Fever in the returning traveller

Nick Beeching

Febrile illnesses account for about 40% of hospital admissions for tropical illness in UK referral units. The initial assessment of travellers is aimed primarily at early detection and treatment of malaria (see *MEDICINE* **33:8**, 39), which can be rapidly fatal. Malaria is the most common diagnosis, followed by nonspecific, self-limiting infections, and respiratory and gastrointestinal infections.[1–5]

Travel history

Start with the question: *"Have you ever been overseas?"* Every possibly relevant trip should be recorded in detail.

Where? – the precise area of travel should be identified, not just the continent or country.

Why? – the reason for travel and the patient's activities there may suggest or exclude specific diseases.

When? – precise dates of departure and return are required. Viral haemorrhagic fevers can be excluded when more than 21 days have elapsed since the traveller left an endemic area in Africa. Malaria does not develop until at least 8 days after arrival in an endemic area, and most cases of falciparum malaria present within 2 months of exposure. Malaria developing more than 9 months after leaving the Indian subcontinent is almost always caused by *Plasmodium vivax*, symptoms of which may develop up to 2 years after exposure.

What? – a risk assessment of behaviour and activities while overseas should include a detailed sexual history. Swimming in fresh water carries a risk of schistosomiasis (Africa) or leptospirosis (particularly Asia, and Central and South America). A history of tsetse fly bite (usually vividly remembered) in a game park in Africa, or of tick bites (often unnoticed) is helpful.

Who? – details of pre-travel immunization and malaria prophylaxis should be recorded, and adherence to antimalarial regimens and antimosquito measures should be assessed, though full compliance does not exclude malaria. Pre-travel health is also important, particularly in patients who are immunocompromised.

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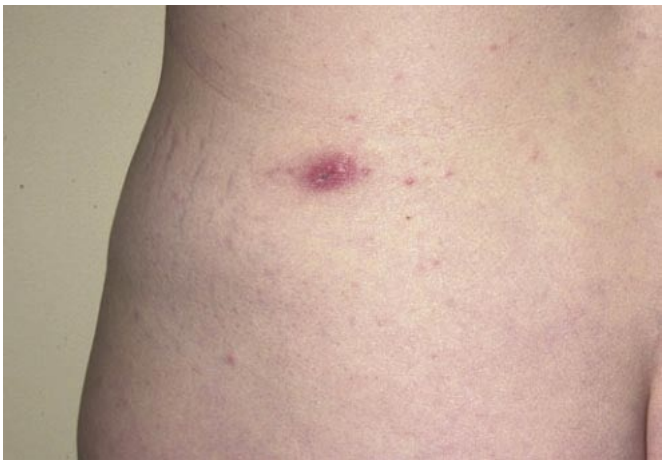
Advice on imported infections

In the UK, expert advice is available from the Schools of Tropical Medicine

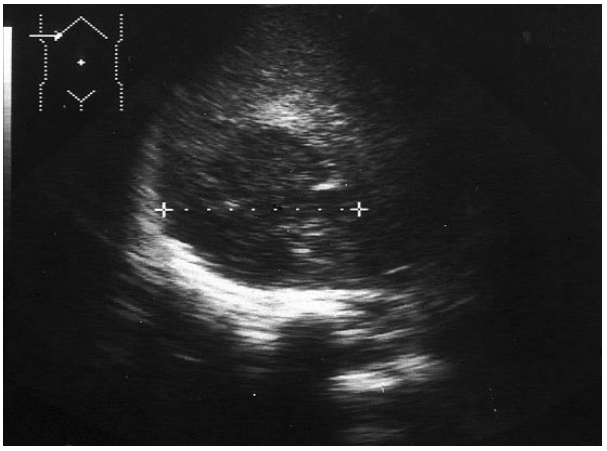
- Liverpool — Tel: 0151 700 2000 for physician on call; Web: www.liv.ac.uk/lstm/lstm.html
- London — Tel: 0207 387 9300, bleep 5845; Web: www.thehtd.org

Information on emerging infections is available from

- ProMED — www.promedmail.org
- US Centers for Disease Control — www.cdc.gov/
- WHO — www.who.int



1 Eschar and maculopapular rash of African tick typhus contracted after the patient visited a game park. Fever and lymphadenopathy preceded the rash by 5 days.



2 Ultrasound scan showing amoebic liver abscess in a merchant seaman with fever, neutrophilia and dullness at the right lung base. Liver abscess may mimic pneumonia.

Examination

Fever – the presence of fever should be confirmed; it is usually futile to pursue detailed diagnosis of a minor febrile illness that has already resolved. Patterns of fever are seldom as useful as textbooks suggest. Falciparum malaria usually causes continuous rather than periodic fever, though up to 10% of patients with malaria may be afebrile at presentation. The general condition of the patient should be assessed, looking for localizing signs and for complications of severe malaria, including confusion or drowsiness, shock and jaundice.

Insect bites commonly become infected with streptococci or staphylococci. Careful examination is needed to find the eschar (scab) of tick bites (Figure 1), which may be hidden in the hairline or under constricting garments (e.g. bra straps, underwear elastic).

Diarrhoea may be a presenting feature of falciparum malaria, pneumonia, atypical respiratory infections including severe acute respiratory syndrome, or enteric infection.

Jaundice suggests malaria, hepatitis or leptospirosis.

Hepatosplenomegaly is found in many infections. Less than 50% of patients with malaria have a palpable spleen, so this sign has little negative predictive value.

Lymphadenopathy should always raise suspicion of HIV seroconversion illness, but is also seen in dengue, brucellosis, rickettsial infections and the 'glandular fever' group of infections.

Investigations

Blood tests – investigations should include full blood count, differential WBC count, renal function, liver function tests and at least two sets of blood cultures. It is always worth storing an acute serum or plasma sample on admission for paired serological tests or for polymerase chain reaction-based diagnosis later.

Blood films for malaria are essential. Most laboratories are accustomed to interpreting thin blood films, which are most useful for diagnosing the type of malaria and determining the degree of parasitaemia. However, thin films are less sensitive than thick films, which are preferred where local expertise allows. Chemoprophylaxis makes blood films more difficult to interpret because the parasitaemia is more scanty.

Dipsticks for plasmodium species-specific lactate dehydrogenase can detect *P. falciparum* and *P. vivax* with almost the same sensitivity as a thick film examined by an expert. In a district general hospital setting, out of hours, these tests should supplement thin film examination. If the first film is negative and malaria is possible, films should be repeated after 12 hours, and possibly repeated again 24 hours later.

Thrombocytopenia is present in more than 75% of patients with malaria, but is also caused by dengue and other infections. Malaria or leptospirosis is more likely in those with both raised serum bilirubin and thrombocytopenia,[2] and the combination of spenomegaly and thrombocytopenia is strongly suggestive of malaria.[4] Neutrophilia suggests bacterial sepsis, including meningococcal disease, or amoebic liver abscess (serology is positive in the latter). Eosinophilia suggests nematodes or cestodes, typically acute schistosomiasis (serology and parasitology are often negative at this stage) or filariasis.

Antibiotic sensitivities should be reported. Pneumococci from many parts of the tropics are penicillin resistant, and *Salmonella typhi* and *S. paratyphi* A isolates from Asia are usually multi-drug resistant.