**SAS Journal of Medicine**
Abbreviated Key Title: SAS J Med
ISSN 2454-5112
Journal homepage: https://saspjournals.com/sasjm/

OPEN ACCESS

# Role of ECMO in Pulmonary Hemorrhage Secondary to Leptospirosis

Nantha kumar Nadarajah*, M.N Mohd Arif, M.K Hamzah

Department of Cardiothoracic Surgery, Hospital Serdang, Puchong, Malaysia

***Corresponding author:** Nantha kumar Nadarajah
| **Received:** 25.01.2019 | **Accepted:** 05.02.2019 | **Published:** 11.02.2019
**DOI:** 10.21276/sasjm.2019.5.2.2

**Abstract** **Case Report**

Extracorporeal Membrane Oxygenation (ECMO) is an extracorporeal system of giving delayed cardiovascular and respiratory help to people whose heart and lungs can't give a sufficient measure of gas trade or perfusion to continue life. The innovation for ECMO is to a great extent gotten from cardiopulmonary detour. Most of the time, this technique is utilized for Paediatric cases but these days it has also been used in adults too. ECMO usually works by expelling the blood from the individual's body and artificially evacuating the CO2 and oxygenating Haemoglobins. As of now, the main predictable proof of its effectiveness is with its utilization in intense respiratory disorder. It is likewise being utilized in extreme pulmonary hemorrhage from Leptospirosis to enable the lungs to rest and recuperate. In this case study the role of ECMO in pulmonary hemorrhage secondary to Leptospirosis has been studied. This study has been done on a 28 years old male who was suffering from severe Leptospirosis.

**Keywords:** ECMO, SPHS, Leptospirosis.



## INTRODUCTION

Leptospirosis is a spirochetal zoonosis that generally happens in tropical nations, for example, the Philippines. Humans are contaminated by direct contact with tainted creature pee or tissues, or by aberrant introduction with pee polluted soil or water. It mostly influences financially powerless populaces where people have to live in slums, forests and most of the time if also effects farmers living in rural areas. A standout amongst the most deadly sequelae of the malady is aspiratory drain i.e. pulmonary hemorrhage. There is restricted proof on the utilization of ECMO for Leptospirosis. There are no randomized controlled preliminaries that can give proof on the adequacy of ECMO in patients suffering from Leptospirosis. According to Costa *et al*. [1] that in south Asia there are around 55 people out of 100000 who suffers from Leptospirosis. ECMO is a treatment used to give transitory cardiopulmonary help in patients whose heart and lungs are harmed. It permits an outside system for gas trade which will give time for recuperation and treatment of hidden problems. ECMO must be considered early in the cases where then is a difficulty in maintaining the sufficient oxygenation by mechanical ventilation because respiratory distress is the one of the main causes of death. Currently, the main predictable proof of its effectivity is with its utilization in intense respiratory misery syndrome. However, it is also used in severe pulmonary hemorrhage caused by Leptospirosis and helps the lungs to rest and recover [2-4]. The average mortality rate in Leptospirosis cases with SPHS is 30–60% even with sufficient treatment.

In this case report, we present a case of a person who suffered from life-threatening Leptospirosis with SPHS and was fruitfully treated using Veno-Venous ECMO.

### Consequences of Leptospirosis

The microscopic organisms attack the inside organs of human beings via blood and damage the organs. Severe Leptospirosis is very lethal as it can prompt serious gastrointestinal dying or bleeding, meningitis, intense failure of renal and respiratory system. Generally Jaundice, bleeding, and impaired renal function usually weaken after several weeks. However, pulmonary connection occurs in around 20–70% of Leptospirosis cases, with pulmonary hemorrhage constituting a main cause of mortality.

## CASE STUDY

This report is regarding a 28 years old male patient who was suffering from severe Leptospirosis. The patient was a building construction worker and was having a history of travelling in jungles and crossing rivers. Initially the patient was treated for Typhoid fever in the medical ward. Patient had massive haemoptysis and unable to maintain the saturation. There was a reduction in blood oxygen level to 72-75%. The patient was intubated ass was supported by hemo-dynamics

and was on ventilator but he was unable to maintain the saturation with carbon dioxide retention. Transoesophageal echocardiogram which revealed good biventricular function, a thin layer of pericardial effusion, equal size aorta and no evidence of pulmonary embolism. However patient had low temperature.

