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Severe imported vivax malaria: a case series from the United Kingdom

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Background: *Plasmodium vivax* (PV) malaria is a major cause of worldwide morbidity and mortality with 2.5 billion living in endemic regions and 100-400 million affected annually. Recent years have seen increasing reports of severe malaria associated with PV, which was classically associated with a benign uncomplicated course. Despite a recent surge in the reporting of severe vivax in endemic regions, there is a scarcity of data on imported vivax malaria, its associated complications and mortality.

Material/methods: We performed a retrospective analysis of all adult cases of vivax malaria presenting to our regional Infectious Diseases Unit at the University Hospitals of Leicester, UK. We included all cases identifiable from the local pathology services database from 2003 to 2013. We reviewed the clinical notes and pathology database to retrieve data on demographics, clinical features, baseline blood investigations including a blood film and G6P-D testing. We used WHO guidelines to define patients suffering with severe malaria. Finally, we looked at the cure rate, reactivation rates and overall mortality.

Results: 96 patients were included. There was a male preponderance and the median age was 42.5 years. Most of our patients were foreign born and predominantly originated from the Indian subcontinent. Most patients (85.4%) acquired vivax malaria in the Indian subcontinent, with May-August representing the peak time of presentation. Data on the time between UK arrival and presentation was available in 46 patients only: median time was 15.5 days (IQR 8-34 days). The use of antimalarial prophylaxis was very low and only 9/78 patients reported taking prophylactic medication. Nearly all patients presented with a fever, with headache and rigors also being common features. Clinical examination was often normal, with a few patients presenting with jaundice (5.2%), hepatomegaly (8.3%) or an enlarged spleen (3.1%). 2% of patients were G6P-D deficient. **7% of patients had features of severe disease including anaemia, impaired consciousness, renal failure, hypotension, acute respiratory distress syndrome (ARDS) and hepatic dysfunction.** None of the patients between Jan 2003 – Dec 2007 had features of severe disease. In contrast, 10.4% of patients between Jan 2008 – June 2013 had evidence of severe disease. Overall mortality was 2%; one gentleman was elderly and had multiple co-morbidities. However, a 58-year-old gentleman with minimal co-morbidities succumbed to vivax disease associated with ARDS and multi-organ failure despite being treated with ECMO. 3% of patients had a recurrence of their infection.

Conclusions: This study has demonstrated the evolution of imported vivax malaria into a pathogen associated with severe disease and mortality.