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A case of Mediterranean spotted fever associated with severe respiratory distress syndrome

Boris Dželalija [a,b,*], Volga Punda-Polić [b], Alan Medić [c], Boris Mraović [d], Tatjana Šimurina [e,f]

[a] *Department of Infectious Diseases, Zadar General Hospital, Zadar, Croatia*
[b] *Department of Microbiology, Split University School of Medicine, Split, Croatia*
[c] *Institute of Public Health, Zadar, Croatia*
[d] *School of Medicine, University of Missouri, Columbia, MO, USA*
[e] *Intensive Care Unit, Zadar General Hospital, Zadar, Croatia*
[f] *Faculty of Medicine, University of Osijek, Osijek, Croatia*

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Abstract

Mediterranean spotted fever (MSF) is usually a mild endemic rickettsial disease occurring in southern Croatia. We have reported the clinical and epidemiological characteristics of an acute MSF case associated with severe respiratory distress syndrome and hemodynamical instability. The patient recovered completely after antimicrobial treatment. Indirect immunofluorescence assay (FOCUS Diagnostics Inc.) was performed to detect IgM and IgG antibodies to *Rickettsia conorii*. A significant increase of both IgM and IgG antibody titres found in paired acute- and convalescent-phase serum confirmed the diagnosis of acute MSF.

Keywords: Mediterranean spotted fever; Respiratory distress syndrome; Rickettsia conorii

1. Introduction

Mediterranean spotted fever (MSF) is a spotted fever disease caused by *Rickettsia conorii.* Humans are usually infected by the bite of an infected brown dog tick *Rhipicephalus sanguineus* [1−3]. MSF is widely distributed throughout Africa, the Middle East and Southern Europe including Croatia [2−6]. Although MSF has been considered to be a mild disease, malignant forms have been reported [1−5]. Variation in the severity of MSF has been observed in different countries and even in different areas of the same country [2−5].

R. conorii is endemic in southern coastal and insular Croatia, where MSF is usually a mild seasonal summer infection presenting with fever and maculopapular rash [6−10], although a case with meningoencephalitis and one fatal case of MSF were reported in the area [11,12]. In this report we have presented the first known case of MSF associated with severe respiratory distress syndrome in Croatia.

2. Materials and methods

The diagnosis of MSF was based on epidemiological data, clinical symptoms and signs of the disease [1,2]. Acute and convalescent patient's serum samples were tested by indirect immunofluorescence assay (IFA) for the presence of IgM and IgG antibodies to *R. conorii* antigen (FOCUS Diagnostics Inc., Cypress, CA, USA) according to the manufacturer's instructions.

3. Results (case report)

A 58-year-old man was admitted to the Department of Infectious Diseases (DID) of Zadar General Hospital, Zadar,

* Corresponding author. Department of Infectious Diseases, Zadar General Hospital, Zadar, Croatia.
E-mail address: boris.dzelalija@zd.t-com.hr (B. Dželalija).

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Croatia, on September 11th, 2013, with a 6-day history of fever (39.5 °C), headache, diffuse myalgia, vomiting, and general weakness, as well as a 4-day history of rash all over his body. He did not report coughing or shortness of breath. Five days before hospitalization the patient had visited his family physician because of the symptoms. Treatment was empirically started with amoxicillin/clavulanic acid (AMC), orally 2 × 1000 mg. Despite of a 5-day treatment with AMC his condition worsened, and he was admitted to hospital.

The patient was a resident of a semirural area near the city of Zadar, which is known as being an endemic region of MSF [6,7,11,12]. He was a retired soldier from the recent war in Croatia (1991–1995). His only past medical history was war-related psycho-trauma and posttraumatic stress disorder treated with diazepam. He had no history of allergies. He reported the removal of ticks from his own dog seven days before the onset of his illness, but he did not recall being bitten by a tick.

Upon admission he presented with cyanosis, tachycardia (115 beats/min), blood pressure of 12/7 kPa, dyspnea with respiratory rate of 22 breaths/min, and fever of 39 °C. His liver was palpable 3.0–3.5 cm below the costal margin, while his spleen was not enlarged. The examination of his skin revealed generalized maculopapular rash with rare petechiae, and eschar (*tache noire*) on the proximal inner part of his left thigh with inguinal lymphadenopathy (Fig. 1).

