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Malaria in Northern Ireland

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SUMMARY

The clinical features, parasitology and prophylactic history of 67 patients who imported malaria to Northern Ireland between 1974 and 1983 are reported. P. falciparum *infections were encountered more frequently than anticipated from current United Kingdom experience. The clinical implications of these findings are discussed.*

INTRODUCTION

Malaria remains a major health problem for more than one thousand million of the world's population, and areas where infected anopheles mosquitos may be encountered are growing. Once endemic in the British Isles, malaria declined in importance during the 18th and 19th centuries. The indigenous anopheles mosquito prefers animal to human blood, and changes in animal husbandry and marsh reclamation meant that, by the early 20th century, indigenous malaria had almost disappeared.[1] Thereafter in the British Isles malaria has been a disease of importation, a trend strikingly illustrated by peaks in malaria incidence that followed the return of those who served in malarial areas during two world wars and the Korean conflict.

The situation changed radically during the decade surveyed with the explosive growth in international travel. The incidence of malaria in the United Kingdom increased from 540 cases (1973) to 2,053 cases (1980). These figures constitute more than half of all malaria importation into Europe.[2] Two groups contribute to this excess of malaria importation — new immigrants and former immigrants returning from a visit to their country of origin. Since the majority of these patients acquire infection in Asia, the predominant parasite involved is *P. vivax*. In the United Kingdom infection by *P. vivax* and other relapsing malarias accounted for more than two-thirds of isolates during the survey period. This study was undertaken to investigate a clinical impression that the pattern of malaria importation to Northern Ireland differed from that of the United Kingdom.

METHODS

A retrospective survey of hospital records for the period 1974 – 1983 identified 63 malaria patients (59 in-patients, four out-patients). Laboratory records added

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four cases, giving a total of 67 patients with recognised malaria during this decade. All but five patients initially presented to their family doctor. Most were then referred to infectious disease consultants (40 cases), general physicians (14 cases), or consultant haematologists (three cases). For seven patients, the diagnosis was made clinically on the basis of fever following travel to an endemic area which responded to specific anti-malarial therapy. In the remaining cases, diagnosis was established by blood film examination in local haematological laboratories. Further confirmation of this parasitological diagnosis was obtained in 41 cases from the Public Health Laboratory Service, Malaria Reference Laboratory (London School of Hygiene and Tropical Medicine) or from the Liverpool School of Tropical Medicine.

RESULTS

There were 50 male and 17 female patients, mostly in the 18 – 40 age range. Europeans, of whom there were 43, formed the largest ethnic group. There were 18 patients of Indian extraction, four of African origin, one patient was of mixed African/European descent and in one case there was no record of racial origin. Reasons for travel are set out in Table I and compared with similar data for the whole of the United Kingdom during the same period. The most readily identifiable group among patients of local extraction were missionaries (14) and employees of voluntary organisations (11), returning on furlough from malaria endemic areas. Immigrants provided a much smaller number of malaria victims than would be anticipated from the comparable United Kingdom experience.

TABLE I

Reasons for travel

Reasons for travel in 67 cases of malaria diagnosed in Northern Ireland compared with the figures for the whole of the United Kingdom.

	Cases	*Percentage of Northern Ireland cases*	*Percentage of United Kingdom cases*[3]
New immigrants	6	8.8%	23.3%
Former immigrants revisiting country of origin	10	14.8%	28.6%
Air/sea crews/military	4	5.8%	1.8%
Foreign visitors	—	—	6.8%
Long-term residents overseas returning home on furlough	14	20.8%	3.7%
Children visiting parents living abroad	6	8.8%	1.3%
Voluntary service overseas business	11	16.4%	5.4%
No record	16	23.8%	29.1%
	67	100%	100%

Northern Ireland malaria patients were most likely to have been infected in sub-Saharan Africa (39 cases), almost equally divided between east, central and western regions of that continent. As expected, the predominant parasite demonstrated was *P. falciparum.* Twenty-two patients presented on return from the Indian sub-continent and, where a parasitological diagnosis was made, all showed *P. vivax* infection. (Table II). Of the 56 patients for whom clinical data is available, all presented to their doctor with a fever or rigor. Other common symptoms were headache (22), myalgia (13) and symptoms referrable to the gastrointestinal tract, including nausea (9), vomiting (12), abdominal pain (8) and diarrhoea (7). Few had positive clinical signs. Hepatomegaly was present in only 14, splenomegaly in nine; five were jaundiced and three anaemic.

