A feverish junior doctor with a diagnosis not to be missed

Introduction

The differentials for a febrile patient presenting with a non-specific flu-like illness are broad and far-reaching, but eliciting an accurate and extensive travel history is a crucial first step in reaching a diagnosis. This is particularly important in cases presenting outside of the endemic tropical disease setting. This case report illustrates the aforementioned learning point and will hopefully decrease the likelihood of a delayed or missed diagnosis.

Discussion

This case highlights the importance of taking a thorough and extended travel history in any patient presenting with a fever or flu-like symptoms. Certain malarial species such as *Plasmodium ovale* can have incubation periods of several years, which is important for health-care professionals to appreciate. Mellon et al (2014) describe two cases of *P. ovale* presenting 47 and 69 months after initial exposure. A large observational study conducted by Broderick et al (2015) found that of all the malaria cases imported to the UK since 1987, the commonest species was *P. falciparum* (65.5%), followed by *P. vivax* (25.4%), *P. ovale* (6.0%) and *P. malariae* (1.6%). Species identification is achieved by conducting a 'thin film' after initial identification of malaria from a 'thick film'.

Broderick et al (2015) reported that the variable latency period of *P. vivax* can (like *P. ovale*) result in clinical presentation years after returning from the endemic setting. This has been attributed to hypnozoite forms of the parasite residing in the liver and persisting until reactivation years later (Krotoski, 1985). In light of this, the authors advocate enquiring about all overseas travel within the last 3–5 years, rather than just the last 12 months as currently taught, to prevent important diagnoses being overlooked.

During 2014, there were just 1586 cases of imported malaria in the UK (Health Protection Agency, 2015), and so clinical experience outside of specialist units is limited, which makes recognition of the non-specific features of malaria challenging. The number of people travelling to malaria-endemic countries continues to increase (United Nations World Tourism Organization, 2012).

Adewole et al (2013) report a case of *P. vivax* presenting in a man who had never traveled to such an area and so clinicians should remain vigilant for tropical diseases presenting in the non-endemic setting. As previously reported (Ladhani and Shingadia, 2011; Mant et al, 2013), delayed or missed diagnosis of malaria can result in death, but by eliciting an accurate travel history, and remaining vigilant, identifying rarer diseases such as malaria, dengue, enteric fever or rickettsial infections becomes much easier, as highlighted by Bell (2012).

Conclusions

Given the authors' experience and the changing malarial epidemiology, the value of requesting a blood film in situations of clinical uncertainty is obvious. For further information

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CASE REPORT

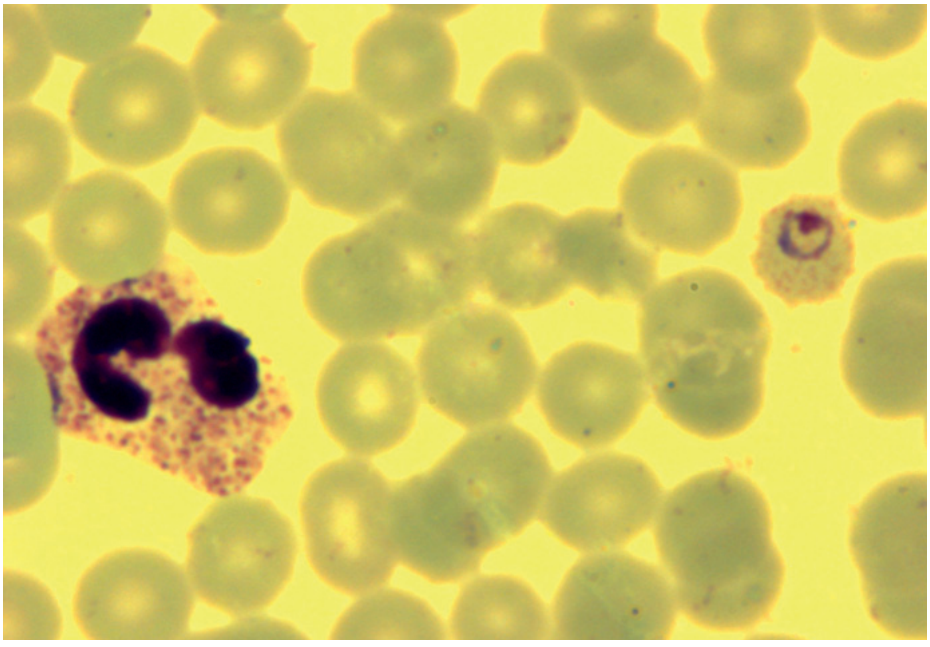
A previously healthy 24-year-old Caucasian junior doctor presented to an accident and emergency department with a 5-day history of drenching night sweats associated with a severe headache and feeling generally unwell. The patient complained of profound rigors and reported one episode of vomiting in the last 24 hours. Past medical history was unremarkable and the patient was not currently taking any medications. A 1-year travel history consisted of a 3-week trip to Greece and a 10-day visit to San Francisco. The patient denied any illicit drug use but did report unprotected sexual intercourse 2 weeks previously which raised the possibility of HIV seroconversion. There was no evidence of a rash, photophobia or neck stiffness. Review of systems was otherwise negative.

