Imported infections in East Birmingham children

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Summary

This 15-month prospective study of admissions to a children's ward found imported infections in 58 children (1.3% of admissions), aged between two months and 15 years. Most had visited the Indian subcontinent 14 (1–341) days earlier. Few had taken preventative measures. The commonest infection was malaria ($n=23$).

Keywords: infectious diseases; children; malaria; traveller's diarrhoea

The number of infections imported into the UK is increasing. Young children constitute only 4% of overseas travellers, but make up nearly a quarter of all travel-associated admissions.¹ Previous studies of imported infections in children are either retrospective or limited to a single infection, such as malaria.^{2,3} These are likely to underestimate the number of imported infections.

It is important to know which imported infections present as emergencies, so that appropriate education can be given to paediatricians in training. We aimed to perform a prospective study of all imported infections seen in children admitted to a district general hospital with a defined catchment area over a 15-month period.

Methods

This prospective, observational study included all children with imported infections seen as emergencies or admitted to our children's ward between June 1995 and September 1996. Birmingham Heartlands hospital is situated in the east of Birmingham. Approximately one third of the local population come from the Indian subcontinent.

An imported infection was defined as an infection in a child with a history of recent travel abroad, in which the incubation period was compatible with acquiring the infection abroad. Children who returned from abroad with diarrhoea, but in whom no pathogen was isolated were defined as having traveller's diarrhoea.

Children were investigated with blood films for malarial parasites, blood and stool cultures. Stools were specifically examined for *Giardia*, *Shigella*, *Cryptosporidia*, *Salmonella*, enteropathogenic and enterohaemorrhagic *Escherichia coli* and *Campylobacter*.

Imported infections in 58 children referred to Birmingham Heartlands Hospital

Infection*	n
Malaria	23
<i>P. vivax</i>	20
<i>P. falciparum</i>	3
Traveller's diarrhoea	11
Hepatitis	9
A	6
B	2
Non-A non-B	1
Giardiasis	6
Campylobacter	5
Typhoid	3
Enteropathic <i>E. coli</i>	2
Pulmonary tuberculosis	2
Measles	1
Cutaneous Leishmaniasis	1
Cryptosporidiosis	1

*Seven children had more than one infection.

Box 1

Results

During the study there were 4238 children's medical admissions. Fifty-eight children (25 female) with imported infections were identified and all except four required admission (1.3% of admissions). Median age (range) was eight years (0.17–15). Children presented a median of 14 days (1–341) after return from the Indian subcontinent ($n=52$), Africa ($n=3$), Europe ($n=2$) and Oman ($n=1$). The commonest symptoms were fever ($n=49$), vomiting ($n=31$) and diarrhoea ($n=26$).

The commonest infection seen was malaria (box 1); the three cases with *Plasmodium falciparum* had visited Africa. One case of typhoid came from eating raw mussels in southern France. Seven children had multiple infections.

Forty-seven children had sought medical advice before admission. Only four had a blood film checked for malaria, while 30 were given inappropriate treatment and admission was delayed.

Few children had taken any preventative measures before travelling. Only four of 23 with malaria had taken correct prophylaxis, although one took a homeopathic medicine.

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Both children with tuberculosis had received neonatal BCG.

The median length of stay in hospital was two days (0–35). Prolonged admissions were needed for a 7-week-old baby with congenital malaria who required a blood transfusion and a 2-month-old baby with severe enteropathy complicating gastroenteritis who required parenteral nutrition. No children died and specific treatment was given to 35 children (antimalarials 23, antibiotics, including antituberculous, 11).

Discussion

The increasing speed and ease of international travel means that children can come to the UK from almost any part of the globe within the incubation period of most infections. These children may present acutely and it is therefore paediatricians in training who may be responsible for their initial diagnosis and management. This first prospective study of imported infections in children admitted to hospital shows the variety of infections that can present as emergencies; mainly malaria, diarrhoea and hepatitis. Many of these infections are well known to British paediatricians. However, malaria requires specific investigations (blood films) and may be fatal.⁴ Inappropriate treatment and delays in diagnosis were common in the present study. Delay is a major factor in determining fatal outcome in malaria.⁴ It is therefore important to ascertain if a febrile child has been in a malarious area within the past year and if so, blood films should be examined.

Learning points

- the most common imported infections in British children are malaria, diarrhoeal disease and hepatitis
- don't forget the travel history in febrile children

Box 2

The most severe disease in this series affected young infants. This is similar to previous studies which found young infants to have more severe traveller's diarrhoea than older children.⁵

Diarrhoeal disease was the second commonest diagnosis in this series. No pathogen was isolated from most cases as is often the case with traveller's diarrhoea.⁶ The prospective nature of this study meant that these cases were included. Such cases would have been missed by a retrospective study.

Most children were resident in the UK before travel. Many infections, especially malaria, could have been prevented by appropriate prophylaxis. However many families do not appreciate the need for malaria prophylaxis³ and rarely consult health services before travel to malarious areas.⁷

In conclusion, paediatricians working in an area of the UK with a high Asian population need to be aware of the more common imported infections, especially malaria, and have training in handling them appropriately.

1 Cossar JH, Reid D, Fallon RJ, *et al.* A cumulative review of studies on travellers, their experience of illness and the implications of these findings. *J Infect* 1990;21:27–42.

2 Paget-Stanfield J, Reid D. Imported infections in children. *J R Coll Physicians Lond* 1980;14:232–7.

3 Simpson R McD, Eden OB. Childhood malaria in Edinburgh 1961–82. *Scott Med J* 1983;28:350–4.

4 Bradley DJ, Warhurst DC. Malaria imported into the United Kingdom during 1991. *Commun Dis Rep* 1993;3: R25–8.

5 Pitzinger B, Stefen R, Tschopp A. Incidence and clinical features of traveller's diarrhea in infants and children. *Pediatr Infect Dis J* 1991;10:719–23.

6 Anon. Consensus conference. Travelers' diarrhea. *JAMA* 1985;253:2700–4.

7 Campbell H. Imported malaria in Britain: survey of British residents travelling to areas in which malaria is endemic. *BMJ* 1985;291:1013–4.