TABLE II

Parasitological diagnosis and source of infection

	Africa	India	Other	Total
P. falciparum	27*	—	—	27
P. vivax	2*	17	3	22
P. ovale	2	—	—	2
P. malariae	1	—	—	1
Parasites not specified	4	4	1	9
'Clinical' diagnosis without confirmation	5	1	1	7

* One mixed infection.

Of the patients infected with *P. falciparum* in whom the interval between arrival in Northern Ireland and the onset of symptoms was recorded, three-quarters presented within one month and the remainder within three months. In patients with *P. vivax* infection, only a quarter developed symptoms within the first month of their arrival, the remainder presenting within 12 months. In one case of *P. ovale* infection, the latent period was longer than a year. The single case of *P. malariae* infection presented two months after return to this country.

Details of the malaria prophylaxis were recorded in only 45 of the cases. Seventeen patients took no prophylaxis whatever, six patients took some form of medication irregularly, six others had discontinued regular prophylaxis immediately on return or before completing four weeks in this country. Sixteen patients were recorded as taking full prophylaxis; proguanil in two cases, chloroquine in two cases, pyrimethamine (Daraprim) in five cases, or pyrimethamine and dapsone (Maloprim) in seven cases. All the patients were treated initially with chloroquine. Haemolysis occurred in one case and methaemoglobinaemia (following the use of dapsone) in another. Quinine was required for three cases of *P. falciparum* infection — all acquired in Africa — which proved resistant to chloroquine. There were no deaths and there is no record of any serious sequelae.

DISCUSSION

We located fewer malaria infections in Northern Ireland than overall United Kingdom statistics led us to expect. This probably reflects the small proportion of immigrants to our community. In the whole United Kingdom, more than half the patients with malaria were immigrants, most acquiring their infection on the

Indian sub-continent where *P. vivax* infection dominates. The resulting illness usually has a typical symptomatology, likely to be recognised as malaria, especially if the patient is Indian. Even where diagnosis is delayed, little harm ensues. In Northern Ireland most of those infected were of local origin and were infected in Africa where *P. falciparum* infection is common. This has considerable clinical significance. The resulting illness frequently follows a fulminant course and can progress rapidly to death, yet the symptoms and clinical findings are much less specific.

P. falciparum was responsible for almost all malaria deaths occurring in the United Kingdom, the annual case mortality varying from 1.4% to 10% during the survey period. In almost all instances, death from falciparum malaria was the consequence of late diagnosis. In Northern Ireland, there were no deaths during the survey period, but there is no room for complacency. Our current good record will be maintained only by extreme clinical vigilance. The presenting features of malaria, particularly the dangerous *P. falciparum* infections, mimic the many simple locally acquired fevers and gastrointestinal upsets. It is esential that both hospital doctors and family practitioners consider malaria as a possible diagnosis in any febrile patient recently returned from a malaria endemic region. Even completion of a full course of anti-malarial chemoprophylaxis does not exclude this possible diagnosis.

Many of those infected failed to seek or did not receive adequate advice about the need for malaria prophylaxis. The family doctor is usually approached to provide this and with the rapid spread of drug-resistance strains of *P. falciparum,* it is essential that such prophylactic advice is constantly updated. The Public Health Laboratory Service Malaria Reference Laboratory (London School of Hygiene and Tropical Medicine) periodically publish such details.[3] Together with the Liverpool School of Tropical Medicine, they provide a telephone answering service. The Medical Advisory Service for Travellers Abroad (MASTA) at the London School of Hygiene and Tropical Medicine also include advice on malarial prophylaxis within their comprehensive health brief. Whatever prophylactic therapy is chosen, patients must be advised to start medication a week prior to departure and to maintain drug cover throughout their stay in the malaria endemic area and subsequently for four to six weeks after their last possible mosquito contact. Prescriptions for drug prophylaxis must be supplemented by emphatic advice on methods of avoiding mosquito bites including the use of mosquito nets, repellent creams and sprays and suitable clothing for the period between dusk and dawn.[4] Such simple measures do much to reduce the risk of malaria.

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