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# A Case Report of Lemierre's Syndrome

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**Abstract**

Lemierre's syndrome, also known as post-anginal septicemia is a rare entity characterized by a triad of septicemia, internal jugular vein thrombophlebitis and metastatic septic emboli secondary to acute pharyngeal infections. It is commonly seen in young men, with 70% of patients between 16 and 25 years old. Lemierre's syndrome shows various clinical presentations, thus recognizing this disease in early stage is difficult. Thus, higher clinical suspicion is required to establish the diagnosis of Lemierre's syndrome. This case report describes a rare presentation of Lemierre's syndrome in a 64-year-old lady who presented with acute onset of anterior neck swelling associated with progressive fatigue, pain and fever for one-week duration. Physical examination at admission found that she was feverish with tachycardia. Oxygen saturation was maintained under room air, and she was not hypotensive. A neck examination revealed soft anterior neck swelling without evidence of clinical inflammation. Further imaging showed retropharyngeal space collection with thrombosis of bilateral internal jugular veins. She was managed with broad-spectrum antibiotic coverage and subsequently achieved full recovery. Our main objective is to highlight the importance of recognizing and diagnosing Lemierre's syndrome in older population to achieve appropriate treatment and management.

**Keywords**
Lemierre's syndrome, geriatric, diagnosis

## Introduction

Lemierre's syndrome, or post-anginal septicemia, is a rare condition with an estimated incidence reported up to 3.6 cases per 1000,000 per year, predominantly affecting younger population[1]. The syndrome is

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potentially fatal, with a mortality rate of around 5%. It is characterized by thrombophlebitis of the internal jugular vein secondary to an infection of the head and neck region caused by anaerobic septic embolization[2]. The most common causative agent is Fusobacterium necrophorum, an aerobic commensal gram-negative bacillus in the upper respiratory tract. Other organisms such as Staphylococcus, Streptococcus, and Klebsiella species may also cause this condition[3]. Antibiotic therapy is mainstay treatment for Lemierre's syndrome. In patients with non-resolving abscesses, surgical drainage is required. Early detection and recognition of Lemierre syndrome is crucial to prevent fatal systemic sepsis. We present a rare case of Lemierre's syndrome in an old lady in an immunocompromised state who is recovering well after a course of antibiotics.

**Case report**

A 64-year-old with underlying hypertension, diabetes mellitus and end-stage renal failure. She presented with anterior neck swelling associated with pain, fever and progressive fatigue. The symptoms are acute in onset and last for one week. She denied any breathlessness, sore throat, chest pain, trauma or any previous history of thyroid disease. Her general state was stable on physical examination, but she was tachycardia with a heart rate of 110 beats per minute and feverish with a temperature of 38 °C. She was noted to have mild anterior neck swelling with no evidence of skin inflammation or pus discharge. Otherwise, she was not in respiratory distress and saturating well under room air. Her blood investigations revealed a high white blood cell (WBC) count with a value of 13.3 (4.1-11.2x10^3 uL) and a raised C reactive protein (CRP) level with a value of 34.3 (0-0.5mg/dl).

Cervical radiograph done in AP and lateral view showed thickening of prevertebral soft tissue at the cervical region with evidence of right internal jugular vein catheter. No emphysema or air pocket within the soft tissue thickening (Figure 1).

The chest radiograph showed pneumonic changes with mild pleural effusion (Figure 2). Ultrasound of the neck showed bilateral internal jugular vein thrombosis. Subsequently, she underwent contrast-enhanced computed tomography (CT) of the neck, which showed a small collection of retropharyngeal space associated with surrounding fat streakiness (Figure 3). Apart from that, there was a long segment filling defect in the right internal jugular vein extending from C5 until T2 vertebral level in keeping with thrombosis (Figure 4). Another eccentric filling defect is also seen within the left internal jugular vein consistent with thrombosis (Figure 5). Since the clinical and radiological findings correlated, Lemierre's syndrome was diagnosed.

A peripheral and central blood cultures from the right internal jugular vein catheter were positive for pseudomonas aeruginosa. Throughout her clinical course, she remained in a standard ward. She was given intravenous antibiotics targeted to the causative pathogen together with analgesic and non-steroidal anti-inflammatories. The right internal jugular vein catheter was removed, and a permanent catheter at the left femoral vein was inserted for her hemodialysis. The patient's laboratory parameters and clinical symptoms were significantly improved throughout her hospital stay, and she was discharged 14 days after admission.

