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## Trauma, travel, and tropical diseases: The malaria connection

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### Abstract

A male in his late twenties presented with a traumatic injury to the left ankle region following a fall from bed. There was no history of fever. Clinical examination revealed tenderness on the anteromedial, lateral and posterior aspects of the ankle. X-ray and Computerised tomographic scan revealed a trimalleolar fracture of the right ankle. The routine baseline investigations revealed mild thrombocytopenia and incidental detection of hemoparasite Plasmodium vivax. The patient was given antimalarial treatment along with open reduction and internal fixation of fracture. The platelet counts normalized, and there was a complete resolution of malaria. Examination of the peripheral smear under the scanning lens (10X) before proceeding to the oil immersion lens (100X) for detailed examination aids in the early and reliable detection of hemiparasites. It helps in timely diagnosis and prevents complications.

### Key Messages:

- Complete blood examination a routine and cost-effective test provides valuable insights beyond cell count including morphological abnormalities, indicators of anemia, infection, inflammation and hematological disorders.
- Consider common diseases, time of year, and geographic location for making a diagnosis.
- Prompt on, time treatment leads to quick patient recovery and avoids complications

**Keywords:** Fracture leg, incidental detection, malaria, thrombocytopenia

### Introduction

Malaria is a significant public health concern in tropical regions, causing substantial mortality and morbidity. In cases of traumatic injury, the focus is typically on managing the immediate consequences of the trauma. However, incidental findings of malaria in trauma patients can have significant implications for patient care. Delayed diagnosis/misdiagnosis can lead to serious complications. Prompt recognition and treatment of malaria are crucial to prevent adverse outcomes in trauma patients. This report describes an incidental detection of plasmodium vivax infection in a patient with traumatic injury who had no history of fever or contact with malaria patients.

### Case History

#### Case presentation

A male patient in his late twenties presented to the trauma center with an alleged history of falling from bed five hours prior to admission. He had painful restrictions of movements and swelling over his right ankle, along with the inability to bear weight over his right foot and walk. On examination, the patient was average built, nourished, and afebrile. On local examination, there was tenderness present over the medial malleolus and tip of lateral malleolus. Rest systemic examination was normal.

He was diagnosed with a trimalleolar fracture of the right ankle. Surgical management was planned for the patient. However, after about 18-20 hours after hospitalisation, the patient had a fever spike with chills (101-degree Fahrenheit). The fever was associated with chills but not rigor.

### Investigation

Computerised tomographic scan with 3 dimensional reconstruction revealed a trimalleolar fracture (vertical fracture of medial malleolus, extra-articular avulsion of lateral malleolus and a small fragment of posterior malleolus).

The on-admission baseline investigations revealed mild thrombocytopenia (platelet count 80,000 cells/mm<sup>3</sup>).

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Also, an incidental finding of hemoparasite *Plasmodium vivax* was noted on the peripheral smear examination. The *plasmodium vivax* parasite was seen in the ring form, trophozoite, schizont and gametocytes. The parasite index was 2%. The rapid card test for malaria antigen was reactive for *plasmodium vivax*. Investigations revealed normal renal and liver function tests.

### Treatment

Following the confirmation of *Plasmodium vivax* malaria, the patient was started on T.Lumerax 80mg (Arthemether 80mg + Lumefantrine 480mg ) BD for 3 days. The patient was monitored for signs of hemolysis, jaundice, and anemia. Following this, his fever settled, and his platelet count increased to the normal range. The fracture managed by open reduction internal fixation by antiglide

The patient was later operated by open reduction and internal fixation of medial malleolus by an antiglide plate 1/3rd tubular locking compression plate implant. The other two fracture fragments (lateral and posterior malleolus) being very small, were managed conservatively by application of a below knee cast following the surgery.

The post-op period was uneventful, and patient discharged in satisfactory condition.

### Outcome and follow-up

By two weeks, the surgical site had healed well. By 6 weeks, his fracture was showing signs of healing. The patient's complete blood count was within the normal range, and no hemiparasite was seen on the peripheral smear.

### Discussion

Malaria is a life-threatening disease spread to humans by some types of mosquitoes. It is mostly found in tropical countries. It is a preventable and curable disease. As per the WHO malaria report in the southeast Asian region, India, along with Indonesia, had accounted for about half the malaria cases and about 88% of related deaths. *Plasmodium vivax* was the most common disease-causing agent, as seen in 48% of the cases <sup>[1]</sup>. The dominant symptom is fever; however, non-specific symptoms include headache, malaise, weakness, and muscle aches. In the present case the patient did not have fever before admission but non-specific symptoms which could be attributed to the fact that the patient was in the incubation period <sup>[2]</sup>. As also seen in the present case, report by Verma *et al.* had the patient had feeling of dizziness before the fall, leading to traumatic injury. The author concluded that early detection and management led to the prevention of malaria-related complications in the patient <sup>[3]</sup>. In a meta-analysis by Achame *et al.* thrombocytopenia was seen in about 70% of patients with malaria, and they emphasized regular platelet monitoring <sup>[3, 4]</sup>. While the thrombocytopenia reported was mild in patients with *plasmodium vivax* infection and severe in *Plasmodium falciparum* <sup>[5]</sup>.

### List of Abbreviations

None

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### Conflicting Interest (If present, give more details)

None

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