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Typhus Group Rickettsiosis Presenting as a Prolonged Febrile Illness with Multisystem Involvement Mimicking Hemophagocytic Syndrome in an Elderly Male

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Abstract

We report the case of a 76-year-old male presenting with prolonged fever, systemic inflammatory response, and multiorgan dysfunction following a recent colonoscopic polypectomy. The clinical course was complicated by rising inflammatory markers, acute kidney injury, hepatic dysfunction, and Staphylococcus hominis bacteremia. Despite empirical broad-spectrum antibiotics, the patient's condition failed to improve. Further infectious workup revealed a significantly elevated Typhus Group Rickettsial IgG titre. Following initiation of doxycycline, the patient experienced rapid clinical and biochemical recovery. This case underscores the importance of considering rickettsial infections as mimics of sepsis or hemophagocytic syndrome in undifferentiated febrile illness, particularly in elderly patients.

Keywords: Colonoscopic polypectomy: Doxycycline: Rickettsial infections

Introduction

Prolonged febrile illness with systemic inflammation in elderly patients often presents a diagnostic challenge. Common bacterial or viral pathogens are frequently considered, but intracellular zoonotic infections such as rickettsioses are easily overlooked, especially when classical signs such as rash or eschar are absent. Rickettsial infections may also trigger a hyperinflammatory response resembling hemophagocytic lymphohistiocytosis (HLH), adding further complexity. We describe a case of probable Typhus group rickettsiosis in an elderly male, initially treated as culture-negative sepsis, who showed a dramatic response to doxycycline therapy.

Case Presentation

Mr. Maxwell James Roberts, a 76-year-old man, presented in early June 2025 with a one-week history of intermittent colicky abdominal pain, fevers, malaise, and diaphoresis. His background included type 2 diabetes mellitus, ischaemic heart disease, hyperlipidaemia, gout, and anxiety exacerbated by recent bereavement. He had undergone a routine colonoscopy with polypectomy approximately four weeks prior.

On presentation to the Emergency Care Centre (ECC), he was hemodynamically stable but febrile. Initial investigations showed a CRP of 21 mg/L, with no focal findings on clinical examination. A CT scan of the abdomen and pelvis demonstrated bibasal lung atelectasis, fatty liver, diverticulosis, and a stable 13 mm adrenal nodule, with no evidence of diverticulitis or abscess formation. Empirical intravenous ceftriaxone and metronidazole were commenced. Despite therapy, his fevers persisted and inflammatory markers rose substantially over the following days. On 9 June 2025, blood cultures grew Staphylococcus hominis in both aerobic bottles. Repeat cultures were sterile. CRP increased to 158 mg/L, and he developed acute kidney injury with creatinine rising from 126 to 147 µmol/L. Hypoalbuminemia (23 g/L), transaminitis (ALT 217 U/L, AST 154 U/L, GGT 239 U/L), and elevated ALP (181 U/L) were also noted. Ferritin was markedly elevated at 1770 µg/L, and procalcitonin was 9.47 µg/L.

The white cell count remained within normal limits, but there was persistent lymphopenia (0.30 ×10⁹/L) and borderline thrombocytopenia (117 ×10⁹/L).

Respiratory virus PCR testing—including SARS-CoV-2, Influenza A/B, RSV, parainfluenza, adenovirus, and rhinovirus—was negative. Serological testing for hepatitis A, B, and C was negative. Epstein-Barr virus (EBV) and cytomegalovirus (CMV) serology confirmed past exposure (IgG positive, IgM negative). Urine and sputum cultures were negative. Q fever serology and PCR were negative. Rickettsial serology, however, revealed a Typhus Group IgG titre of 1:512, consistent with either recent or past infection. Spotted fever and scrub typhus antibodies were not detected. In consultation with the Infectious Diseases team, oral doxycycline 100 mg twice daily was commenced on 19 June 2025. Following initiation of doxycycline, the patient became afebrile within 48 hours. His appetite and functional status improved, and inflammatory markers declined dramatically, with CRP falling to 7 mg/L. Renal and hepatic parameters also improved, and lymphocyte and platelet counts began to recover. A transthoracic echocardiogram was performed on 12 June 2025 to evaluate for endocarditis in the setting of Staphylococcus hominis bacteremia. The study demonstrated normal left and right ventricular size and function, with a preserved ejection fraction of 63% and only grade 1 diastolic dysfunction. There was no significant valvular disease or vegetation identified on any valve, and no pericardial effusion. The inferior vena cava was normal in size with appropriate respiratory variation.

