Hepatic Abscesses and Pylephlebitis Due to *Fusobacterium Nucleatum* Septicemia: Lemierre's Syndrome Variant

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Introduction

- Fusobacterium species are gram negative, strictly anaerobic bacilli that are predominantly found in the gastrointestinal tract, oropharynx, and female genital tract [1].
- Lemierre's syndrome is a rare complication of oropharyngeal infections. It involves the extension of infection to the lateral pharyngeal spaces of the neck with the subsequent development of septic thrombophlebitis of the internal jugular vein(s).
- In Lemierre's syndrome, which most commonly affects young individuals, *Fusobacterium necrophorum* is the predominant bacterium species. Comparatively, *Fusobacterium nucleatum (F. nucleatum*) is the most common species causing intraabdominal and pelvic infections. This presentation is known as GI variant of Lemierre's syndrome, and more commonly occurs in the elderly population [2,3].
- We report a rare case of *F. nucleatum* septicemia with septic pylephlebitis and multiple liver abscesses, most likely precipitating from diverticulitis.

Case Presentation

Patient : 62-year-old female
Past Medical History : Hypertension, heart failure with reduced ejection fraction, hyperlipidemia, anxiety, depression, and anxiety.
Chief Complaint : fatigue and confusion
Presentation :
- Patient's son noted that for the past week patient has not been acting like herself. She was not answering questions appropriately the day before presentation.
- She had also generalized malaise, confusion, low-grade fever, and body aches.
- 1-2 months prior to presentation, she had left-sided cramping abdominal pain associated with decreased appetite and occasional bloody stool.
- Denies SOA, cough, urinary symptoms, chest pain, nausea or vomiting.

Vitals: Temperature 99.8, HR 90, RR 29, BP 103/45, Spo2 97% on room air
Physical Exam: remarkable for tenderness to palpation in the RUQ and the epigastric areas
Medications: Amlodipine, Carvedilol, Atorvastatin, Losartan, Sertraline
Past Surgical History: None
Social History: smokes 0.5 PPD for 30 years, denies alcohol, current marijuana, past cocaine use
Family History: Mom and sister with DM and HTN

Timeline

Initial work-up
- Labs : (Table 1)
- Chest X-ray : Negative
- CT Head : Negative
- Urine Analysis : Negative
- Toxicology : Negative
- Blood Cultures : *Fusobacterium nucleatum*
- CT Abdomen and Pelvis with IV Contrast : (Figure 1)

Treatment
- IV Fluids
- Enoxaparin and Ampicillin- Sulbactam
- MRCP : (Figure 2)

Malignancy work-up
- CT Chest : Unremarkable
- MRI Brain : Unremarkable
- Colonoscopy : (Figure 3)
- Tumor Markers (AFP, CEA and CA-19-9) : Negative

Management
- IR Aspiration of the Liver Lesions with Cytology : Degenerative cells, neutrophils, and negative for malignancy.
- Aspirate Culture : *Fusobacterium nucleatum*
- Echo : Negative for vegetation.

Discharge
- Ertapenem and Apixaban
- Follow up with ID

Follow up
- Amoxicillin -Clavulanate and Apixaban : (total of 12 weeks)
- Repeat CT abdomen with IV Contrast every 4 weeks : (Figure 4)
- Hepatic drains removed

Figures

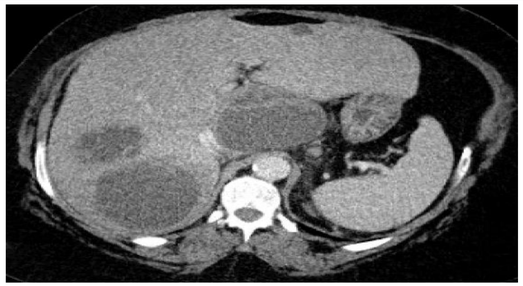


Figure 1 :CT abdomen and pelvis with IV contrast showing numerous large hepatic lesions up to 9 cm in size, subocclusive thrombus in the superior mesenteric and portal veins, several enlarged para-aortic lymph nodes, and chronic diverticulitis.

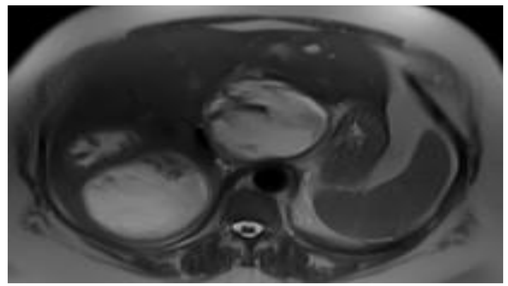


Figure 2 : MRCP demonstrating multiple predominantly cystic hepatic masses suspicious for abscess versus metastatic disease.

