EDUCATIONAL OBJECTIVES

- To outline the challenges with imaging the spine and spinal cord
- To demonstrate various novel advanced MR imaging techniques
- To focus of clinical tools which can be applied such as diffusion and diffusion tensor imaging using novel reduced FOV and zoomed FOV techniques
- To demonstrate how perfusion and permeability imaging can be applied in the spine and spinal cord
- To demonstrate MR spectroscopy in the spinal cord and disc space

PRESENTATION SUMMARY:

Challenges with Imaging the Spinal Cord

- Small Size of Cord – low spatial resolution/low SNR, CSF partial volume
- B0- Inhomogeneity of surrounding bony structures
- Chemical Shift (Vertebral Body Lipids) and Fat Suppression
- Physiologic Motion/Pulsation- Cardiac/Pulse Gating & CSF Flow within Cord
- Long Acquisition times with Spin Echo and Single Shot EPI-Nyquist Ghosting Artifact

Advanced Imaging Techniques

MRS, DWI, DTI, Perfusion, Permeability fMRI, MEG or MMG, IDEAL fat quantitation, SWI, dynamic, flexion-extension. T1 rho, T2 mapping

Clinical Applications

- Focus on new techniques particularly imaging the cord and disc
- Perfusion/Permeability Imaging in the Spine
- Diffusion and Diffusion Tensor Imaging in the Spine
• Reduced FOV and Zoomed Diffusion
• MR Spectroscopy of the Disc and Spine

REFERENCES:


