



Received: 03-12-2023
Accepted: 13-01-2024

International Journal of Advanced Multidisciplinary Research and Studies

ISSN: 2583-049X

An Interesting Case of Leptospirosis with Pulmonary Syndrome

¹Dr. Myla Vijay Krishna Yadav, ²Dr. Anuhya Adusumili, ³Dr. Rangeela P

^{1, 2, 3} Junior Resident, Department of General Medicine, Sree Balaji Medical College and Hospital, Chromepet, Chennai, India

Corresponding Author: Dr. Myla Vijay Krishna Yadav

Abstract

Objective: To report a case of leptospirosis with pulmonary syndrome.

Background data: Leptospirosis is one of the most common zoonotic disease occurring worldwide, *Leptospira interrogans* being the pathogenic spirochete for humans. The spread occurs mostly during the monsoons. It enters the human skin through cuts and abrasions, while rats are the frequent hosts. Leptospirosis is associated with a wide range of syndromes such as *bacteraemic leptospirosis* which infests as a non-specific illness and conjunctival congestion is the only physical sign. *Aseptic meningitis* is another manifestation with a neutrophil leucocytosis and abnormal LFTs. Weil's disease (icteric leptospirosis), is a life-threatening event which presents with hepatic and renal involvement along with haemorrhage and a macular rash. Involvement of lungs leads to *pulmonary syndrome* which is characterised by haemoptysis, patchy lung infiltrates on chest xray, ARDS with MODS.

Case: A 32 year old male, butcher by profession, had complaints of fever since the past 10 days, which was high

grade, intermittent and associated with chills and rigor, for which he went to a local hospital where he was prescribed some medications and was found to have a low haemoglobin level. His symptoms relieved in 2 days after which he noticed yellowish discolouration of eyes and a high coloured urine for which he did not consult a doctor. Four days following this episode, he started having cough and shortness of breath, which was progressive. Now, he presented to the casualty for the same and one episode of melena last night. On investigating further, he was found to have increased counts, altered LFTs, and USG Abdomen showed increased echogenicity of kidneys with normal size. Peripheral smear showed toxic granulations and no parasites were found. His viral markers and NS1 antigen were negative. He was started on NIV support, Inj. Ceftriaxone 1g BD, Inj. Azithromycin 500mg BD and symptomatic treatment was given. Since the patient's condition did not improve in 3 days, leptospira IgM was sent which came out positive with a titre of 1:400. Patient was then started on doxycycline.

Keywords: Leptospirosis, Pulmonary Syndrome, India

Introduction

Leptospirosis is a commonly underreported infectious disease that can present with various clinical manifestations. One severe complication of leptospirosis is Acute Respiratory Distress Syndrome (ARDS), which can lead to multiorgan failure and even death. ARDS is characterized by the sudden onset of severe respiratory distress and bilateral lung infiltrates on imaging. In patients with leptospirosis, ARDS can be associated with diffuse alveolar bleeding, icteric hepatitis, and renal failure.

Case Presentation

A 32 year old male, butcher by occupation came with complaints of fever since 12 days, yellowish discolouration of eyes since 8 days, shortness of breath since 4 days and melena since 1 day. The patient consulted a doctor for fever at 3 days of its onset upon which his fever subsided. He was also found to have a low haemoglobin. Following this fever episode, he developed yellowish discolouration of eyes which he neglected. Then he started having shortness of breath and cough, and presented at our casualty for the same. Patient had no known comorbidities and nil significant family history. On examination, pallor and icterus were present, rat bite marks were seen on lower limbs. His spO₂ was 88% at room air, bilateral air entry present, bilateral crepitations were heard.

Investigations

		Day 1	Day 2
CBC	TLC (cumm)	13,000	25,000
	Hb (g/dl)	9	9.8
	Platelets (lakhs/cumm)	1.2	
RFT	Sr. Creatinine (mg/dl)	3	5
	Sr. Sodium (mEq/L)	128	
	Sr. Potassium (mEq/L)	2.8	
LFT	Total bilirubin (mg/dl)	5	8
	Direct bilirubin (mg/dl)	3.4	8
	Indirect bilirubin (mg/dl)	1.6	2.6
	SGOT (IU/L)	54	50
	SGPT (IU/L)	92	98
ESR	(mm/hr)	40	
Pancreatic enzymes	Sr. Amylase (U/L)	500	
	Sr. Lipase (U/L)	482	
	Sr. LDH (U/L)	230	

Peripheral smear – toxic granulations seen. No parasites.
PTINR – normal

USG abdomen – increased bilateral echogenicity of kidneys with normal size
Viral markers – negative
Dengue NS1 – negative Widal test – 1:80

Treatment

At presentation, patient was immediately started on NIV support. Patient was managed symptomatically and started on Inj. Ceftriaxone 1g BD IV and Inj. Azithromycin 500mg OD IV.

Patient's condition did not improve for the following 3 days, after which, blood for *Leptospira* IgM was sent which came out as positive with a titre of 1:400. He was immediately started on Inj. Doxycycline and cvp guide fluids.

The management of leptospirosis with ARDS involves a multidisciplinary approach and supportive care.

Antibiotic therapy is recommended, with cephalosporins and doxycycline being the most commonly used antibiotics. In severe cases, intravenous methylprednisolone may be administered to treat the underlying vasculitic process. Lung-protective ventilation strategies, such as high positive end-expiratory pressure (PEEP) and low tidal volume, are essential for managing respiratory distress and improving oxygenation.

In cases of severe respiratory failure refractory to conventional respiratory support, extracorporeal membrane oxygenation (ECMO) can be a life-saving intervention. ECMO provides temporary cardiac and respiratory support by oxygenating the blood outside the body and removing carbon dioxide. In patients with leptospirosis-associated ARDS, venovenous ECMO (VV-ECMO) has been used successfully to improve oxygenation and allow for lung recovery.

Conclusion

Leptospirosis is an underreported infectious disease that can present with severe complications, including ARDS. Prompt recognition and diagnosis of leptospirosis with ARDS are essential for initiating appropriate treatment and improving patient outcomes. The management of leptospirosis with ARDS involves a multidisciplinary approach, including supportive care, antibiotic therapy, and lung-protective ventilation strategies. In severe cases, ECMO, such as VV-ECMO, can be a life-saving intervention. Further research is needed to enhance our understanding of leptospirosis and

develop more effective diagnostic tools and treatment strategies to combat this potentially life-threatening disease.

References

1. Luks AM, Lakshminarayanan S, Hirschmann JV. Leptospirosis presenting as diffuse alveolar hemorrhage: Case report and literature review. *Chest*. 2003; 123:639-643.
2. Von Ranke FM, Zanetti G, Hochegger B, *et al*. Infectious diseases causing diffuse alveolar hemorrhage in immunocompetent patients: A state-of-the-art review. *Lung*. 2013; 191:9-18.
3. Agrawal VK, Bansal A, Pujani M. A rare case of leptospirosis with isolated lung involvement. *Indian J Crit Care Med: Peer-reviewed, official publication of Indian Society of Critical Care Medicine*. 2015; 19:174.
4. Tatopoulos A, Herbain D, Kazmierczak C, *et al*. Parenteral use of recombinant activated factor VII during diffuse alveolar hemorrhage secondary to leptospirosis. *Inten Care Med*. 2010; 36:555.
5. Von Ranke FM, Zanetti G, Escuissato DL, *et al*. Pulmonary leptospirosis with diffuse alveolar hemorrhage: High-resolution computed tomographic findings in 16 patients. *J Comput Assist Tomogr*. 2016; 40:91-95.