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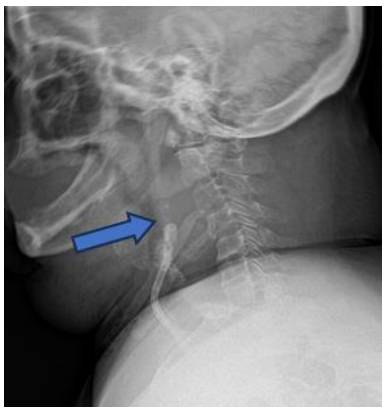

Figure 1: Lateral view of cervical spine showed prevertebral soft tissue thickening. Noted internal jugular catheter with tip in situ (Arrow).

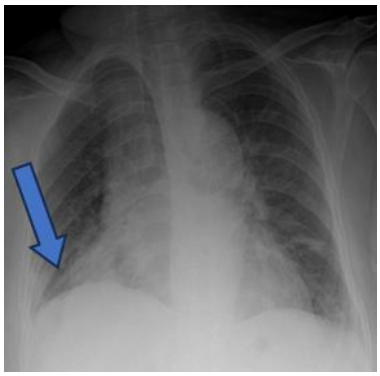

Figure 2: Chest radiograph in AP projection showed consolidation in right middle zone with obliteration of right heart border (Arrow). Noted minimal blunting of right costophrenic angle.

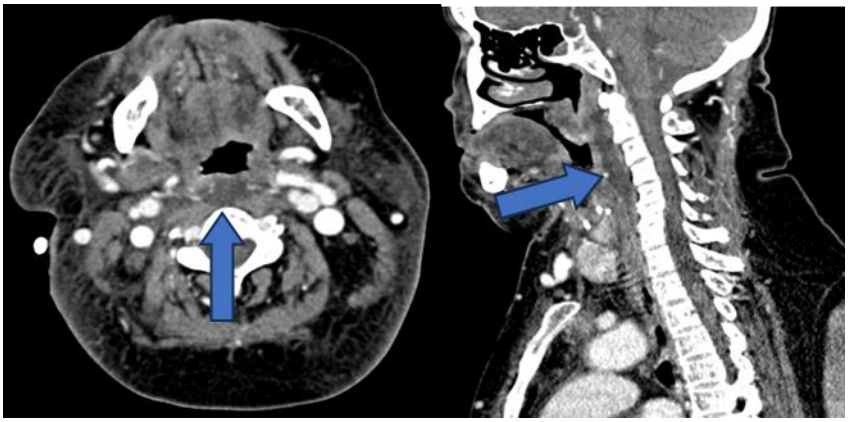

Figure 3: Contrast enhanced CT neck in axial and sagittal view showed retropharyngeal space collection with surrounding fat streakiness extending from C2 toC6 vertebrae level (Arrow).

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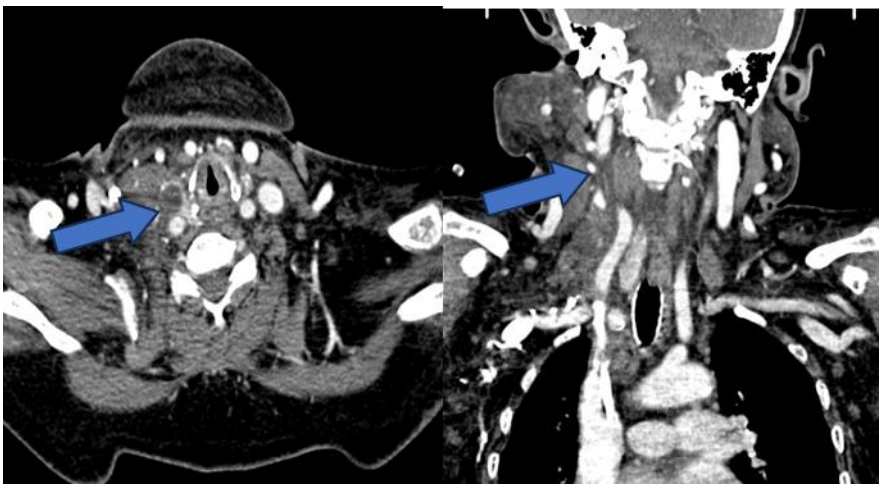

Figure 4: Contrast enhanced CT neck in axial and coronal view showed long segment filling defect in the right internal jaguar vein in keeping with thrombosis (Arrow).

