



## CASE REPORT

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**Rickettsioses: A Case Presentation****Christina Seitopoulou<sup>1,2</sup>, Marilena Stamouli<sup>3</sup>, Georgia Kalliora<sup>4</sup>, Christos Natsis<sup>3</sup>, Nikolaos Kalogiros<sup>5</sup>, Antonia Mourtzikou<sup>2\*</sup> and Maria Kimouli<sup>2</sup>**<sup>1</sup>Nikea Primary Health Care Center, Nikaia, Piraeus, Greece<sup>2</sup>Laboratory of Microbiology, General Hospital of Nikaia "Agios Panteleimon", Piraeus, Greece<sup>3</sup>Department of Biochemistry, Naval and Veterans Hospital of Athens, Athens, Greece<sup>4</sup>Faculty of Biology, National and Kapodistrian University of Athens, EKPA, Greece<sup>5</sup>Faculty of Medicine, Medical University of Patras, Greece**ARTICLE HISTORY**

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**Introduction**

Rickettsioses is the term used for a spectrum of diseases caused by the intracellular bacteria *Rickettsia*, which invade endothelial cells and provoke vasculitis [1-3]. The aim of this study is the presentation of a patient case with rickettsioses.

**Case Presentation**

A 27-year-old Caucasian male patient with fever since 10 days, general malaise, headache, neck lymphadenopathy, vomiting and myalgia. The patient was examined by a private GP in the village where he lived, had some tests, such as Streptococcus-test, rapid for the influenza A, B, SARS-CoV-2, RSV which were negative. He was treated with anti-inflammatory drugs, light diet, vitamins and advised to check again in case of non-resolution of symptoms. He was referred to the Public Health Care Center of Nikaia for laboratory testing.

**Methods**

The laboratory performed complete blood count at the NIHON KOHDEN CelltaG MEK 9100 haematology analyser, serum biochemical tests at the KONELAB 60 biochemistry analyzer and urinalysis by means of Multistix 10 SG Reagent Strips, Siemens Healthineers method.

**Results**

Whole blood tests revealed anemia {HCT 34.2%, Thrombocytopenia (PLT: 75x10<sup>3</sup>/μL), RBC: 3.76x10<sup>6</sup>/μL, HGB:11.8 g/dL, mildly elevated WBC:10.200x10<sup>3</sup>/μL}, elevated neutrophils (83.6 %), and elevated sedimentation rate (72 mm). Serum biochemistry tests revealed mild decrease in total protein and albumin (5.91 g/dL and 3.16 g/dL respectively), elevated levels of SGOT (136 U/L), SGPT (157 U/L), GGT (130 U/L), LDH (703 U/L), CPK (221 U/L), Hyponatremia (133 mmol/L), CRP (236 mg/L) and ferritin (1077 ng/mL). Urine biochemistry revealed mild proteinuria.

Rickettsiae took on a characteristic red colour when stained by the Giemsa stain (typical coccobacilli gram-negative small obligate intracellular parasites). Due to the seriousness of the patient's condition, it was recommended that the patient be transferred to a hospital for further laboratory testing and treatment. The laboratory test results for HAV, HBV, HCV, Toxoplasma gondii, Rubella, Brucella, CMV, EBV, HIV, Influenza A and B, RSV and SARS CoV-2 were negative. Antinuclear autoantibodies, anti-dsDNA, AMA, ASMA, AGPA, anti-SSA/Ro, anti-SSB/LA, Anti-RNP, anti-Sm, anti-Jo-1, anti-Scl-70, cANCA, pANCA, as well as anti-Cardiolipin IgG and IgM antibodies were negative. Protein electrophoresis results were as follows: albumin 46%, a1-globulin 10.4%, a2-globulin 11.6%, beta-globulin 10.3% and gamma-globulin 24.0%. Coagulation tests revealed elevated D-Dimer (5.59 mg/L). Urine cultures, blood cultures and CSF cultures were negative. CSF biochemistry tests were normal. Wright, Monotest, RPR/VDPL and Widal-anti-Par-A and anti-Par-B (both flagel and somatic) were negative. Complete blood count and biochemical tests were performed every day of hospitalization. RealTime-PCR results were positive for *Rickettsia*-IgM (601 mg/dL). The patient received appropriate treatment with doxycycline and was discharged a week later. According to his medical history, the patient was a traveler returning from an endemic region.

**Conclusion**

*Rickettsia* is transmitted by arthropod vectors - lice, fleas, ticks and/or mites [4,5]. Its reservoirs are insects, animals and humans. Species causing human infection have a worldwide geographical distribution with an increasing incidence of disease. Rickettsioses is divided into 3 main groups: typhus, spotted fever, and scrub typhus. Each disease is caused by a different species, carried by different vector, has a different geographic distribution, and has different clinical presentation and sequelae. There are multiple ectoparasite vectors for *Rickettsia*, including lice, ticks, fleas, and mites. *Rickettsia* infections diagnosis is based on epidemiology, medical history, physical examination findings and laboratory test results [5]. Rickettsioses can be confirmed either

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by isolation of the organism, serology, PCR, and immunologic detection in tissue samples. The most frequent hematological and biochemical modifications are thrombocytopenia, leukocyte count abnormalities, elevated hepatic enzyme levels and an increase of C-reactive protein [5]. No malignant or fatal cases of the disease have been described in the literature. The basic role of the physician - Biopathologist is to promptly and accurately diagnose the patient's condition and refer him to the appropriate specialty so that he can receive specific treatment. Finally, the goal is to ensure the patient's quality of life, their survival and, generally, ensure the protection of public health from diseases such as rickettsioses [6].

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