Laboratory findings obtained upon admission showed erythrocyte sedimentation rate 67 mm/h, white blood cell count 12.8 cells/mm^3, with 12% of immature forms, C-reactive protein 266 mg/L, procalcitonin1.8 ng/mL, lactate dehydrogenase 380 U/L, γ-glutamyltranspeptidase 463 U/L, aspartate aminotransferase 154 U/L, alanine aminotransferase 194 U/L, alkaline phosphatase 291 U/L, creatine phosphokinase 445 U/L, fibrinogen 5.2 g/L, d-dimers12.05 mg/L, and creatinine 132 umol/L. Hemoglobin, red blood-cell count, platelets, serum sodium, chlorine, potassium, calcium, iron, protein total, albumin, globulin, immunoglobulins, glucose, and prothrombin were within reference range. Arterial blood-gas analysis (ABG) showed hypoxemia with oxygen saturation SpO_2 87.8%, partial pressure of oxygen PaO_2 6.48 kPa, while other ABG values were within normal range. The electrocardiogram showed sinus tachycardia. Troponin T test and echocardiography showed no abnormalities. Chest X-ray showed laminaratelectasis on the right and inhomogeneous shadows bilaterally corresponded to pulmonary oedema.

Three hours after admission, his clinical condition significantly deteriorated. He was dyspneic and with decreased breath sound bilaterally. His heart rate increased to 125 beats/min, respiration rate to 30 per min, and blood pressure 24/16 kPa. He developed severe headache, without signs of meningitis.

He was transferred to the Intensive care unit (ICU) with a diagnosis of severe rickettsios complicated by acute respiratory failure. Treatment for MSF with doxycycline (100 mg every 12 h instilled per nasogastric tube), and ciprofloxacin (400 mg intravenously q12h), was started. Normal saline, fresh frozen plasma and metilprednisolon was also administered followed by daily monitoring of fluid, electrolyte balance and vital signs.

On the first ICU day, the patient was oxygenated by facial mask (inspiratory fraction of oxygen 0.4; pulse oximetry SpO2 96%). On the second day he developed respiratory failure (SpO2 93.8%, pCO2 26.60 kPa) that required intubation and mechanical ventilation. On the fourth ICU day chest computer tomography showed bilateral diffuse multiple “ground glass” opacifications, most prominent in the left upper lobe, with partial consolidation and volume reduction of the left lower lobe.

After five days in the ICU, his condition improved, he became afebrile, and was extubated. The next day he did not require ICU treatment and was transferred to the DID. Treatment with ciprofloxacin was stopped when his respiratory symptoms were resolved, and oral doxycycline (200 mg/day) was administered for a total of 14 days.

On day 16, his chest X-ray showed complete regression of the pulmonary infiltrates and the patient was discharged from

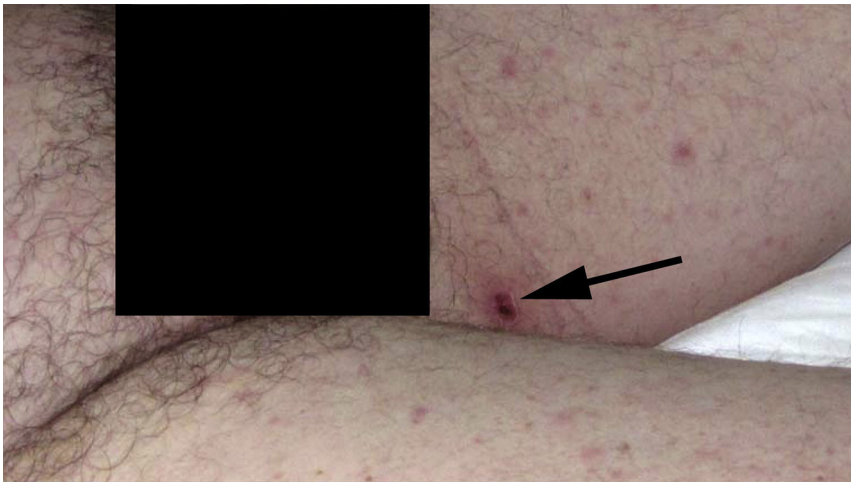

Fig. 1. Maculopapular rash and eshar (*tache noire*-arrow head) in a patient with Mediterranean spotted fever.

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