CASE REPORT

Meliodosis in a returning traveller

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Dr Simon William Dubrey,
simon.dubrey@thh.nhs.uk**SUMMARY**

A 66-year-old man returned to the UK from Thailand with a 2-week history of new confusion, hallucinations, fever with rigours and productive cough. He had not responded to (unspecified) antibiotic treatment in Thailand. On examination he was afebrile, with an abbreviated mental test score of 8/10 and no other findings on systemic examination. He was treated with ceftriaxone in response to discovery of a Gram-negative organism in blood. This was converted to meropenem on the clinical suspicion of our microbiologist, on the basis of a history of contact with surface water in the Far East. A blood culture subsequently confirmed *Burkholderia pseudomallei*. His condition remained stable for approximately 4 days, but then deteriorated over the course of the next 2 weeks with pneumonia and subsequent formation of disseminated abscesses. Treatment was withdrawn as his condition deteriorated to the point at which survival was deemed impossible and he subsequently died.

BACKGROUND

Burkholderia pseudomallei septicaemia (melioidosis) has a mortality as high as 90% if untreated,¹ and around 20% in developed regions with appropriate treatment.² Mortality is particularly high in immunocompromised groups, for example, patients with diabetes mellitus. While usually recognised promptly in endemic areas, it may go unrecognised in areas in which it is uncommon.

Given the increase in tourism to endemic areas, often by people in late middle age, we expect an increase in presentations within the UK and are concerned about the ramifications of a missed diagnosis.

In case of our patient, although his diagnosis and initiation of treatment on clinical grounds was reasonably prompt, it could easily have gone unrecognised for longer owing to the unusual organism and recognised difficulties (specific growth media required) in obtaining a definitive microbiological diagnosis.

CASE PRESENTATION

A 66-year-old man returned to the UK from the Phuket region of Thailand with a 2-week history of new confusion, hallucinations, fever with rigours and productive cough. He had not responded to (unspecified) antibiotic treatment in Thailand. He was previously fit and healthy with no significant medical history.

On examination he was afebrile, with an abbreviated mental test score of 8/10 and no other findings on systemic examination.

Accompanying family members were the primary historians.

The patient did not show any clinical improvement on either empirical treatment with ceftriaxone or subsequent 'appropriate' treatment with intravenous meropenem. His confusion was persistent and observations showed intermittent spikes in temperature, desaturations requiring daily increases in oxygen supply and a tachypnoea maintained at 24/min. Arterial blood gas sampling was in keeping with a type 1 respiratory failure, showing a partial pressure of oxygen concentration of 70 mm Hg.

Given his rapid decline he was transferred to an intensive care unit.

INVESTIGATIONS

An initial chest x-ray was unremarkable with clear lung fields (figure 1).

Blood tests on presentation showed an elevated white cell count of $12.5 \times 10^9/l$ and C reactive protein of 349 mg/l (normal range 0–8). Renal function was significantly impaired with urea 17.1 mmol/l and creatine 202 $\mu\text{mol/l}$.

Sequential blood results revealed that his C reactive protein was slowly declining, but alkaline phosphatase increased from 97 to 133 IU/l, the international normalised ratio from 1.6 to 2.8 (not on anticoagulation) and the serum albumin decreased from 28 to 16 g/l. Although a picture of hepatic encephalopathy was considered, further investigations were more in keeping with rapidly progressive sepsis.

Abdominal ultrasound showed a 1 cm haemangioma attached to the falciform ligament but no other abnormality.

Urine cultures, cytomegalovirus, Epstein-Barr virus, retroviral and hepatic virology screens were negative.

Figure 1 Chest radiograph (AP view) showing no obvious lung field abnormality and normal mediastinal and cardiac contours.

To cite: Ismail A, Buckley A, Dubrey SW. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2013-009655

A CT brain scan on admission and at 1 week revealed no intracranial abnormality.

CT imaging of the chest, abdomen and pelvis, performed at weekly intervals, gave a clear picture of disease progression. The first scan delineated right lower lobe pulmonary consolidation, multiple 3.5 mm nodules within both lungs, small bilateral pleural effusions and a moderate liver enlargement.

The second scan showed changes in the form of innumerable 5 mm lung nodules of low density, in keeping with abscesses, low-density lesions in both kidneys and some free fluid in the abdomen.

The final scan revealed extensive patchy lung consolidation, nodules and cavitation in the right middle lobe (figure 2); mucosal thickening of the entire colon; and subcutaneous oedema.

DIFFERENTIAL DIAGNOSIS

The differential diagnosis of a traveller returning from Thailand with a fever would include malaria, dengue, typhoid and paratyphoid fevers. Leptospirosis requires consideration, being similarly associated with the region and excess surface water.

OUTCOME AND FOLLOW-UP

Given the aggressive nature of this case of melioidosis, with rapid dissemination and antibiotic resistance, a multidisciplinary team of infectious disease and intensive care clinicians deemed no further intervention to be of benefit.

After the third CT scan of the chest, the Glasgow Coma Scale had reached a score of 7/15. Multiorgan system failure developed and despite best efforts, the patient died 5 weeks from onset of symptoms.

DISCUSSION

Melioidosis is a saprophytic Gram-negative organism. It is endemic in Northern Australia, South East Asia, the Indian Subcontinent and southern China. The highest prevalence rates are recorded for northeast Thailand. Infection is primarily through exposure to infected soil and ground water and usually through skin inoculation. Cases in American helicopter pilots during the Vietnam War suggested some cases might occur through inhalation. Infection rates are typically higher during the rainy season.

Incubation is generally acute and of an order of 1–21 days. Melioidosis can present as a chronic suppurative infection

mimicking tuberculosis and presenting months to years following exposure. The latter has acquired the synonym 'Vietnamese TB' or the 'Vietnamese time-bomb'. Clinical presentation includes localised skin infection, pneumonia, meningoencephalitis or systemic sepsis.³

Diagnosis is through culture of body fluids on Ashdown's medium and can be facilitated by its characteristic pattern of antibiotic resistance.⁴ Melioidosis is rare in the UK and cases are invariably imported; 22 cases associated with travel were reported in the UK between 1997 and 2006.⁵

Recommended treatment for melioidosis is with an initial 10–14 days of intravenous ceftazidime or meropenem, followed by eradication therapy with co-trimoxazole +/- doxycycline for 12–20 weeks.⁶

A Medline search for case reports using the keyword 'Melioidosis' within the last 5 years returned 76 results. A case of melioidosis was reported in the *Irish Medical Journal* in 2012,⁷ and a case of a melioidosis neck abscess was reported in the *Journal of Laryngology and Otology* in 2010,⁸ both were associated with travel. There are multiple case reports from South America, Australia, Singapore, Thailand, Malaysia, India and China.

Learning points

- ▶ Observe a high index of suspicion in people with recent travel history to Thailand, Asia and the Far East.
- ▶ A specific culture medium (Ashdown's medium) is required for growth of *Burkholderia pseudomallei*.
- ▶ Although the most common presentation is pulmonary melioidosis, bacteraemia and disseminated infection are likely evolutions, with a very high death rate.
- ▶ Survivors require intravenous antibiotics for 2 weeks, followed up with oral doxycycline and co-trimoxazole for 20 weeks
- ▶ Follow-up for at least 5 years is recommended as there is a lifelong risk of relapse.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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Figure 2 CT scan of the thorax (lung field settings), at the level of the aortic arch, showing extensive bilateral pulmonary involvement.

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