

Grave Complication of Pharyngitis: Lemierre syndrome

SUTHAR POKHRAJ PRAKASHCHANDRA¹, ANKIT KUMAR B. PATEL²,
KIMMYBEN PATEL³, RAJ KUMAR DOSHI P.⁴, NAROTTAM A. PATEL⁵

ABSTRACT

Fusobacterium necrophorum is the causative agent in the pharyngitis. After invasion of the oropharyngeal mucosa by the organism leads to the development of the grave complications like superficial thrombophlebitis of internal jugular vein, septic emboli in the lung and coagulopathy. A 23-year-old male presented with chief complaints of sore throat, headache and high grade fever with past history of upper respiratory tract infection one month ago. On examination, he had high grade fever, tachycardia, hypotension and tender cervical lymph nodes. Oropharyngeal mucosa appeared oedematous and congested. Leucocytosis with raised ESR was present. Blood culture positive for *Fusobacterium necrophorum*. Dilated right IJV with the hypoechoic thrombosis seen on Ultrasonography & Doppler. Patient was diagnosed as a case of Lemierre syndrome secondary to oropharyngeal infection was made. He was treated with intravenous imipenem and metronidazole, and then shifted to oral amoxicillin. After completion of full course of the therapy of 6 weeks, patient was improved clinically and all routine blood investigations were normalized. Blood culture was negative for *Fusobacterium necrophorum*. No evidence of thrombosis within the right internal jugular vein on Doppler.

Keywords: Colour doppler, Complication of pharyngitis, Internal jugular vein

CASE REPORT

A 23-year-old male presented in ENT department of the Shree Shayaji General Hospital, Vadodara 8 months back with complaints of sore throat, headache and high grade fever with rigors. The patient had past history of the upper respiratory tract infection one month ago. Generalised body weakness and lethargy were also present. Symptoms were progressive over the period of the last one month. There was no history of the chest pain, abdominal pain, breathlessness, cough, diarrhoea, nausea, vomiting or photophobia. On general examination, patient was looking lethargic with high grade fever of 103°F with tachycardia (pulse-112/min) and tender cervical lymph nodes. There was no pallor, icterus or pitting pedal oedema. Patient was hypotensive with blood pressure of 104/64 mm of Hg. Oropharyngeal mucosa appeared oedematous and congested [Table/Fig-1]. No hepatomegaly or splenomegaly on per abdominal examination. No history of substance abuse or significant family history. Clinical diagnosis of high grade fever with cervical lymphadenopathy secondary to the upper oropharyngeal infection was postulated.

Total white blood cell count was 15,000/mm³ (leucocytosis), red blood cells was 4.5 millions/mm³ (normal) and platelet count was 2,02,000/mm³(normal) with normal peripheral blood smear examination. Erythrocyte sedimentation rate at the end of one hour was 65 mm(raised). Blood culture was positive for the growth of gram negative and anaerobic bacteria *Fusobacterium necrophorum*. Chest x ray was normal. Liver function tests and renal function tests were within normal limits.

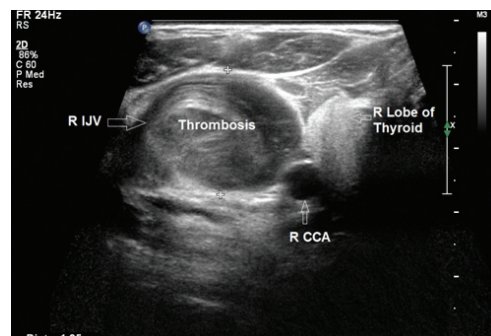
On ultrasonography of the neck with linear high frequency probe, revealed dilated right internal jugular vein (IJV) which is filled with the hypoechoic thrombosis within [Table/Fig-2,3]. On application of the colour Doppler there is no intra-luminal Doppler detectable flow [Table/Fig-4]. There was no change in the size of the lumen on performing valsalva manoeuvre. Few enlarged lymph nodes were seen along bilateral upper IJV (Level II). Rest of the great vessels of the neck appears normal. Patient was diagnosed as Lemierre syndrome (Thrombophlebitis of internal jugular vein) secondary to oropharyngeal infection was made. Patient was treated with intravenous imipenem 500 mg two times daily and intravenous metronidazole 500 mg three times daily. After starting intravenous therapy patient symptomatically improved in two weeks, then he shifted to oral amoxicillin 500 mg three times daily for the four weeks. After completion of full course of the therapy patient was improved clinically. And routine blood counts were within normal limits. Blood culture was negative for *Fusobacterium necrophorum*. No evidence of thrombosis within the right IJV on Doppler [Table/Fig-5,6].

