

Indication	Key History & Risk Factor	Clinical Presentation	Typical MRI Findings	Urgency
Spinal Cord Compression	- Rapidly progressive or acute neck/back pain (often severe, worse at night or with Valsalva) "Red flag " historical elements: history of cancer (especially metastatic disease), weight loss, fever/night sweats, recent spinal procedures, intravenous drug use, osteoporosis/steroid use, recent trauma, or immunosuppression. Motor: Gradually worsening weakness, gait difficulty Sensory changes with a possible sensory level Autonomic symptoms: bladder dysfunction (retention/incontinence), constipation or bowel incontinence. - Cauda Equina Syndrome	- Motor weakness below level (UMN signs below lesion as disease progresses) - Sensory loss with dermatomal pattern or sensory level - Hyperreflexia, spasticity (may be initially reduced at level) - Decreased rectal tone, urinary retention/incontinence in advanced cases	Cord compression with cord edema (+/- enhancement possible in the region of maximum compression) - Degen: Compressive disc herniation, endplate/facet osteophytes/synovial cyst - Epidural abscess: Discitis/OM + epidural collection, rim-enhancing + restricted diffusion - Epidural hematoma: Epidural collection, Variable T1/T2 depending on age, blooming/signal void on GRE/SWI based sequences - Spinal Neoplasm: - Extradural – Bony Mets, Multiple Myeloma, Lymphoma (Marrow replacement, extraosseous soft tissue extension into epidural space or neuroforamina), Primary bone tumors - Extramedullary Intradural – Leptomeningeal mets. Meningioma, Schwannoma - Intramedullary – Mets (enhancing nodule with extensive edema), Other tumor (Ependymoma, Astrocytoma, Hemangioblastoma)	 EMERGENT MRI SPINE <i>Immediate MRI (hours) – results likely to change management urgently</i>
Traumatic Spinal Cord Injury	- High-energy trauma (MVC, fall, sports, penetrating injury) - Immediate neurologic symptoms at time of injury - Neck/back pain may or may not be present - Possible altered mental status or distracting injuries	ASIA classification used to classify severity (detailed motor/sensory exam) – determine if there is incomplete or complete sensory and/or motor function loss below level of injury. Spinal shock: acute flaccid paralysis, areflexia Neurogenic shock: features with high cervical injury: hypotension, bradycardia, warm extremities. - Autonomic dysfunction (urinary retention, neurogenic shock in high cervical injuries)	- Cord edema/contusion, - Cord hemorrhagic contusion/ Hematoma - Fracture, Ligamentous injury, Joint malalignment, Epidural hematoma, Vascular injury (Loss of Flow Void), Soft tissue injury	 EMERGENT MRI SPINE
Spinal Cord Infarct	- Sudden onset (minutes–hours) of neurologic deficit - Acute focal neck/back pain at onset - Precipitating factors: hypotension, aortic pathology/surgery, embolic risk, trauma - No preceding progressive symptoms	Motor: Acute bilateral weakness/paralysis below lesion Sensory disturbances: - Anterior infarct → loss of pain/temperature with relative preservation of vibration /proprioception. - Posterior infarct → loss of position/vibration at level. - Possible dissociated sensory loss - Early flaccidity/areflexia → later UMN signs - Acute bladder/bowel dysfunction	- Cord restricted diffusion - Cord edema (Variable T2 cord signal , Classic: "Owl's eye" sign T2 hyperintensity of bilateral anterior horn GM) - Patchy or mild enhancement may develop subacutely - Thoracic cord most common (watershed region) - Accompanying Bone Infarcts	 EMERGENT MRI SPINE
Discitis/Osteomyelitis	- Persistent, focal back/neck pain (progressive, often at rest or nocturnal) - Fever often absent - Recent bacteremia, endocarditis, skin infection, or spinal procedure - Risk factors: diabetes, immunosuppression, IV drug use - Elevated ESR/CRP	- Severe focal back pain - Limited ROM due to pain - Radicular pain if epidural extension - Neurologic deficits (late): weakness, sensory loss, bowel/bladder dysfunction	- Disc and Marrow edema + Enhancement, - Endplate erosion/ (loss of T1 dark cortex), ± progressive disc/vertebral height loss, - Epidural//paraspinal extension - phlegmon or abscess - Facet septic arthritis (degree of marrow and periarticular edema is out of proportion to degree of degen)	 URGENT MRI SPINE <i>(Prompt MRI (within 24 hours) – important for diagnosis and near-term)</i> <i>*If suspect Spinal Cord Compression ☐  Emergent</i>