An Unusual Case of Lemierre Syndrome- One Pathogen or Two?

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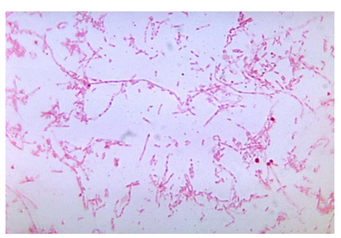
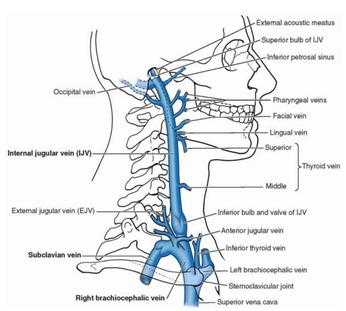
Abstract

Lemierre syndrome, or septic thrombophlebitis of the internal jugular vein, is a rare disease that affects healthy young adults following an episode of pharyngitis or other upper respiratory disease. It most commonly involves the anaerobe *Fusobacterium necrophorum*, a component of normal oral flora. We present an unusual case of polymicrobial Lemierre syndrome involving both *F. necrophorum* and Group C streptococcus following an episode of pharyngitis and streptococcal toxic shock syndrome. Providers should consider the possibility of polymicrobial infection when there are imaging findings suggestive of Lemierre Syndrome and adjust antibiotic regimens accordingly.

Introduction

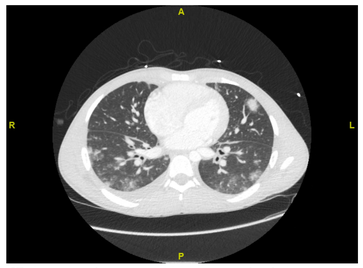
- **Lemierre Syndrome is characterized by septic thrombophlebitis of the internal jugular vein**
- **Typically caused by oral anaerobe *Fusobacterium necrophorum* following an episode of pharyngitis**
- **The disease typically affects otherwise healthy teenagers or young adults**





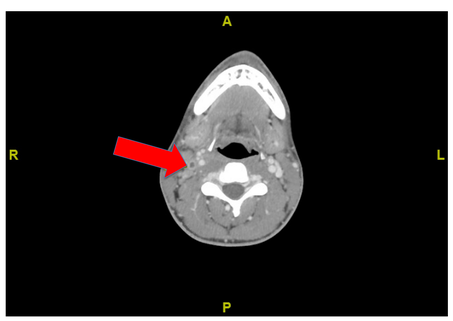
Case Report

- **Patient is a 20-year-old male with no significant past medical history**
- **Presented to the ED with 8-day history of systemic symptoms, such as fever, sore throat, chest pain, diarrhea, emesis, and one episode of pre-syncope**
- **He had been seen 4 days prior at an outside hospital for a presumed viral infection**
- **In the ED, patient was febrile and hypotensive with systolic BP in 60—70s; PE showed hepatosplenomegaly and abdominal tenderness; lab values in Table 1**
- **Begun on vasopressors, cefepime, vancomycin; pan-cultured with addition of throat cultures**
- **Chest CT showed diffuse ground-glass attenuation**
- **Blood cultures grew Group C Streptococcus; toxic shock syndrome presumed**
- **Patient defervesced and labs improved (Table 1); repeat blood cultures negative; discharged with 14-day course of ceftriaxone**

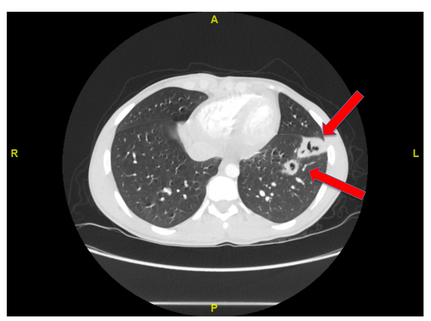


CT chest showing ground-glass attenuation in both lungs.