DISCUSSION

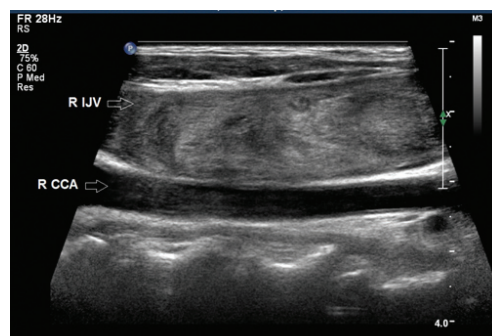
Lemierre syndrome is rare thrombophlebitis of the IJV with distant metastatic sepsis seen in the setting of initial oropharyngeal infection. Most common in the 2nd decade of life (51%), followed by the 3rd decade (20%) and then the 1st decade (8%) [1]. There is no sex predominance with Lemierre's syndrome. Late winter and early spring seasons are highly vulnerable for it [2].



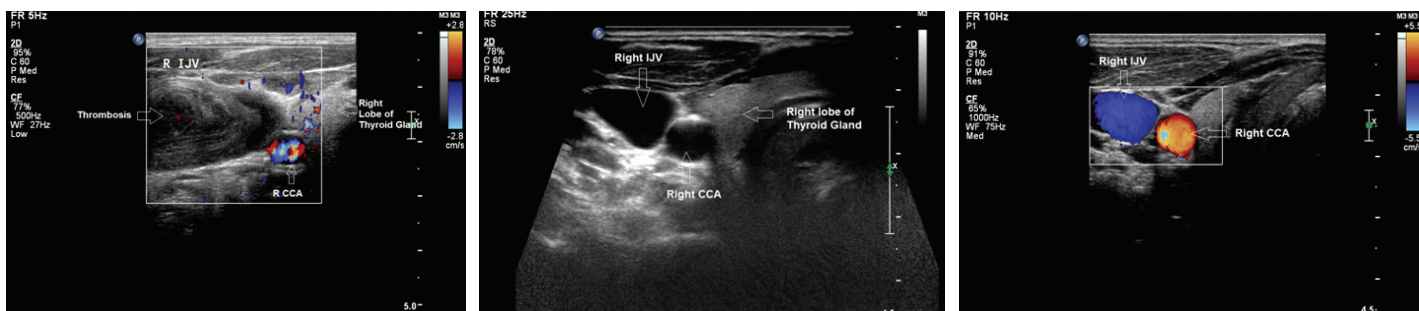
[Table/Fig-1]: Clinical image of the oral cavity shows red, oedematous and congested oropharyngeal mucosa



[Table/Fig-2]: High frequency ultrasonographic image with probe placed transversely at on right side at the level of the lower border of the thyroid cartilage shows dilated right Internal Jugular Vein with hypoechoic thrombosis within



[Table/Fig-3]: High frequency ultrasonographic image with probe placed longitudinally shows dilated right IJV with hypoechoic thrombosis within



[Table/Fig-4]: Doppler image with probe placed transversely at on right side at the level of the lower border of the thyroid cartilage shows dilated right IJV with no evidence of flow within. However right common carotid artery shows normal colour flow

[Table/Fig-5]: High frequency ultrasonographic image with probe placed transversely at on right side at the level of the lower border of the thyroid cartilage shows no evidence of thrombosis within

[Table/Fig-6]: Doppler image with probe placed transversely at on right side at the level of the lower border of the thyroid cartilage shows normal colour flow in right IJV

According to the Karkos et al., chest x-ray was the first-line investigation in 92% of patients ultimately diagnosed with Lemierre's syndrome [1]. Lemierre's syndrome is now a rare condition with an incidence of 3.6 cases per 1 million per year [3].

