Two febrile travellers

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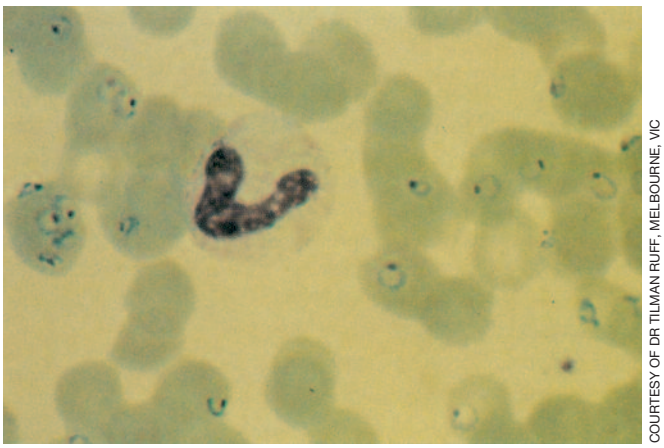
Emergencies can spring up at any time and in many incarnations. Are you adequately equipped to deal with them? Here is a case study in emergency medicine that is based on two real cases. Would you have been able to help these patients?



COURTESY OF DR TILMAN RUFF, MELBOURNE, VIC

Figure. *Plasmodium falciparum* hyperparasitaemia.

Despite the current international unrest, it is your impression that backpackers are travelling as much as ever – judging by the numbers of returned travellers attending with health problems at both your own general practice and the local emergency department where you work regular shifts. You have a special interest in travel health, so one day at the hospital your attention was caught by two sick returned travellers in adjacent cubicles. One of the reasons you do shifts in the emergency department is that you can observe, learn and generally keep up to date by just working there.

A case of falciparum malaria

The first patient, a 26-year-old man, looked really sick and was the focus of a lot of attention. His GP had phoned the hospital before sending him in to the department. He had a high fever (39.6ºC), a low platelet count (140 x 10^9/L; normal 150 to 400 x 10^9/L) and a positive imm - unochromatography test (ICT) for falciparum malaria. (The ICT is a small kit travellers can use to test a drop of their blood for malaria. The test only takes a couple of minutes. Although it is very reliable for *Plasmodium falciparum* infection and its reliability for *P. vivax* infection is improving with each new version, the results should be confirmed with the standard thin and thick peripheral blood films for malarial parasites.)

The patient had returned a month ago from travelling for four months through Asia (Thailand, Malaysia and Indonesia). On his return, he had noticed lethargy and sweats that lasted a few days. Four days ago he again suffered severe lethargy and sweats, which settled after 24 hours and then recurred with associated headache, generalised aches and pains, diarrhoea and profound thirst.

He was now jaundiced and dehydrated, and had a temperature of 40.4ºC, pulse of 110 beats per minute, blood pressure 110/70 mmHg, respiratory rate 22 breaths per minute and oxygen saturation 99%. He had taken no real precautions against malaria during his travels. Also, he had acquired a tattoo in Thailand.

He was admitted with severe falciparum malaria infection. The next day, his laboratory tests confirmed a worsening critical state (Table). The blood film results showed a high falciparum parasite count (Figure) and a concomitant vivax infection. HIV and hepatitis serology were negative.

The infectious disease consultant and the intensive care team were immediately involved because *P. falciparum* infection can lead to organ failure within hours of presentation. The mortality from falciparum malaria is quoted at 1 to 4%, the main factors associated with death being the failure of use of prophylaxis, late presentation and mature age.

The patient's course was complicated by renal failure, haemolysis, thrombocytopenia, disseminated intravascular

Table. Laboratory test results in severe falciparum malaria

Test	Laboratory test result	Normal range (male)
Anaemia	122 g/L	130 to 180 g/L
Platelets	40 x 10^9/L	150 to 400 x 10^9/L
Renal impairment – creatinine	170 µmol/L	60 to 120 µmol/L
Liver impairment – bilirubin	272 µmol/L	<18 µmol/L
Gamma glutamyl transferase	98 U/L	<35 U/L

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coagulopathy, moderate liver impairment, hyponatraemia, red cell metabolic deficiency (glucose-6-phosphate dehydrogenase [G6PD] deficiency) and lower respiratory tract infection (left lower lobe consolidation).

The main therapy was intravenous quinine (Quinine Dihydrochloride), which had to be adjusted once the patient's G6PD deficiency was found out and because of the development of tinnitus.

After six days in intensive care and a further four days in the ward, the patient was discharged home. The follow up by the infectious disease team would focus on therapy with primaquine (Primacin) to eradicate the parasite's hepatic phase.

A case of vivax malaria

The other patient that caught your attention was a 23-year-old woman who was happily chatting with her friends. She had presented with a high fever (39.5°C), body aches and headaches. Her pulse was 110 beats per minute and her blood pressure, 80/40 mmHg.

She had travelled through Papua New Guinea (highlands and coastal) and had been bitten often by mosquitoes. She had taken daily doxycycline during her travels and for two days after her return. Over the week after her return, she had suffered chills and fevers.

A provisional diagnosis of malaria was made and the patient was treated with intravenous quinine. Not surprisingly *P. vivax* was identified on blood film, since doxycycline alone is not generally considered complete prophylaxis against vivax malaria. (It is, however, usually appropriate to use doxycycline alone for *P. falciparum* prophylaxis.) The intravenous quinine was then changed to oral chloroquine (Chloroquin), while continuing her intravenous hydration.

Apart from anaemia (haemoglobin level 103 g/L), her laboratory results, including dengue fever serology, were unremarkable.

The patient stayed in hospital for three days because of her weakness and marked lethargy before being discharged to finish her chloroquine course. A course of primaquine would then complete her treatment.

Malaria presents in many ways

You are reminded that it is important to have a high index of suspicion of malaria in all febrile or sick returned travellers. Patients with malaria may present with a variety of symptoms and more often than not present firstly to their GP. MT