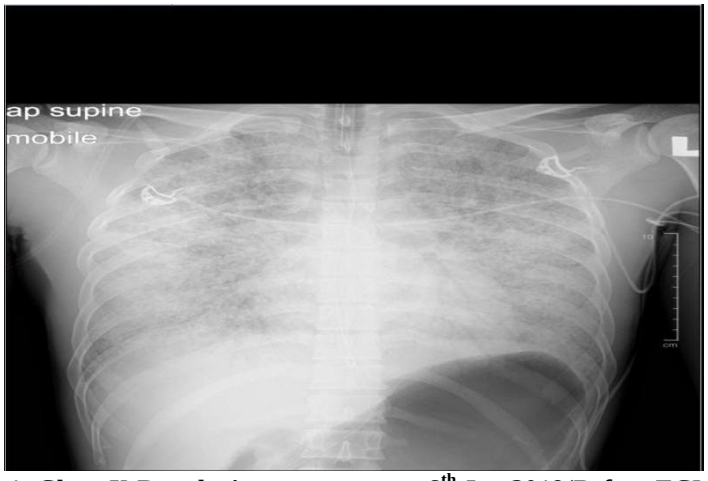


**Fig-1: Chest X-Ray during treatment on 6th Jan 2019(Before ECMO)**

Patient started on IV Ceftriaxone. The patient was commenced ECMO and was given Intravenous Heparin, but Co2 still retained in the body. The patient was given the Continuous Veno-Venous Hemofiltration (CVVH) treatment. Patient clinically improved FiO from 100% reduce to 40% within 3 days. Ionotropic support also reduced and finally off on day 5 of ECMO. Patient was On ECMO for 14 days and subsequent day was extubated successfully. Patient discharged home without any complications.

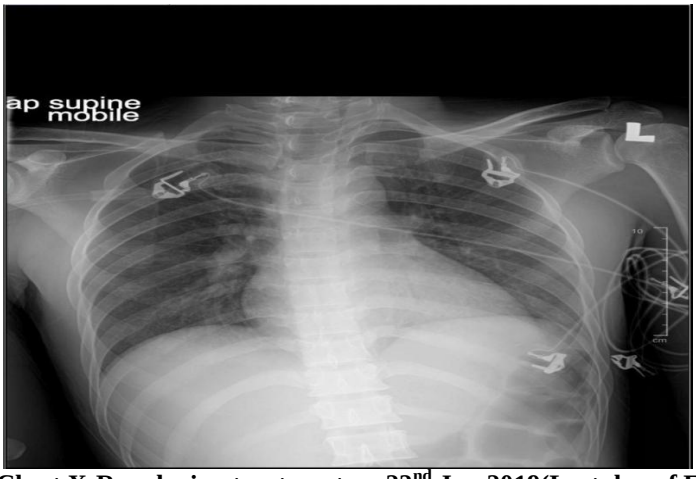


**Fig-2: Chest X-Ray during treatment on 22nd Jan 2019(Last day of ECMO)**

## CONCLUSION

By giving the above mentioned treatment with VV-ECMO the patient successfully survived. It is concluded that VV-ECMO may avert death in patients with Leptospirosis-induced SPHS that don't respond to conventional therapy. However the cost is ECMO is quite high and may not be affordable for all patients [5]. The presented case study is vital because the findings reveal the possibility of patient survival by using VV-ECMO in patients with Leptospirosis-associated SPHS.

## REFERENCES

1. Costa F, Hagan JE, Calcagno J, Kane M, Torgerson P, Martinez-Silveira MS, Stein C, Abela-Ridder B, Ko AI. Global morbidity and mortality of leptospirosis: a systematic review. PLoS neglected tropical diseases. 2015 Sep 17;9(9):e0003898.
2. Peek GJ, Mugford M, Tiruvoipati R, Wilson A, Allen E, Thalanany MM, Hibbert CL, Truesdale A, Clemens F, Cooper N, Firmin RK. Efficacy and economic assessment of conventional ventilatory support versus extracorporeal membrane oxygenation for severe adult respiratory failure (CESAR): a multicentre randomised controlled trial. Lancet (London, England). 2009 Oct 17;374(9698):1351-63.
3. Park M, Mendes PV, Zampieri FG, Azevedo LC,

Costa EL, Antoniali F, Ribeiro GC, Caneo LF, Neto C, Carvalho CR, Trindade EM. The economic effect of extracorporeal membrane oxygenation to support adults with severe respiratory failure in Brazil: a hypothetical analysis. Revista Brasileira de terapia intensiva. 2014 Sep;26(3):253-62.

4. Umei N, Ichiba S. A Case of Leptospirosis-Associated Severe Pulmonary Hemorrhagic Syndrome Successfully Treated with Venovenous Extracorporeal Membrane Oxygenation. Case Reports Crit Care. 2017; 2017:1–5.
5. Mishra V, Svennevig JL, Bugge JF, Andresen S, Mathisen A, Karlsen H. Cost of extracorporeal membrane oxygenation: evidence from the Rikshospitalet University Hospital, Oslo, Norway. Eur J Cardio-Thoracic Surg.2009 Aug 21;37(2):339–42.