

Pediatric MRI Symposium I_brain

SY16-1

Susceptibility imaging in pediatric neuroradiology

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1. What is Susceptibility Weighted Imaging (SWI)?

Concept of susceptibility

Susceptibility Weighted Imaging

2. Clinical application of SWI in pediatric neuroradiology.

Hemorrhagic lesion

Vascular malformation

Venous stasis

Neoplasm

Calcification or iron deposition

Neonatal diseases

3. Difficulties in applying and interpreting SWI.

SWI parameters

SWI postprocessing

Left-Handed vs. Right-Handed

Potential diagnostic pitfalls

4. What is quantitative susceptibility mapping (QSM) and its application?

Concept of QSM

Application of QSM

Keywords : Susceptibility, SWI, QSM, Children, Brain

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SY16-2

Neonatal Brain Imaging

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Objectives

- Understand the normal myelination process
- Recognize the normal MRI appearance of preterm and term neonate
- Understand pathophysiology of hypoxic ischemic encephalopathy

- Recognizing the pattern of hypoxic ischemic encephalopathy in preterm and term neonates
- Basic overview of therapeutic hypothermia
- Knowledge of imaging features of mimickers of hypoxic ischemic encephalopathy
- Recognizing the variable pattern of neonatal stroke

Keywords : Neonatal, MRI, Hypoxic ischemic, Encephalopathy, Myelination

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SY16-3

Diffusion and perfusion imaging in brain MRI

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The recent advances in brain MR imaging offer unique anatomical as well as pathophysiological information that provides new insights on brain diseases, directed at facilitating therapeutic decisions and providing information regarding prognosis. This information is presently utilized in clinical practice for initial diagnosis and noninvasive, preoperative diagnostic prediction of diseases, biopsy planning, surgery, and radiation portal planning, as well as, prognostication. The newer advances described in this lecture include magnetic resonance (MR) diffusion, and perfusion imaging. The role of diffusion-weighted (DW) MR imaging with quantitative apparent diffusion coefficients (ADCs) in the pretreatment evaluation of several brain pathologies has been investigated in various studies. Many studies have demonstrated that the high cellularity of high-grade gliomas results in greater diffusion restriction and, in turn, a low ADC value. Perfusion imaging with MRI is an exciting new radiological technique for noninvasive evaluation of cerebral hemodynamics, in certain definite clinical settings. Cerebral perfusion imaging describes the passage of blood through the brain's vascular network. Perfusion imaging, especially with MRI has become an integral component of the complete radiological assessment of brain diseases. The next decade will witness further sophistication of these techniques, with data available from larger studies. It is expected that imaging will continue to provide new and unique insights in neuroimaging, which should hopefully contribute to the better management of patients with brain diseases.

Keywords : DWI, PW, Brain