

Fever in returning travellers: A case of paratyphoid

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A 74 year old man presented with one week of tiredness and aching in his back and legs since returning from a four month stay in India. Ten weeks later he was still recovering following a protracted and relapsing illness with paratyphoid. His interesting case illustrates some learning points regarding this disease and illnesses in returning travellers in general.

PREVENTION

Prior to travel the patient had seen the practice nurse. He had up to date vaccination against hepatitis A and typhoid and had had general advice regarding hygiene and prevention of infectious diseases and had taken anti-malarial medication. Like many of the older generation of our patients travelling to India, he was born and had lived a large proportion of his life in the area which he was visiting. None of these factors were to prevent him from falling ill.

Immunisation by injection of polysaccharide typhoid vaccine is recommended for travellers aged over 18 months to tropical or developing countries. Boosters are advised every 3 years for continued exposure. It is estimated that the typhoid vaccine is around 50% effective five years after a single dose. A live attenuated vaccine is much less commonly available, but also licenced for adults and children over 6 years. Typhoid vaccination may be overwhelmed by a large inoculum, particularly in susceptible individuals including the immunocompromised and the young. There is no vaccination for the prevention of paratyphoid.

It is not known from his history whether this particular patient had previously contracted paratyphoid earlier in his life whilst living in India. In individuals who have been previously infected, the subsequent immune response probably confers partial protection against reinfection or disease severity, but this is a disease which can be contracted more than once.

CLINICAL FEATURES

On the first day of his presentation he did not give a history of fever and on examination he had a normal tympanic temperature and no other abnormalities were revealed. His symptoms of tiredness and general aching set alongside a subsequent set of normal blood and urine tests had not yielded a diagnosis. As in this case, enteric fevers often present insidiously after an incubation period of up to about 3 weeks and fever may be absent initially.

Two weeks after his initial presentation he returned with a two day history of abdominal pain, nausea, bloating and fever. On examination he was pyrexial with suprapubic tenderness and a urine specimen dipstick positive for blood and leucocytes. He was treated with oral cefalexin. Although an MSU later confirmed that there was indeed a urine infection, perhaps subsequent events show that even where an apparent diagnosis is reached,

one should be particularly wary of the possibility of co-existing conditions or misdiagnosis in patients returning from abroad and therefore exercise caution when considering safety-netting and follow up.

Four further days later, a Friday, our patient returned. Although improving slightly he continued to have fever at night and body aches. He now had slight loose motions for the first time. Unlike food poisoning, including Salmonellosis (with which S Typhi and Paratyphi should not be confused), constipation occurs more commonly than diarrhoea with enteric fever. A further set of bloods were taken and CXR, MSU and stool MC&S requested.

On review the following Monday, having had a trip to the out of hours centre and a script for trimethoprim, he felt worse again with fever, malaise and headache. As the condition develops, typically a high pyrexia becomes sustained and the abdomen is often distended and slightly tender, as occurred in his case. Although absent in this gentleman, many patients have splenomegaly and crops of red macules, 'rose spots' may appear.

His results showed a CRP 144 alongside an ESR 1 (a learning point here regarding the potential pitfalls when ordering and interpreting either one of these tests). His other results to date were normal or clear. He was accepted by the medical on-call team for an acute assessment.

During his seven day admission, although blood cultures proved negative, the stool result from the previous week came back and had grown Salmonella Typhi (type A). Blood cultures may often prove negative where, as in this case, the patient has already been given antibiotics. Prompt communication of the incoming primary care stool result to the hospital was important in managing this gentleman.

Due to his co-existing history of UTI and ongoing microscopic haematuria an ultrasound was performed during the admission which showed a ureteric stone and a cyst in liver. He was treated with intravenous ceftriaxone until afebrile, then with oral cefixime to complete a two week course. Follow up was planned for the fever and urology outpatient clinics (he was later to be treated with lithotripsy for persistent renal calculi). Two weeks later at fever clinic he was continuing to feel improved though still mildly fatigued. His CRP was 23 and he had mild liver function test derangement.