The main symptoms start with a sore throat, fever, and generalized bodyache. These symptoms followed by lethargy, spiked fever, rigors, enlarged cervical lymph nodes. Symptoms of septic shock like hypotension, tachycardia, oliguria and tachypnea may be there. The neck pain with Lemierre's syndrome is typically unilateral and may be aggravated by turning the head away from the involved side due to irritation of the sternocleidomastoid muscle [4]. Andre Lemierre published a case series of 20 patients presented with Lemierre syndrome characterized by clinical or radiological evidence of internal jugular venous thrombosis secondary to the oropharyngeal infection caused *Bacillus funduliformis* [5].

The bacteria causing the thrombophlebitis are anaerobic bacteria. 81% of Lemierres's syndrome had been infected with *Fusobacterium necrophorum*, while 11% were caused by other *Fusobacterium* species. Rarely, Lemierres's syndrome is caused by *Bacteroides fragilis* and *Bacteroides melanogenicus*, *Streptococcus microaerophile*, *Staphylococcus aureus*, and *Eikenella corrodens*. *F. necrophorum* exists in normal oral mucosal flora. If oropharyngeal mucosal damage from another pathologic organism occurs then subsequently there is extension of *F. necrophorum* into the parapharyngeal spaces happens [6]. Septic thrombophlebitis of the IJV develops secondary to the local invasion from the lymphatic or tonsillar veins. 79% to 100% of cases can develop septic emboli to the lungs [6] and 11% to 27% of cases can manifest arthralgias [2] and rarely coagulopathies can manifest [7].

Ultrasonography may show thrombus within the jugular vein. Imaging with Color Doppler may overcome some of these shortcomings. There is no change in size of IJV on performing Valsalva maneuver. Contrast enhanced CT (CECT) as the imaging study of choice due to visualization of complications and underlying infection. CECT shows an intra-luminal filling defect in the jugular vein. However, CECT is the imaging modality of the choice for the diagnosis of suspected case of Lemierre syndrome; ultrasonography and color doppler plays vital role in the initial evaluation due to advantage of cost effectiveness, easy feasibility, no radiation exposure.

Fusobacterium spp. has 100% sensitivity to metronidazole, ticarcillin-clavulanate, cefoxitin, and imipenem [8]. It is also 100% sensitive to the amoxicillin [9]. So, our patient was treated with intravenous imipenem 500 mg two times daily and intravenous metronidazole 500 mg three times daily. After starting intravenous therapy patient symptomatically improved in two weeks, then he shifted to oral amoxicillin 500 mg three times daily for the four weeks [2]. If unrecognized and untreated systemic dissemination can occur with a poor prognosis with mortality rates as high as 18%.

CONCLUSION

Lemierre syndrome is thrombophlebitis of the internal jugular veins, most commonly caused by oral *Fusobacterium* spp. flora. Ultrasonography and colour Doppler plays vital role in the initial evaluation due to advantage of cost effectiveness, easy feasibility, no radiation exposure. *Fusobacterium* spp. highly sensitivity to Metronidazole and carbapenems. If unrecognized and untreated systemic dissemination can occur with a poor prognosis with mortality rates as high as 18%.

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PARTICULARS OF CONTRIBUTORS:

1. Resident, Department of Radiology, S.S.G. Hospital, Medical College, Vadodara, India.
2. Resident, Department of Physiology, S.S.G. Hospital, Medical College, Vadodara, India.
3. Intern, Department of Medicine, S.B.K.S. Medical Institute and Research Centre, Waghodiya, India.
4. Intern, Department of Medicine, Medical College Baroda, Vadodara, India.
5. Professor, Department of Radiology, S.S.G. Hospital, Medical College, Vadodara, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Suthar Pokhraj Prakashchandra.
5-Durga Nagar Society, Karodiya, Baroda, Gujarat, India
Email: pokhraj_suthar@yahoo.co.in

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