On admission, the patient was alert and orientated but pyrexial (40.8°C), tachycardic (145 beats/minute) and tachypnoeic (35 breaths/min). Blood pressure was 117/74 mmHg with an oxygen saturation of 98% on room air. The history offered no obvious clues as to the cause of pyrexia, while clinical examination revealed marked splenomegaly. Initial blood tests revealed a white cell count of 2.2×10^9/litre (normal $4–11\times10^9$/litre), profound thrombocytopenia with a platelet count of 32×10^9/litre (normal $150–400\times10^9$/litre) and raised alanine aminotransferase level of 177 IU/litre (normal 3–35 IU/litre). Chest X-ray and urine dipstick were both unremarkable. HIV serology and blood cultures were subsequently proved to be negative.

The blood film (3.5 ml of venous blood on both thick and thin films as the National Institute for Health and Care Excellence (2010) guidelines recommend) taken on admission is shown in *Figure 1* and this unexpectedly revealed an infection with *Plasmodium ovale*, one of several types of protozoa responsible for causing malaria.

Further probing into the travel history revealed a trip to Mozambique and Swaziland 18 months previously during the patient's medical school elective, when antimalarial prophylaxis was not taken. The patient was subsequently treated with chloroquine and primaquine before being discharged several days later with outpatient follow up. It is worth noting that thrombocytopenia, leukopenia and mild-to-moderately deranged liver function tests, as seen in this patient, are typical of a malarial infection. The splenomegaly resolved after a period of 8 weeks.

Figure 1. Thin blood film showing a *Plasmodium ovale* trophozoite visible within an erythrocyte (right of image). Also present is a neutrophil (left side of image) demonstrating toxic granulation, which is characterized by dark coarse granules found in granulocytes, especially neutrophils. This is a feature associated with systemic infection.



LEARNING POINTS

- Certain tropical diseases such as *Plasmodium ovale* can have incubation periods of several years, so enquiring about all foreign travel in the last 3–5 years rather than just the last 12 months is advocated by the authors.
- Diagnosing tropical diseases outside of the endemic setting can be challenging, so clinicians should have a high index of suspicion in patients presenting with a non-specific or flu-like illness.
- Eliciting an accurate travel history can potentially be life saving and should be implemented in both the adult and paediatric health-care setting.
- A simple blood film can be diagnostic in such circumstances.

relating to the health of travellers as well as country-specific guidance for tropical diseases, see the National Travel Health Network and Centre website (www.nathnac.org/travel), commissioned by Public Health England, whose broad aim is to promote clinical standards in travel medicine and promote the health of British travellers. **BJHM**

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