A further three weeks later he presented again to the surgery, now with a one day history of relapse of

fever with no other symptoms. On examination he had a tympanic temperature of 39.6 degrees and pulse of 117. He was accepted again by the medical on-call team as an acute referral. 10% of patients with enteric fever relapse, typically around 3 weeks after stopping treatment or recovery.

During his eighteen day inpatient stay a CT showed a liver abscess which required drainage twice, with the pus growing paratyphoid. Fatality is less than 1% with antibiotic therapy, but may be as high as 20% in untreated cases, especially vulnerable are children in endemic areas. Various complications are possible affecting organ systems including haematological, brain, gut, liver, kidneys and others.

He again received intravenous antibiotics prior to being discharged on 3 weeks of oral augmentin. Follow up of the cyst by scan demonstrated it gradually shrinking to a 2 cm underlying benign pre-existing lesion

EPIDEMIOLOGY

The 'enteric fevers', typhoid and paratyphoid, are caused respectively by the gram negative bacteria Salmonella typhi and Salmonella paratyphi (types A {prevalent in South Asia}, B {Middle East and Mediterranean} and C). These organisms are transmitted primarily via the oral route following ingestion of food or drink contaminated with bacteria excreted by humans with either acute illness or chronic carriers. The disease is predominantly one of countries with inadequate sanitation. It is endemic in South Asia, the Middle East, Central and South America and Africa. Outbreaks also occur in Southern and Eastern Europe but are rarer elsewhere. The last indigenous UK outbreak was of five cases in Newport in 2001. Prevention in travelers depends upon great attention to personal, food and water hygiene, and upon the improvement of sanitation and water supplies in endemic areas.

Typhoid and paratyphoid are both notifiable diseases. The reported incidence in the England and Wales is around 400 cases per year (HPA 2005). The most common source of infection is during travel to the Indian subcontinent, where there is an endemic rate of over 100 cases per 100,000 people per year. The risk is highest where there is travel to an area of high endemicity. This certainly seems to be the case in our practice, where 5 unrelated confirmed cases of paratyphoid in the last three years have occurred in travellers to the same region in the Punjab, in one case the patient stating an awareness of a high rate of enteric fever on presenting after their return.

An immigrant from an endemic area may be a chronic carrier for years. 10% excrete the organism

in faeces for three months and around 3% become carriers for over a year. This is more likely in older, female and biliary individuals. Carriers should be excluded from handling food or water. Local public health services should be involved with microbiological advice regarding the use of antibiotic treatment for the carrier state. They may consider checking stool and urine samples until satisfactory clear results are obtained.

Since 1997 the number of cases of paratyphoid annually in England and Wales has exceeded those of typhoid, reversing the previous traditional pattern. This again rings true in our practice, which has not (knowingly) seen a case of typhoid to put up against the 5 cases of paratyphoid, of which this case is one. This highlights the importance of awareness of scrupulous personal, food and water hygiene as the prime preventative measure for foreign travellers.

USEFUL READING

- Department of Health (2001) *Health Information for overseas travel ('the yellow book')*.
- London: The Stationary Office
www.archive.official-documents.co.uk/document/doh/hinfo/
- Department of Health (2006) *Immunisation against Infectious Disease ('the green book')*
London: The Stationary Office
www.dh.gov.uk/en/PublicHealth/Healthprotection/Immunisation/Greenbook/index.htm
- Crump JA, Luby SP and Mintz ED (2004) The global burden of typhoid fever. *Bull World Health Organ* **82**:346-53.
- Sinha A, Sazawal S, Kumar R *et al.* (1999) Typhoid fever in children aged less than 5 years. *Lancet* **354**:734-7.
- Health Protection Agency (2006) *Salmonella Typhi and Paratyphi laboratory reports 1980 – 2006* www.hpa.org.uk (and follow links through 'infectious diseases')