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Neuroimaging Spectrum of Non-Compressive Non-Neoplastic Myelopathy

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Neuroimaging Spectrum of Compressive Non-Neoplastic Myelopathy

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Purpose

Compressive non-neoplastic spinal cord lesions represent a broad spectrum of neurologic disease processes contributing to back pain and neuropathy, including traumatic, inflammatory/infectious, degenerative, and metastatic etiologies. Compressive cord lesions are optimally evaluated with high-field strength magnet MRI with and without contrast. Differential diagnoses for cord lesions are inherently broad due to the nonspecific nature of increased intramedullary signal on T2-weighted images seen with many cord pathologies. However, differentiating features such as degree of cord expansion, enhancement characteristics, and extramedullary findings can provide additional information to refine the differential diagnosis. In this exhibit, we present representative cases of compressive non-neoplastic spinal cord lesions from our institutional archive, outlined accordingly: traumatic (traumatic spondylolisthesis with cord contusion, epidural hematoma), infectious/inflammatory (epidural abscess), degenerative (disk herniation, spinal stenosis), and metastatic (osseous metastasis with cord compression). These cases will be presented according to our institutional protocol: sagittal T1, sagittal T2, sagittal STIR, axial T2*, axial T2, axial T1 without and with contrast, and diffusion weighted imaging. Each case will include brief literature review with discussion points. Objectives -Review common spinal cord lesions under the category of compressive, non-neoplastic. -Characterize compressive non-neoplastic cord lesions according to anatomic distribution, MRI signal characteristics, enhancement patterns, and relationship to symptom onset and clinical presentation.

Materials and Methods

N/A

Results

N/A

Conclusions

Disease processes relating to compressive non-neoplastic spinal cord lesions are numerous and often difficult to delineate from one another. A thorough knowledge of pathologies within this category, along with key imaging findings to differentiate these pathologies, can aid the radiologist in developing a practical and accurate differential diagnosis, ultimately leading to better patient outcomes.

