Management Implications of Multifactorial Pathophysiology of Ischemic Stroke in Pediatric Lemierre's Syndrome

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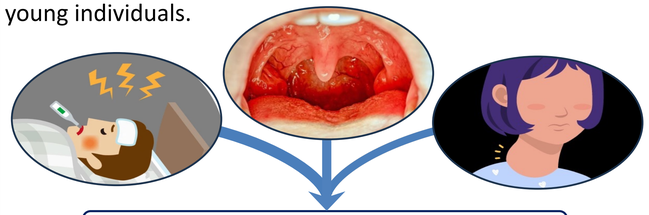
Background

Lemierre's syndrome is a rare septic thrombophlebitis of the head and neck with increasing prevalence among healthy, young individuals.



Septic thrombophlebitis & metastasis

Internal jugular vein thrombophlebitis is common, but carotid artery and consequent ischemic stroke is rare and of a likely multifactorial etiology, necessitating multifaceted treatment.

Case Timeline

Day 1
- 10yoM p/w neck pain and facial swelling
- CT head with periorbital & orbital cellulitis, mastoiditis, skull base abscess, extensive sinus thrombosis, and bilateral IJV thrombi
- Started on heparin, cefepime, vancomycin, metronidazole

Day 3
- Transitioned from heparin to enoxaparin

Day 4
- MRI brain with worsening sinusitis, mastoiditis, and osteomyelitis; numerous brain abscesses (>50); persistent IJV thrombi

Day 6
- Enoxaparin held for I&D procedure
- Dose of protamine sulfate

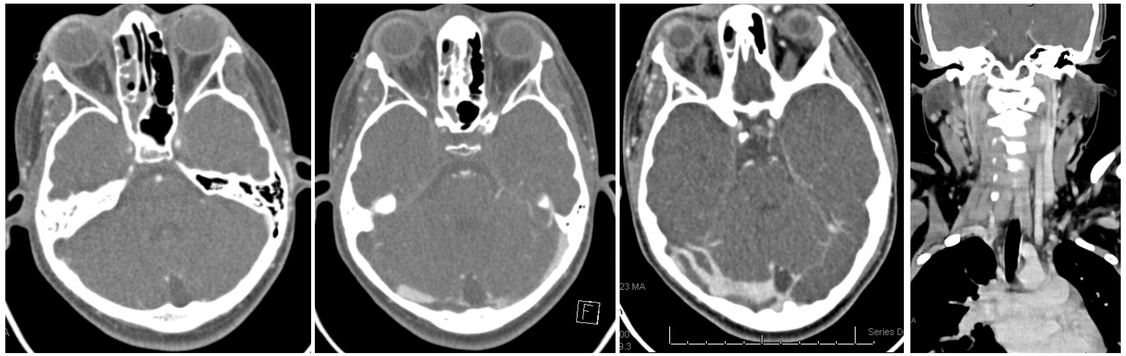
Day 7
- 1 AM- In OR, lowest BP 74/37
- 3 AM- Transient disconjugate gaze and decreased responsiveness
- 4 AM- Back to baseline
- 6 AM- Stroke alert for unilateral weakness
- MRI brain stroke protocol and vessel imaging

Day 15
- Repeat vessel imaging with mild improvement

Day 22
- Anticoagulation resumed for 12 more weeks & antibiotics for 8 more weeks
- Subtle residual RUE weakness, resolved by day 34

Imaging Results

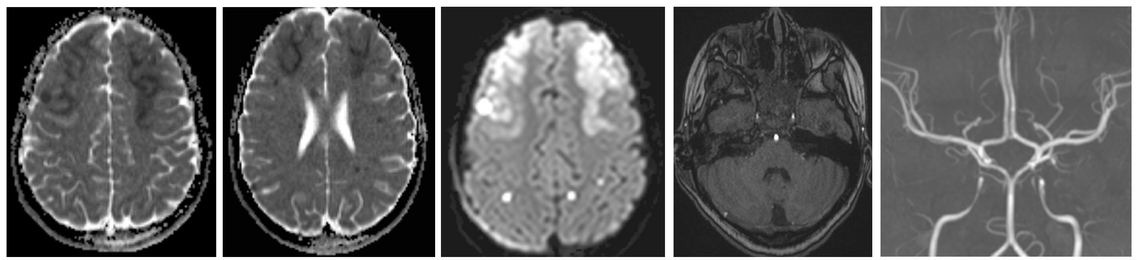
DAY 1: INITIAL PRESENTATION



DAY 4: MRI FOR MONITORING DISEASE PROGRESSION

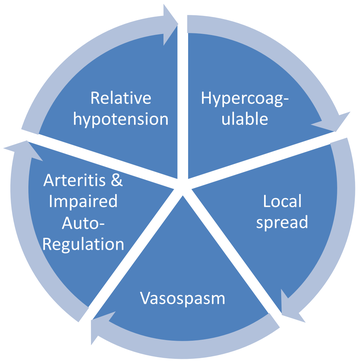
Additionally:
(1) Numerous brain abscesses (>50) with diffusion restriction and minimal enhancement (sub-optimally seen on CT)
(2) Progressive infection (retropharyngeal abscess, osteomyelitis, sinusitis, mastoiditis, orbital abscess)
(3) Cavernous sinus thrombosis and adjacent subdural empyema, transverse and sigmoid sinus thrombosis with subtle cerebellitis

DAY 7: STROKE ALERT



Discussion

Lemierre's syndrome is well-known for its venous complications, particularly of the internal jugular vein and cavernous sinus thrombosis. Yet, there remains much controversy surrounding anticoagulation with a recent review demonstrating anticoagulation use in ~65% of pediatric LS. Arterial involvement is less common and primarily secondary to local invasion or pseudoaneurysm formation. Multifactorial cerebral infarct remains a rare complication but demonstrates the need for targeted, multi-tiered management.



- Early recognition
- Control of local infection
- Anticoagulation
- Role for steroids
- Timing of surgical interventions
- Targeted blood pressure management

Features suggesting increased risk of extensive complications:

Extensive disease/ abscesses → Skull base osteomyelitis → Cavernous sinus thrombosis → Longitudinal ICA narrowing

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