Back Pain 2 - Endocarditis

* CC
	+ 27 year old female presents with back pain
* Vital Signs
	+ HR 110 BP 120/80 T39C RR20 Sat 100% RA Wt 65 kg
* What does the patient look like?
	+ The patient appears uncomfortable and slightly diaphoretic
* Primary survey
	+ Airway: speaking in full sentences
	+ Breathing: tachypneic, clear to auscultation
	+ Circulation: warm skin, 2+ pulses all extremities
* Action
	+ Large bore IV access
	+ Place patient on monitor
	+ 1L IVF if ordered
* History
	+ Source: patient
	+ HPI: a 27 year old female presents with back pain for the past three days. The pain began in the middle of her work day; she works as a secretary. Yesterday she began having headaches and chills and stayed home from work. She admits she relapsed from IV drugs 1 month prior and uses heroin daily. She denies incontinence, abdominal pain, dysuria, hematuria, trauma. She endorses mild nausea but no vomiting or diarrhea
	+ MHx: none
	+ SHx: Lasik eye correction
	+ Allergies: none
	+ Meds: OCP
	+ Family Hx: non contributory
* Physical Exam
	+ General appearance: slightly diaphoretic
	+ HEENT: dry mucous membranes
	+ Lungs: CTAB
	+ Cardiac: tachycardic with systolic murmur best heard at R 4th intercostal space
	+ Abdomen: normal
	+ Extremities: track marks bilateral arms, no erythema, abscesses
	+ Back: focal tenderness to T3-5
	+ Neuro: 5/5 strength throughout, equal sensation throughout, 2+ biceps and patellar reflexes bilaterally, steady gait
	+ Skin: warm, dry, track marks as mentioned above
* Instructor prompt
	+ Discuss differential diagnosis and workup/treatment
* Action
	+ Order labs
		- CBC, BMP, ESR/CRP, Lactate, Blood cultures x 3, HCG, PT/INR, PTT, Urinalysis + culture
	+ Order meds
		- Antipyretic
		- Analgesic
		- Antiemetic
		- IV antibiotics
	+ Consider POCUS
		- Bedside echo shows EF ~50% with vegetation on tricuspid valve
	+ Consider imaging
		- CT T spine with IV contrast (discuss CT vs emergent MRI)
* Nurse
	+ Reevaluate patient and repeat vitals
		- After 1L IVF and antipyretic: HR 100 BP 125/80
		- Lab results: WBC 20, K 2.8, CRP 40, ESR 100, Lactate 2. Other labs unremarkable
		- Ekg if asked: sinus tachycardia
		- CT T spine: no acute fractures, normal vertebral alignment. If concerned, consider MRI
* Instructor prompt: discuss management and treatment goals
* Action
	+ Order meds: Antibiotics if not ordered previously
	+ Consult NSGY for possible spinal epidural abscess
	+ Consider ordering MRI T spine with gadolinium
	+ Admit patient to floor
* Diagnosis
	+ Primary: endocarditis
	+ Secondary: spinal epidural abscess
* Critical actions
	+ Fluid resuscitation
	+ Obtaining 3 sets of blood cultures for possible endocarditis
	+ Early administration of antibiotics
	+ Neurosurgery consult for SEA
* Instructor guide
	+ This is a case of SEA caused by endocarditis in a young, otherwise healthy patient with IVDU. The patient has 2 SIRS criteria due to fever and an elevated WBC count. The combination of fever and atraumatic back pain in an IVDU should raise suspicion for SEA, regardless of a normal neuro exam.
* Teaching points
	+ DDx for a young patient with back should include SEA, epidural hematoma, cauda equina, diskitis. You can also consider nephrolithiasis, pyelonephritis, MSK pain.
	+ SEA is an infection of the epidural space (between the dura and the vertebra) of the spinal canal and is more common in the thoracolumbar region due to the epidural space being larger. abscesses commonly extend to multiple levels due to the contiguous nature of the epidural sheath. The average length of extension is 3-5 spinal levels.
* Diagnosis of SEA
	+ The triad of fever, back pain and neuro deficits is rarely present in cases of SEA, and if so, it is likely to be later in the disease course. Most patients present with fever, malaise, and back pain. Focal spinal tenderness is found in 17-98% of cases. Patients may develop symptoms of causa equina such as paralysis, incontinence, and saddle anesthesia
	+ Consider SEA in patients with spinal tenderness on palpation/percussion and signs of radiculopathy.
	+ Risk factors for SEA include spinal instrumentation, IVDU, immunocompromised patients, and diabetes
	+ SEA can be caused by contiguous spread of disease (80%) or hematogenous, as in this case
	+ Abscesses can occur non-contiguously throughout the spine, therefore if a SEA is found, it is recommended to obtain MRI of the entire spine. CT with IV contrast is an acceptable alternative to MRI if MRI is unavailable. Plain films may reveal underlying chronic osteomyelitis. CT myelography is now rarely used.
	+ LP is typically not performed due to low diagnostic yield and concern for introducing infection into the spinal canal.
* Treatment of SEA
	+ Most common causative organisms include Staph aureus (60% all cases), Strep, and Gram negative bacilli. Consider Pseudomonas in IVDU and HACEK/anaerobes if IVDU with needle licking
	+ Management of SEA is with a combination of surgical decompression and IV antibiotics. Surgery should ideally be performed between 24-48 hours of diagnosis. Cover with vancomycin + Ceftriaxone/Ceftazidime/Cefotaxime +/- Flagyl/Meropenem (for anaerobes)
	+ Patients continue on IV antibiotics for 6-8 weeks
* References
	+ OrthoBullets
	+ StatPearls
	+ Radiopedia
	+ UpToDate

MRI T spine