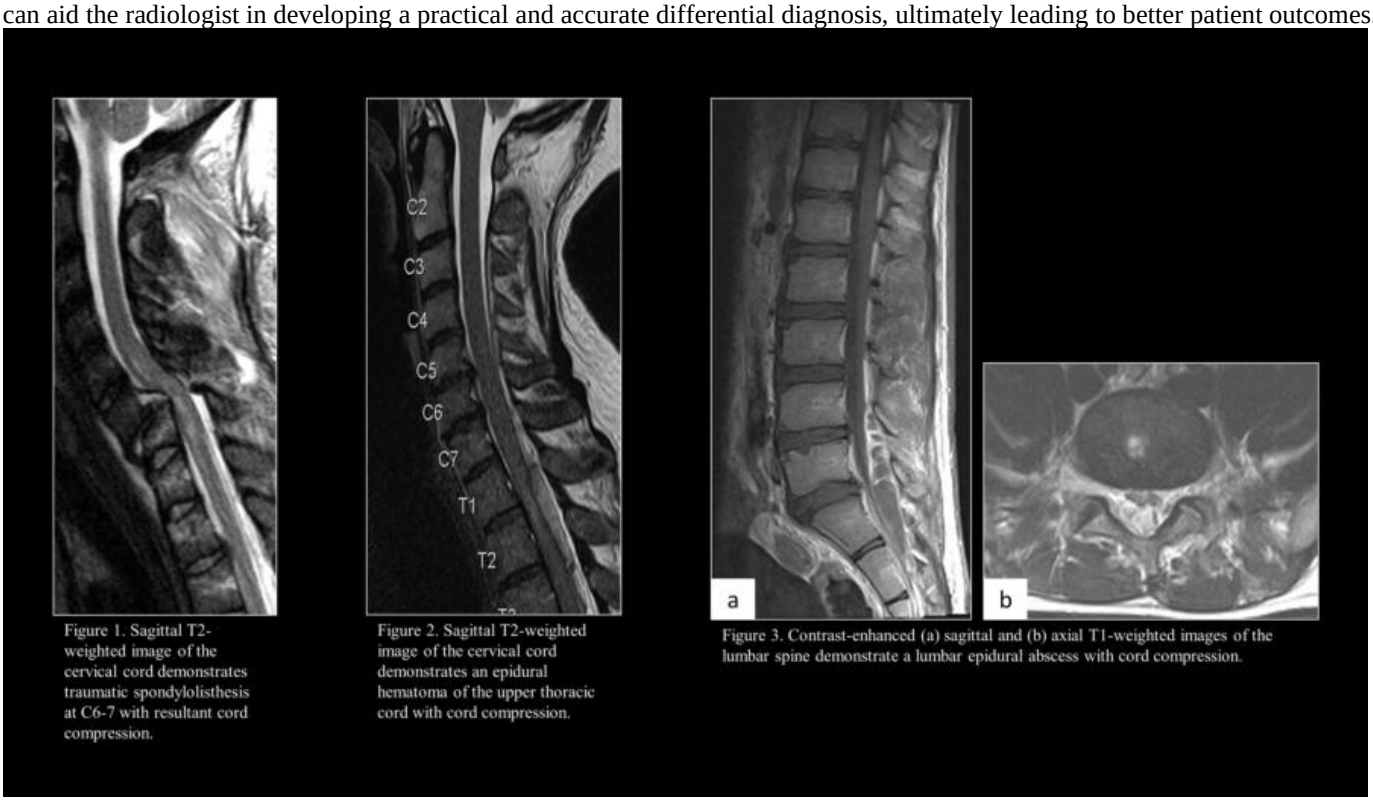

Figure 1. Sagittal T2-weighted image of the cervical cord demonstrates traumatic spondylolisthesis at C6-7 with resultant cord compression.

Figure 2. Sagittal T2-weighted image of the cervical cord demonstrates an epidural hematoma of the upper thoracic cord with cord compression.

Figure 3. Contrast-enhanced (a) sagittal and (b) axial T1-weighted images of the lumbar spine demonstrate a lumbar epidural abscess with cord compression.

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Purpose

Non-compressive, non-neoplastic spinal cord lesions represent a broad range of disease processes and entities. Most commonly, spinal

cord lesions demonstrate T2 signal abnormality on magnetic resonance imaging, a relatively nonspecific finding requiring a variety of differentiating factors to build an accurate differential diagnosis (1). Additionally, many disease entities have significant overlapping features on MRI, rendering it difficult to separate diagnoses and guide management (2). The combination of signal characteristics on MRI, timing of clinical presentation, degree of cord expansion, and contrast enhancement patterns can provide improved differentiation between disease entities. The purpose of this exhibit is to educate the viewer on radiographic findings of non-compressive, non-neoplastic spinal cord lesions, including common and rare clinical and radiological presentations. Building an accurate and complete differential diagnosis can aid in guiding therapy and preventing additional unnecessary work-up.
Materials and Methods
1. To review common pathologies of non-compressive, non-neoplastic spinal cord lesions. 2. Characterize lesions based on anatomic distribution, signal intensity pattern, contrast enhancement, and their relationship to clinical onset and presentation. 3. Identify common pitfalls when imaging non-compressive, non-neoplastic spinal cord lesions.
Results
This exhibit will include presentations of non-compressive non-neoplastic spinal cord lesions and the distinguishing factors on magnetic resonance imaging, with CT and angiographic correlation as well. Cases will include congenital causes, demyelinating disease, longitudinally extensive transverse myelitis (ADEM, Anti-MOG), vascular disease (cord edema, cavernous cord infarction, AV fistula, etc.), post-traumatic etiologies, inflammatory/infectious disease, demyelinating disease, and metabolic myelopathy (vitamin B12 deficiency). Literature review and discussion points will accompany each case presentation in the respective categories.
Conclusions
Multiple clinical presentations of non-neoplastic spinal cord lesions exist, which have unique radiological findings. Familiarity with the neuroimaging findings within the non-compressive pathologic spectrum of non-neoplastic myelopathy can provide timely diagnoses to facilitate appropriate management and improve clinical outcomes.

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Neuroophthalmologic Imaging of Papilledema
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Purpose
Papilledema is optic disc swelling that is caused by increased intracranial pressure (ICP) due to any cause. Early recognition of papilledema and elevated ICP is of important for ensuring restoration of vision. Noninvasive imaging of papilledema includes ophthalmologic tests such as ophthalmoscopy, visual field test and optic coherent tomography (OCT), orbital ultrasound (US), CT, and MRI examination. Neuroophthalmologic imaging of papilledema will be presented in a variety of medical condition including idiopathic intracranial hypertension, intracranial hemorrhage, etc.
Materials and Methods
In order to accurately diagnose papilledema at an early stage, it is necessary to understand not only imaging findings such as orbital US, CT, and MRI, but also ophthalmic examinations such as fundus examination, visual field examination, and OCT. Therefore, we