

## **Outbreaks Of Infectious And Non-Infectious CNS Diseases: How Does MRI Help?**

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Singapore is a small tropical island at the crossroads of large people movement, and therefore, potential spread of disease. In today's globalized and hyperconnected world, the spread of diseases such as influenza and the Zika virus represents a potential public health hazard.

This presentation will focus on outbreaks of Nipah virus, group B streptococcus agalactiae infection. MRI is helpful for initial diagnosis, delineating the anatomical extent of CNS involvement, narrowing the differential diagnosis, anticipating complications, and improving follow up comparison. MRI patterns may be divided into those predominantly affecting the subarachnoid/ventricular, leptomeningeal and/or pachymeningeal, encephalopathic and mass-like ring-enhancing lesions. Each of these patterns may have features that can be helpful for detection and differential diagnosis, for example the presence of cysts, calcification, hemorrhage and aggregating associated non-imaging investigations.

Diffusion-weighted imaging (DWI), especially, is useful in improving lesion conspicuity, and delineating active disease in cerebral abscess, empyema, ventriculitis and detecting the presence of pus in the subarachnoid space. MR perfusion and MR spectroscopy (MRS), can help in differentiating neoplastic from infectious diseases. Radiologists should be aware that MRI findings are often non-specific, but adds value to multi-disciplinary consultations with infectious disease specialists, neurologist and neurosurgeon.

### **Conclusion**

Radiologists should be familiar with typical MRI findings of common tropical diseases affecting the CNS; the limitations of neuroimaging in differential diagnosis can be overcome by multi-disciplinary conferences to add value to patient management. Newer techniques, especially DWI, may also be helpful for differential diagnosis.