

# Clinical Features of Babesiosis in High-Risk Patients

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# DESCRIPTION

Babesiosis is a tick-borne disease caused by protozoa of the genus Babesia, transmitted primarily through the bite of Ixodes ticks. The disease has been increasingly recognized in Europe, including Italy, where cases have been reported in various regions. While many individuals experience mild or asymptomatic infections, immunocompromised patients are at higher risk of severe complications. This study analyzes data from a multicentric cohort in Italy to assess the clinical impact of babesiosis on immunocompromised individuals, focusing on disease presentation, complications, and treatment outcomes.

# Background

Babesia species infect red blood cells, leading to symptoms ranging from mild fever and fatigue to severe hemolysis, multiorgan dysfunction and, in extreme cases, death. Immunocompromised individuals, including those undergoing chemotherapy, transplant recipients and patients with HIV, are particularly vulnerable to more severe manifestations of the disease. The lack of routine screening in endemic and nonendemic areas complicates early detection, often leading to delays in diagnosis and treatment.

#### Patient demographics and risk factors

The study cohort consisted of individuals with a median age of 62 years, with a higher prevalence in males. The majority of patients had underlying conditions that impaired immune function, including hematologic malignancies, organ transplantation, or long-term immunosuppressive therapy. Exposure history revealed that several individuals had traveled to or resided in rural areas where Ixodes tick activity is prevalent.

#### **Clinical manifestations**

Symptoms varied in severity, with fever, chills and fatigue being the most common initial complaints. Hemolytic anemia, jaundice and thrombocytopenia were frequently observed, particularly in patients with significant immunosuppression. A

subset of individuals developed complications such as Acute Respiratory Distress Syndrome (ARDS), Disseminated Intravascular Coagulation (DIC) and renal dysfunction.

# Laboratory findings

Blood tests showed elevated Lactate Dehydrogenase (LDH), indirect bilirubin and reticulocyte counts, indicative of hemolysis. Parasitemia levels varied widely, with some patients exhibiting high parasite burdens requiring urgent intervention. Co-infections with Borrelia and Anaplasma species were detected in a small proportion of cases, further complicating disease management.

#### Treatment approaches and outcomes

The majority of patients received a combination of atovaquone and azithromycin, while severe cases required clindamycin and quinine. Exchange transfusion was performed in select patients with high parasitemia and refractory symptoms. Despite treatment, prolonged recovery was observed in those with severe immunosuppression, emphasizing the importance of early intervention.

Mortality in the cohort was higher than in immunocompetent individuals, particularly among patients with hematologic malignancies or solid organ transplants. However, those who received timely diagnosis and appropriate therapy had improved survival rates.

# Implications for clinical practice

The study highlights the need for increased awareness and early detection of babesiosis in immunocompromised populations. Delayed diagnosis contributes to severe complications, underscoring the importance of considering babesiosis in febrile patients with hemolytic anemia, especially those with epidemiological risk factors.

Routine screening in high-risk patients may improve early identification, particularly in regions with known tick exposure. Clinicians should maintain a high index of suspicion for Babesia

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infection in immunocompromised individuals presenting with unexplained fever and cytopenias. Enhanced surveillance, patient education and tick-bite prevention strategies are necessary to mitigate infection risks in vulnerable populations.

Babesiosis poses a significant health concern for immunocompromised individuals, leading to severe complications and prolonged illness if not promptly diagnosed and treated. This multicentric cohort study from Italy provides valuable insights into the clinical presentation, laboratory findings and therapeutic outcomes in this high-risk population. Strengthening diagnostic capabilities and improving awareness among healthcare providers will be key in reducing disease burden and improving patient outcomes.