Discussion

This case illustrates a diagnostically challenging febrile illness in an elderly male with systemic inflammation and evolving multiorgan involvement. While Staphylococcus hominis bacteremia raised the possibility of endocarditis or device-related infection, repeated negative cultures and a normal echocardiogram diminished this likelihood. The persistent fevers, cytopenias, transaminitis, elevated ferritin, and hypoalbuminemia also raised concern for a hyperinflammatory syndrome such as HLH.

The patient met several aspects of the HLH-2024 criteria including fever, cytopenia (lymphopenia and borderline thrombocytopenia) and elevated ferritin. However, the absence of splenomegaly, elevated fibrinogen (6.6 g/L) and clinical resolution without immunosuppression indicates that significant HLH is unlikely in this patient. The additional presence of transaminitis, renal dysfunction and elevated LDH suggests a severe systemic inflammatory response driven by intracellular infection. The markedly elevated Typhus Group IgG titre (1:512) and rapid clinical improvement following doxycycline strongly support a diagnosis of acute Typhus group Rickettsial infection, most likely due to Rickettsia typhi.

The incidence and clinical burden of rickettsial infections in Australia is not well established due to the absence of compulsory reporting [1-6]. Incidence has a pattern of seasonal variance peaking with warm weather and increased rainfall. In Australia, the predominant typhus group of ricketssial bacteria include murine typhus (Rickettsia typhi), spotted fever group rickettsia, and scrub typhus. Murine typhus is endemic to temperate, subtropical and tropical coastal regions across Australia, Asia, Mexico, Spain and the United States [7]. Acute rickettsial infections can present as pyrexia of unknown origin without clear localising findings, often presenting as a diagnostic dilemma. The systemic inflammatory response and biomarker derangement may cause it to be mistaken for conditions including for abdominal sepsis, endocarditis, or viral hepatitis. Additionally, interpreting rickettsial serological studies can be challenging due to cross-reactivity between species in tropical areas [6]. Importantly, early empirical doxycycline therapy is both diagnostic and therapeutic. This case is likely caused by Rickettsia typhi due to the subacute pattern of symptom development and presentation Notably, the patient lacked a rash, eschar, or known arthropod exposure, consistent with the often-non-specific presentation of murine typhus, particularly in older adults. Unusually, this case presented in winter, however the Mackay region has a subtropical climate that may be responsible for increased incidence in this region. This patient was strongly responsive to tetracycline therapy with complete clinical resolution as expected with murine typhus. This makes this case slightly atypical due to its presentation in winter, however given Mackay's subtropical climate there is increased risk in this region.

Conclusion

This case underscores the importance of considering rickettsial infections, including Typhus group rickettsiosis, in the differential diagnosis of prolonged fever with systemic inflammation, particularly when routine microbiology and imaging are non-diagnostic. The presence of HLH-like features should not preclude the search for treatable infectious triggers. Prompt initiation of doxycycline in this patient led to rapid resolution of symptoms and reversal of biochemical derangements, highlighting its critical role in managing rickettsial illness.

Learning Points

- Typhus group rickettsiosis may present without rash, eschar, or known exposure and mimic abdominal or systemic bacterial sepsis.
- Serological testing is essential in prolonged febrile illnesses with negative initial workup and should include rickettsial panels.

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- Features of HLH (e.g., elevated ferritin, cytopenias, liver dysfunction) can occur in rickettsial infections but may resolve with appropriate antimicrobial therapy.
- Doxycycline remains the cornerstone of treatment and should be considered early in undifferentiated febrile syndromes with systemic inflammation.
- A multidisciplinary approach involving infectious diseases, renal, cardiology, and imaging is often essential in unraveling complex febrile presentations.

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