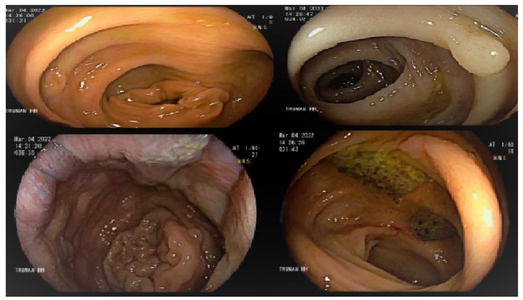


Figure 3 : Colonoscopy shows moderate, benign appearing, 10cm stenosis in the distal sigmoid colon, extensive diverticula, a sigmoid polyp (not resected) and internal hemorrhoids.

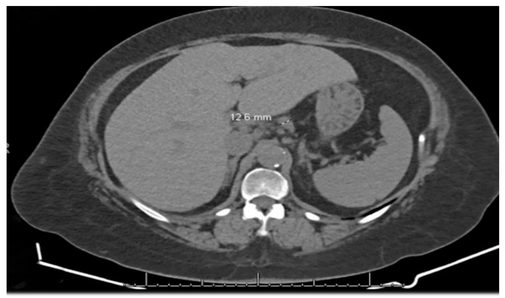
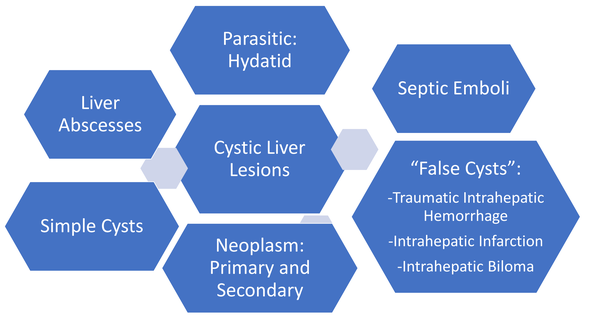


Figure 4 : Repeat CT abdomen and pelvis with IV contrast after 12 weeks shows near complete resolution of the multiple hepatic abscesses and mild residual non-occlusive thrombus.

Labs (Table 1)

Lab	Result	Lab	Result
BMP	Remarkable for Creatinine 1.3 (baseline 0.6)	**INR**	1.3
Alkaline Phosphatase	128	**UA**	negative
AST	21	**Iron/ Transferrin/ TIBC/Saturation**	17/16/232/ 7
ALT	7	**Ferritin**	1155
Total Bilirubin	0.7	**Ammonia**	55
WBC	12	**Toxicology**	Negative
Neutrophils %	81%	**AFP**	3.1
Hemoglobin	8.8	**CEA/CA-19-9**	39-9
Platelet	299	**Hepatitis Panel**	negative
Lactate	1.4	**HIV**	negative
Folate/B12/TSH	7.3/279/ 3.3	**Stool Culture, Shiga, Campylobacter**	negative

Differential Diagnosis



Take-Home Message

- Our patient had portal vein thrombosis, splenic vein thrombosis and hepatic abscesses from a suspected diverticulitis.
- This picture mimics metastatic liver lesions with portal vein thrombosis. Thus, exclusion of malignancy and distinguishing clinical features should be recognized.
- The clinical presentation of GI Variant Lemierre's Syndrome is quite variable and non-specific, most commonly being associated with abdominal pain and fever.
- A multidisciplinary approach is needed to treat liver abscesses and pylephlebitis. This complex disease presentation often requires a combination of abscess drainage, anticoagulants, and targeted antibiotics [4].
- Carrying a mortality rate of 17-35%, early recognition and prompt treatment of the GI Variant of Lemierre's Syndrome is critical to providing quality patient-centered care [5].

References

1. 1. Dorsher CW, Rosenblatt JE, Wilson WR, Ilstrup DM. Anaerobic bacteremia: decreasing rate over a 15-year period. *Rev Infect Dis*. 1991;13(4):633-636. doi:10.1093/clinids/13.4.633
2. Hagelskjaer Kristensen L, Prag J. Lemierre's syndrome and other disseminated Fusobacterium necrophorum infections in Denmark: a prospective epidemiological and clinical survey. *Eur J Clin Microbiol Infect Dis*. 2008;27(9):779-789. doi:10.1007/s10096-008-0496-4
3. Huggan PJ, Murdoch DR. Fusobacterial infections: clinical spectrum and incidence of invasive disease. *J Infect*. 2008;57(4):283-289. doi:10.1016/j.jinf.2008.07.016
4. Brazier JS, Hall V, Yusuf E, Duerden BI. Fusobacterium necrophorum infections in England and Wales 1990-2000. *J Med Microbiol*. 2002;51(3):269-272. doi:10.1099/0022-1317-51-3-269
5. Abraham MN, Mathiason MA, Kallies KJ, Cogbill TH, Shapiro SB. Portomesenteric venous thrombosis: a community hospital experience with 103 consecutive patients. *Am J Surg*