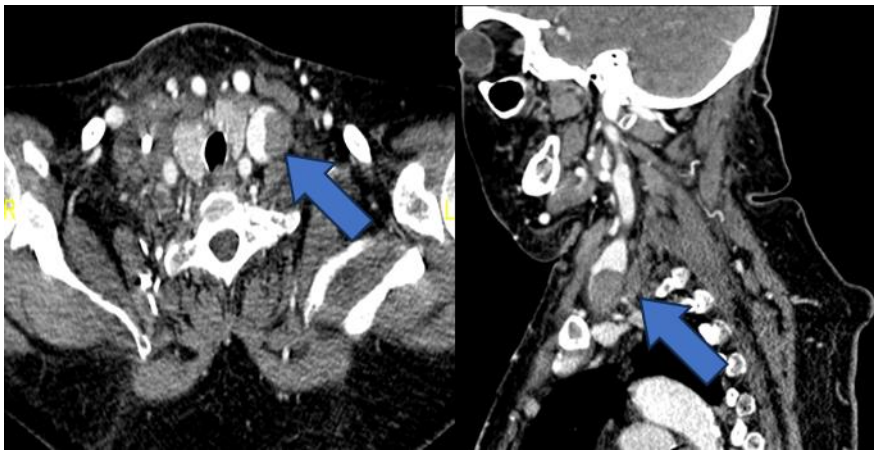

Figure 5: Contrast enhanced CT neck in axial and sagittal view showed eccentric filling defect in the left internal jaguar vein in keeping with thrombosis (Arrow).

**Discussion**

Lemierre's syndrome predominantly affects young adults and adolescents[4]. Risk factors for Lemierre's syndrome include immunocompromised state, organisms and environmental conditions[5]. Most young people start with pharyngitis, while the old age group presents with distant septic emboli complications such as brain abscesses or empyema. The difference in manifestations may be due to poor immune response or occult infections in the old age group population[6]. This syndrome is characterized by septicemia caused by Fusobacterium necrophorum, an aerobic gram-negative bacillus of oral flora which invades the pharyngeal mucosa, resulting in subsequent internal jugular vein thrombophlebitis and metastatic infection[7]. Apart from Fusobacterioum necrophorum, other pathogens such as Staphylococcus, Streptococcus, Proteus, and Bacteroides can cause Lemierre's syndrome[3]. In our case, the patient has diabetes mellitus complicated with end-stage renal failure, which suppresses her immune status, thus predisposing her to Lemierre's syndrome. However, this syndrome is uncommon in older age groups.

Pseudomonas aeruginosa, as depicted in our case, is a gram-negative aerobic pathogen that can cause various infections in both immunocompetent and immunocompromised hosts. In a systematic review by Johannesen and Bodtger, other pathogens like Klebsiella and Pseudomonas can cause Lemierre's syndrome. Pseudomonas is commonly associated with immunocompromised hosts and patients with indwelling medical catheters, as depicted in our patient. Clinical manifestations of Lemierre's syndrome are usually high-grade fever from 39 to 41 °C with chills and rigour from 4 to 5 days onset of pharyngitis[10].

Hematogenous spread to the lungs is most affected in up to 85% of the cases. Lung lesions commonly appear as cavitary lesions, infiltrates, empyema, pleural effusion and lung abscesses[9]. Chest radiograph typically shows bilateral non-specific opacities and small pleural effusions[8]. Radiological features of septic pulmonary emboli include feeding vessel signs, pulmonary infarcts, lower zone predilection and lung abscess. As in our case, the lung findings only revealed consolidation with minimal pleural effusion. The septic emboli originating from the thrombosis in the jugular vein may also affect the joints, which may cause the patient to develop septic arthritis or osteomyelitis. Another site of septic emboli may also result in meningitis, pericarditis and hepatic abscesses. The thrombosis of the internal jugular vein can be assessed by ultrasound, given its comparatively lower cost and lack of radiation risk. However, the low echogenicity of fresh clots combined with limited anatomical assessment of the lower neck may result in lower sensitivity for detecting acute thrombosis. Thus, contrast-enhanced CT neck is widely used clinically, given better sensitivity and specificity in detecting thrombosis[10].

The mainstay of treatment for Lemierre's syndrome is an antibiotic that is tailored to the culture results. Early administration of intravenous antibiotics is necessary to minimize the morbidity and mortality caused by Lemierre's syndrome[11]. The main causative agent, Fusobacterioum necrophorum, is sensitive to penicillin, clindamycin and metronidazole[7]. Recommended duration of antibiotic therapy is three to six weeks to allow time for antibiotics to penetrate the necrotic abscess and fibrin clot[7]. Besides that, surgical management may be deemed necessary in cases of abscess formation and pulmonary thrombosis or in patients with thrombus extension into the mediastinum and cerebrum. Anticoagulation therapy in Lemierre's syndrome is controversial. Uncomplicated Lemierre's syndrome without extensive clot burden usually resolves with appropriate antibiotic therapy without anticoagulation[12]. However, an anticoagulant was started in our patient, given the clot burden involving both internal jugular veins.

