From Kenya to Connolly: A rare case of P. *ovale* infection during the COVID Pandemic

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Introduction

- *P. ovale* accounts for between 0.5 and 10.5% of all malaria cases, with geographical distribution in sub-Saharan Africa, the Western Pacific, Timor, and Indonesia.
- Infections due to *P. ovale* are likely underestimated compared with those of other *Plasmodium* species, due to frequently low parasitaemia burden demonstrated on blood film and having morphologic similarities with *P. vivax*.
- *P. falciparum* is still the leading cause of severe malaria while *P. ovale* is usually associated with low morbidity and mortality. However, *P. ovale* can cause severe complications and death
- Previous studies have reported that the severe complications of *P. ovale* infections include acute respiratory distress syndrome (ARDS), renal impairment, jaundice, and hypotension.

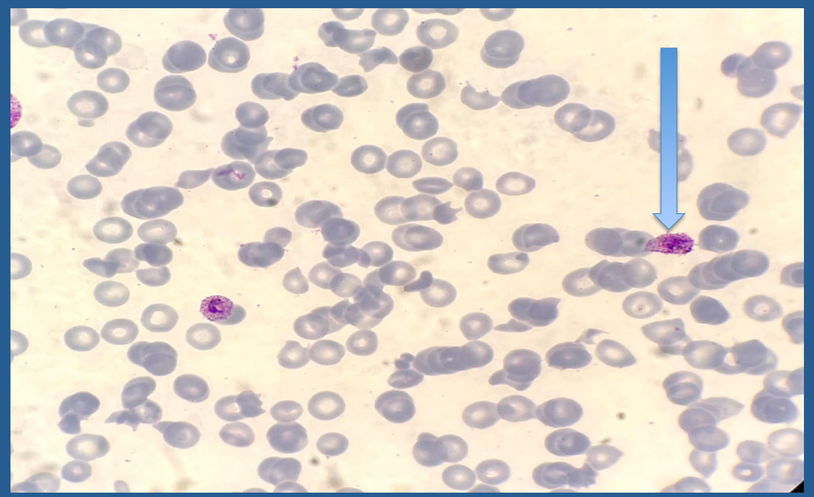

Figure 1 : Blood film demonstrating trophozoite of *P. ovale* malaria

Case

- Previously healthy 48 year old Caucasian female presenting to a peripheral Dublin hospital in March 2020 with a one week history confusion, severe back pain, oliguria and fever, following travel to Kenya eight months previously.
- Blood tests demonstrated severe haemolysis, thrombocytopenia and acute renal failure. Patient immediately transferred to ICU in neighbouring tertiary referral centre for emergency dialysis.
- Blood film revealed schistocytes and malarial blood smear demonstrated trophozoites of an undifferentiated malaria species with low parasitaemia level.
- CT significant for multiple liver lesions and splenomegaly in keeping with malarial infection.
- Patient was commenced on IV artesunate and doxycycline. Thrombotic Thrombocytopenic Purpura or an atypical Haemolytic Uraemic Syndrome were also considered as possible differential diagnoses to account for severe presentation and patient underwent one session of plasma exchange until ADAMTS level returned normal.
- IV artesunate was followed by PO artemether/ lumefantrine and she was subsequently given 14 days of primaquine therapy for parasite clearance.
- Molecular diagnostics carried out at the Parasitology Reference Laboratory at Public Health England confirmed P. *ovale* species. Patient's renal function slowly improved and she was independent of dialysis on discharge four weeks

Figure 2: Female anopheles mosquito–main vector for *Plasmodium* species transmission

Investigations:

- **Admission bloods:**
  Hb 6.7 g/L
  WCC 15 x10^9/ L
  Platelets 8 x10^9/ L
  CRP 31 mg/L
  Urea 46 mmol/L
  Creatinine 672 umol/L
  ADAMSTS13 negative (59%)
  ANCA positive
  Anti-phospholipid ab- negative
  Anti MPO/ PR3 negative
  Anti GBM negative
  CTD screen negative
  C3/C4 low
  Hep B /Hep C/ HIV- negative
- **Microscopy:**
  Positive *P.ovale* malarial species

Take home messages:

- This case serves as an important reminder to clinicians to take an accurate travel history, even in the midst of a COVID-19 pandemic.
- It also highlights the need to consider P. *ovale* species in patients presenting with severe malarial infection.
- Low level parasitaemia, coupled by poorer sensitivity of RDTs in detecting this species may lead to delay in diagnosis and subsequent treatment of this particular species of infection.

References

Kotepui, M., Kotepui, K. U., Milanez, G. D., & Masangkay, F. R. (2020). Severity and mortality of severe Plasmodium ovale infection: A systematic review and meta-analysis. *PloS one*, *15*(6), e0235014