests, some with increased risk to the health care providers. Human forms of prion infection include sporadic, familial, iatrogenic and new variant CJD, Gerstmann–Straussler–Scheinker syndrome (GSS), sporadic and familial fatal insomnia and kuru. Sporadic CJD (sCJD) accounts for approximately 85% of human disease with the remainder being predominantly hereditary including familial CJD, GSS, and familial fatal insomnia. New variant CJD (vCJD) gained widespread recognition from a public health perspective in the late 1990's, but has now virtually disappeared. Typical findings of sCJD include symmetric T2 hyperintensity involving the basal ganglia, in particular, the corpus striatum, or ribbon-like lesions in the cortex. The new variant form of CJD shows distinctive imaging findings, in particular symmetric high signal involving the pulvinar. The remainder of the human forms of prion disease have only limited reports detailing the imaging findings.

References:

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Learning Objectives:

1. Review and recognize the imaging spectrum of viral and prion diseases of the CNS

2. Learn to formulate a concise differential diagnosis based on the imaging findings.