## Conclusion

Although Lemierre's syndrome occurs predominantly in young adults, this entity should not be forgotten in the older age group population who presented with head and neck infections with internal jugular vein thrombophlebitis as well as systemic complications caused by septic emboli. It is a rare disease that needs prompt recognition and immediate treatment to avoid morbidity and mortality.

## Declaration

Author(s) declares that no conflict of interest.

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**References**

1. L. Hagelskjaer Kristensen, J. Prag, et al. Lemierre's syndrome and other disseminated Fusobacterium necrophorum infections in Denmark: a prospective epidemiological and clinical survey. Eur J Clin Microbiol Infect Dis, 27 (9)(Sep 2008), pp. 779-789.
2. Gupta N, Kralovic SM, McGraw D. Lemierre Syndrome: Not So Forgotten! American Journal of Critical Care [Internet]. 2014 Mar 1 [cited 2024 Aug 12];23(2):176–9. Available from: https://dx.doi.org/10.4037/ajcc2014975
3. Stavrakas M, Karkos PD, Karkos CD. Lemierre's syndrome. Infections of the Ears, Nose, Throat, and Sinuses [Internet]. 2018 May 3 [cited 2024 Aug 12];223–30. Available from: https://www.researchgate.net/publication/324928452_Lemierre's_Syndrome
4. Libeer C, Bockaert J, Van den Brande P, Zachee P, Van de Vyvere M, Geyskens W. HET SYNDROOM VAN LEMIERRE: EEN GECOMPLICEERDE OROFARYNGEALE INFECTIETHE LEMIERRE SYNDROME: A COMPLICATED OROFARYNGEAL INFECTION. Acta Clin Belg. 2005 Aug;60(4):173–9.
5. Righini CA, Karkas A, Tourniaire R, N'Gouan JM, Schmerber S, Reyt E, et al. Lemierre syndrome: study of 11 cases and literature review. Head Neck [Internet]. 2014 [cited 2024 Aug 12];36(7):1044–51. Available from: https://pubmed.ncbi.nlm.nih.gov/23784917/
6. Kim JH, Kwon HY, Durey A. Thrombophlebitis of superior mesenteric vein with bacteremia of Gemella sanguinis and Streptococcus gordonii. Journal of Microbiology, Immunology and Infection. 2019 Aug 1;52(4):672–3.
7. Kuppalli K, Livorsi D, Talati NJ, Osborn M. Lemierre's syndrome due to Fusobacterium necrophorum. Lancet Infect Dis [Internet]. 2012 Oct 1 [cited 2024 Aug 12];12(10):808–15. Available from: http://www.thelancet.com/article/S1473309912700890/fulltext
8. Alperstein A, Fertig RM, Feldman M, Watford D, Nystrom S, Delva G, et al. Septic thrombophlebitis of the internal jugular vein, a case of Lemierre's syndrome. Intractable Rare Dis Res [Internet]. 2017 [cited 2024 Aug 13];6(2):137. Available from: /pmc/articles/PMC5451747/
9. Lee W Sen, Wang F Der, Shieh YH, Teng SO, Ou TY. Lemierre syndrome complicating multiple brain abscesses caused by extended-spectrum β-lactamase-producing Klebsiella pneumoniae cured by fosfomycin and meropenem combination therapy. J Microbiol Immunol Infect [Internet]. 2012 Feb [cited 2024 Aug 12];45(1):72–4. Available from: https://pubmed.ncbi.nlm.nih.gov/22154996/
10. Johannesen KM, Bodtger U. Lemierre's syndrome: current perspectives on diagnosis and management. Infect Drug Resist [Internet]. 2016 Sep 14 [cited 2024 Aug 12];9:221–7. Available from: https://pubmed.ncbi.nlm.nih.gov/27695351/
11. Walkty A, Embil J. Lemierre's Syndrome. N Engl J Med [Internet]. 2019 Mar 21 [cited 2024 Aug 12];380(12). Available from: https://pubmed.ncbi.nlm.nih.gov/30893539/
12. Riordan T, Wilson M. Lemierre's syndrome: more than a historical curiosa. Postgrad Med J [Internet]. 2004 Jun [cited 2024 Aug 12];80(944):328. Available from: /pmc/articles/PMC1743018/?report=abstract