CASE REPORTS

Malaria: a laboratory risk

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Summary

A case is described of malaria contracted in a clinical laboratory by accidental self-inoculation with infected blood.

Introduction

Although transmission of malaria by blood transfusion and infected needles in drug addicts is well documented, the disease is not normally regarded as an infection acquirable in the laboratory. With the increased incidence of malaria in this country during recent years, it is felt that this is now a potential hazard of which both clinicians and laboratory staff should be aware.

Case report

On 17 May, 1979, a 26-year-old Senior House Officer in pathology presented with a 36-hr history of headache, fever, sweating, and 4 episodes of rigor. He had vomited on one occasion. Maximum temperature recorded by the patient had been 40.5°C. History revealed that on 3 May, 1979, he had accidentally stabbed his finger and drawn blood whilst preparing a routine blood film from a Nigerian patient. This blood film had shown a sparse parasitaemia of *Plasmodium falciparum*.

On examination, the doctor was febrile and sweating. There was no clinical evidence of anaemia, jaundice or splenomegaly. He was completely lucid and had no neck stiffness or photophobia. The only signs were a tachycardia of 100-120/min, and generalized hyper-reflexia. Examination of a thin blood film showed *P. falciparum*, with 5 to 6 trophozoites per high-power field. Hb was 16.2 g/dl with a WCC of $5.1 \times 10^9/l$.

He was admitted to the ward and treated with chloroquine sulphate (600 mg base, immediately, followed by 300 mg base at 6 hr and then 150 mg base 12-hourly for 3 days). He had one further rigor 4 hr after starting treatment with a pyrexia of 39.8°C, a further spike of fever to 38.4°C, 24 hr

later, and became apyrexial within a further 30 hr. No parasites were seen in venous blood 15 hr after starting treatment. There were no clinical or biochemical sequelae.

Discussion

There can be no doubt that in this case malaria was transmitted by accidental self-inoculation with infected blood. The patient, working in a London laboratory, had never visited an area endemic for malaria and had received no transfusion of blood or blood products. From a search of the literature, accidental laboratory transmission of malaria would appear to be rare. Only one other case has been reported (Burne, 1970).

This mode of transmission is well known in drug addicts and following transfusions of infected blood or blood products. In these cases, because the hepatic stage of the life-cycle is by-passed, variable incubation periods of between 2 and 24 days have been reported. The incubation period in the present patient was 14 days. H. Most (1940) reported 200 cases amongst heroin addicts over a 2-year period in New York. In that series, there were 198 cases due to *P. falciparum*, one due to *P. vivax*, and one due to *P. malariae*. The risk of transmission of malaria by transfusion is more widely known and is well documented (Gordon, 1941). Congenital malaria is also well documented (Covell, 1950). Here it seems unlikely that sporozoites or merozoites cross the placental barrier, but that infection occurs by transfer of maternal red cells to the fetal circulation during parturition. In favour of this, Bradbury (1977) reported a case of congenital malaria occurring in one non-identical twin.

Accidental laboratory transmission of malaria must be relatively more common in endemic areas, but the victim is likely to have a degree of immunity or to be taking prophylaxis. In non-endemic areas the risk may be reduced by considering malaria in the differential diagnosis of 'pyrexia of unknown origin'

in laboratory workers, by avoiding the use of needle and syringe in transferring samples and preparing slides, by wearing gloves in the laboratory, and by prescribing appropriate prophylactic therapy following any episode of accidental self-inoculation of infected blood.

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References

- BRADBURY, A.J. (1977) Congenital malaria in one non-identical twin. *British Medical Journal*, **2**, 613.
- BURNE, J.C. (1970) Malaria by accidental inoculation. (Correspondence), *Lancet*, **ii**, 936.
- COVELL, G. (1950) Congenital malaria. *Tropical Diseases Bulletin*, **47**, 1147.
- GORDON, E.F. (1941) Accidental transmission of malaria through administration of stored blood. *Journal of the American Medical Association*, **116**, 1200.
- MOST, H. (1940) Falciparum malaria in drug addicts: clinical aspects. *American Journal of Tropical Medicine*, **20**, 551.