An Unlikely Unifying Dx: Group A Strep Meningitis

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Case Presentation

A 74-year-old female with PMH of post-surgical lymphedema to RUE, T2DM, HTN, and hypothyroidism was presented to hospital for a "slide out of bed."

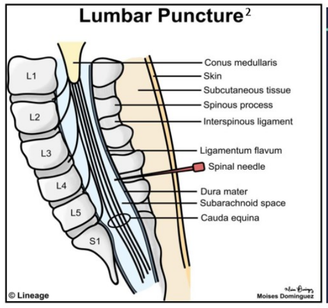
- PMH: Post-surgical lymphedema to RUE, T2DM, HTN, hypothyroidism
- Home Medications: levothyroxine, duloxetine, amlodipine

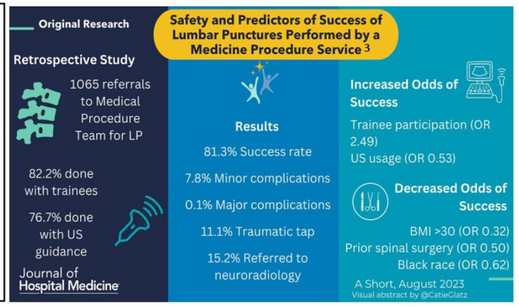
Initial Workup – Hospital Day 1

- Patient admitted for weakness and hypoxia following slide out of bed--Per patient's report she could not get up and waited for her nephew to help her.
- Pan scan negative for acute fractures, dislocations, and bleeds
- On initial assessment, patient felt fine and asked to go home, yet team did not feel she was safe to discharge. She continued to be hypoxic, with generalized weakness and unknown reason for fall, but initial workup was unremarkable.
- Secondary survey notable for pain to RUE, RLE, with tenderness/warmth, subacute wounds to medial R ankle, weakness RUE/RLE (chronic per patient).

	Normal	Bacterial	Viral	Fungal/TB
Pressure (cmH20)	5-20	> 30	Normal or mildly increased	
Appearance	Normal	Turbid	Clear	Fibrin web
Protein (g/L)	0.18-0.45	> 1	< 1	0.1-0.5
Glucose (mmol/L)	2.5-3.5	<2.2	Normal	1.6-2.5
Gram stain	Normal	60-90% Positive	Normal	
Glucose - CSF:Serum Ratio	0.6	< 0.4	> 0.6	< 0.4
WCC	< 3	> 500	< 1000	100-500
Other		90% PMN	Monocytes 10% have >90% PMN 30% have >50% PMN	Monocytes

CSF Analysis [1]





Hospital Course

Hospital Day 2

- Patient became acutely altered in evening, a rapid response was called, she was sent to head CT with concern for stroke
- CT head was negative for stroke, EEG was negative
- Patient developed a fever, no leukocytosis
- UA infectious appearing, started ceftriaxone, fever did not return

Hospital Day 3

- Patient remained acutely encephalopathic, and with increasing oxygen requirement, yet afebrile and without leukocytosis
- Antibiotics broadened to include metronidazole
- RRT called hospital day 3 for altered mental status
- LP completed and cultures grew GAS, urine culture with *S. pyogenes*
- Patient's abrasion on her right ankle developed into a worsening blistering rash with bullae.

Outcome

- Patient remained in the ICU for several days for severe agitation, but ultimately returned to normal mental status after treatment with IV antibiotics for group A strep meningitis, and discharged following IR drainage of wound

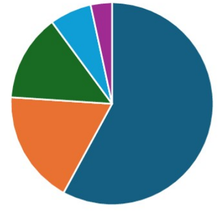
Discussion

In this case, the most likely source of GAS infection were the purulent blisters on the patient's right heel via bacteremia that was not identified on blood cultures because they were obtained following antibiotic initiation. Meningitis is an inflammatory disease of the leptomeninges (tissues surrounding the brain and spinal cord) and is characterized by an abnormal amount of WBCs in the CSF of a patient. GAS causing meningitis is a fulminant disease with high morbidity/mortality. GAS meningitis is very rare, representing only 1-4% of all invasive GAS cases detected across the US and Europe. It's associated with neurologic sequelae, and usually occurs in patients who have experienced sinusitis, otitis, recent head injury or neurosurgery, CSF leak, or alcoholism. However, in 1/3rd of cases there are no predisposing factors.[4]

Final Takeaways

- GAS can cause bacterial meningitis
- Don't discount meningitis when assessing what seems like hyperactive delirium
- LPs are safe procedures [5]
- Small physical assessment notes, like a blister on a heel, can help provide a unifying diagnosis.
- ALWAYS do a full neuro exam for any neuro-related complaint

Meningitis Causes 2003-2007 USA[6]



References