Leptospirosis – associated hemorrhagic pneumonitis successfully treated by venovenous extracorporeal membrane oxygenation: a case report

Hemoragijski pneumonitis tijekom leptospiroze uspješno liječen venovenskom izvantjelesnom membranskom oksigenacijom: prikaz bolesnika

Marko KUTLEŠA
Branimir GJURAŠIN

University Hospital for Infectious Diseases “Dr. Fran Mihaljević” Zagreb

Key words
leptospirosis
pneumonitis
extracorporeal venovenous membrane oxygenation

Ključne riječi
leptospiroza
pneumonitis
venovenska izvantjelesna membranska oksigenacija

Introduction

In continental parts of Croatia leptospirosis is endemic and shows a seasonal distribution pattern. Although pulmonary involvement is not uncommon (in 20 to 70% of cases in different series), on some occasions in the infection’s severe form (Weil’s disease), acute respiratory distress syndrome with pulmonary hemorrhage can occur – the frequency of such involvement has been on the rise and is becoming the main cause of death from the disease. Mortality rates for severe lung involvement may be as high as 50%.

Here we present a case of Weil’s disease with multiorgan failure, including hemorrhagic pneumonitis, successfully treated by veno-venous extracorporeal membrane oxygenation (VV-ECMO).

Case report

A 72-year-old female patient without significant co-morbidities presented in March 2016 with a five day history of fever, sore throat, malaise, dyspnoea, mild diarrhea and nausea. She came from a rural part of northern Croatia and reported daily contact with bulls. On admission she was icteric, tachydispnoic, febrile, hypoxemic (SpO2 77%), GCS 15. Initial laboratory tests revealed leukocytosis (14.6 \times 10^9/L), anemia (hgb 103 g/L), thrombocytopenia (40 \times 10^9/L), elevated CRP (293.9 mg/L), procalcitonin (44.6 μg/L), CK (548 U/L), kidney injury (BUN 17.7 mmol/L, creatinine 357 μmol/L) and conjugated hyperbilirubinemia (75 μmol/L). The chest radiograph showed bilateral confluent parenchymal infiltrates (Figure 1). She was admitted to the intensive care unit where empirical antimicrobial therapy consisted of ceftriaxone, fluoxa-
Leptospirosis – associated hemorrhagic pneumonitis successfully treated by...

Discussion

Leptospirosis can manifest as a severe illness with high morbidity leading to multiple organ dysfunction syndrome. It can present with a wide range of symptoms, mimicking flu, hepatitis, dengue, hanta virus cardiopulmonary syndrome, meningitis, among others, and has a specific treatment; thus, clinical suspicion must remain high and serological and molecular diagnosis should be performed. Given the fact that leptospirosis is endemic throughout the world, a clinician should be familiar in recognizing and treating the infection's severe form which can also be accompanied by ARDS and pulmonary hemorrhage. It should be remembered that not all cases of pulmonary hemorrhage have a vasculitic cause – infectious diseases should be considered in the differential diagnosis because early, adequate, targeted therapy in combination with supportive treatment and, possibly, corticotherapy will improve survival. The most frequent infections causing pulmonary hemorrhage (diffuse alveolar hemorrhage) in immunocompetent patients are influenza, dengue, lerp-s
Leptospirosis – associated hemorrhagic pneumonitis successfully treated by ... M. KUTLEŠA et al.

tospirosis, malaria, and *S. aureus* pneumonia. In severe presentations, supportive therapies are essential for survival, considering that multiorgan failure is typically completely reversible. As a last resort for treating severe ARDS and pulmonary hemorrhage of any etiology, clinicians may need to use VV-ECMO if mechanical ventilation does not suffice. VV-ECMO is a method of pulmonary support that allows the lung to be relieved of its gaseous exchange function minimizing the degree of lung injury caused by MV with high FiO2, high tidal volumes and increased airway pressures needed in severe respiratory failure and ARDS, ensuring protective ventilation without further compromising oxygen delivery or acid base balance. The benefits of ECMO use in hemorrhagic pneumonitis and ARDS in leptospirosis are still under evaluation. The importance of careful case selection has become clear. Our patient had no significant comorbidities and was started on VV-ECMO relatively early (on the sixth day of her illness, i.e. the following day after admission). VV-ECMO support was discontinued after six days, and the patient eventually had full recovery.

This case report shows the importance of the fact that VV-ECMO should be considered early as an option in adult patients with severe respiratory failure especially if the underlying cause is infective and therefore ultimately curable. Finally, this case report shows that VV-ECMO can be safely used with standard anticoagulation, without enhancing the risk of bleeding, despite hemorrhagic pneumonitis in leptospirosis.

References