- **After discharge, blood cultures finalized and grew *Fusobacterium necrophorum***
- **Patient returned to ED with new-onset fever, shortness of breath, neck pain**
- **CT neck showed filling defect in right IJV; CT chest showed new cavitary lesions suspicious for septic emboli**
- **Patient treated with IV ceftriaxone and metronidazole**



CT neck showing right IJV filling defect (denoted by arrow).



CT chest from second admission showing cavitary lesions in left lung suspicious for septic emboli (marked by arrow).

	Reference Range	Day 1 of 1st admission	Day 7 of 1st admission	Day 1 of 2nd admission	Day 5 of 2nd admission
WBC	4.0-11.0 x 10^3/L	37.0 (72% neutrophils, 15% bands, 2% lymphocytes)	11.7 (66% neutrophils, 1% bands, 17% lymphocytes)	17.8 (86.8% neutrophils, 5.3% lymphocytes)	5.2 (31% neutrophils, 40% lymphocytes)
HGB	14.0-18.0 g/dl	13.2	9.8	10.2	9.0
Na	133-145 meq/L	129	133	126	132
K	3.7-4.8 meq/L	3.5	4.6	4.8	4.1
BUN	6-20 mg/dl	33	11	19	21
Cr	0.7-1.2 mg/dl	3.3	0.7	1.0	0.8
AST	0-40 U/L	58	25	82	27
ALT	0-41 U/L	33	19	72	38
Total Bili	<1.0 mg/dl	4.7 (3.6 direct)	1.6	0.9	0.5
Lactic Acid	0.5-2.2 mmol/L	4.7	n/a	0.7	n/a
D-Dimer	90-500 ng/mL	2,843	n/a	3,830	n/a
ESR	0-15 mm/hr	24	n/a	104	n/a
CRP	0-5 mg/L	236	n/a	65	n/a
Fibrinoge n	145-490 mg/dl	496	n/a	n/a	n/a
LDH	120-250 u/L	303	n/a	n/a	n/a
Ferritin	30-400 ng/mL	1,288	n/a	n/a	n/a
Procalcito nin	<0.5 ng/mL	472	n/a	n/a	n/a
COVID19 PCR	n/a	Negative	n/a	Negative	n/a
Rapid Strep	n/a	Negative	n/a	n/a	n/a

Table 1. Lab values during the patient's two hospital stays.

Discussion

- **Lemierre syndrome is a septic thrombophlebitis that can precipitate septicemia and septic shock, typically following pharyngitis**
- **In rare cases, Lemierre syndrome can present as polymicrobial sepsis**

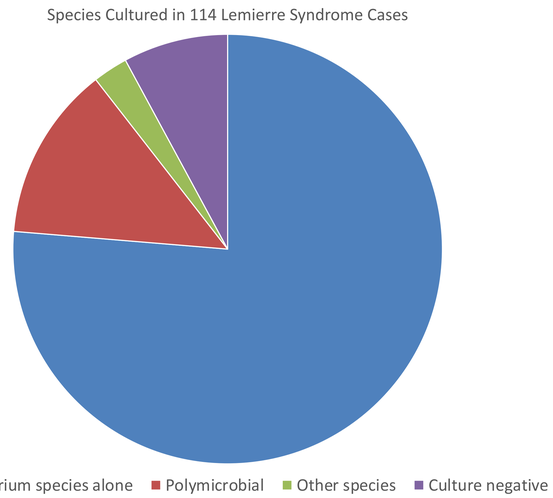


Figure 1. Bacterial species found on blood cultures according to a systematic review of 114 cases of Lemierre Syndrome (Karkos et al, 2009). There were 2 (1.8%) cases that involved both *F. necrophorum* and Group C Streptococcus.

References

Karkos, P. D., Asrani, S., Karkos, C. D., Leong, S. C., Theochari, E. G., Alexopoulou, T. D., et al. (2009). Lemierre's syndrome: A systematic review. *Laryngoscope, 119*(8) doi:10.1002/lary.20542