Correspondence

Iron Deficiency and Malaria Mortality: Possible Implication of Invasive Bacterial Diseases

TO THE EDITOR—With great interest we read the recent article by Gwamaka et al about the relation between iron deficiency (ID) and protection from malaria [1]. In children with ID, significantly lower incidences of malaria infection, severe malaria disease, and mortality were observed. It was also found that ID predicts malaria-associated mortality. We think, however, that other factors, especially invasive bacterial diseases, should be assessed before ascribing deaths to malaria.

Malaria-associated mortality was defined as a positive thick blood film obtained during terminal illness. Although malaria infection was microscopically confirmed, we have some concerns about the malaria-attributable case fatality in these patients. A positive blood film does not exclude the presence of concurrent infections. One child with a positive blood film was categorized as a nonmalaria death because of proven bacterial meningitis. For all other children, however, no blood cultures or lumbar punctures were performed to exclude invasive bacterial diseases.

Malaria strongly predisposes to invasive bacterial diseases [2], above all to nontyphoidal Salmonella (NTS) [2, 3]. NTS is the most commonly acquired bloodstream infection in many parts of sub-Saharan Africa [4]. Coinfections of malaria and NTS are not uncommon and symptoms are clinically indistinguishable [3]. NTS is associated with severe malaria and high mortality rates [3, 5, 6]. Recently, we observed a tremendous increase in mortality among hospitalized children in Kisantu, Democratic Republic of the Congo. Although at first ascribed to malaria because of the high rate of positive thick blood films, blood cultures revealed the presence of a clonal NTS outbreak (M. F. Phoba, O. Lunguya, D. V. Mayimona, et al, unpublished data).

In addition, mouse studies have demonstrated that malaria-induced hemolysis releases heme oxygenase and iron, which impair bacterial phagocytosis and support bacterial growth, respectively [7].

These data suggest that in the study of Gwamaka et al [1], at least some of the children who were iron-replete and adjusted as malaria death could have died of concurrent invasive bacterial disease rather than from malaria itself. Conversely, the lower mortality among children with ID could have been ascribed to less frequent invasive bacterial diseases in this group as a consequence of lower malaria incidence.

Although Gwamaka et al [1] provided striking evidence that ID is related to a lower number of malaria infections and overall mortality, future additional investigations should include blood cultures to assess the relative contribution of malaria versus invasive bacterial diseases to infant mortality.

Note

Potential conflicts of interest. Both authors: No potential conflicts of interest.

Both authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

Jessica Maltha and Jan Jacobs
Department of Clinical Sciences, Institute of Tropical Medicine, Unit of Tropical Laboratory Medicine, Antwerp, Belgium

References


Correspondence: Jessica Maltha, MD, Institute of Tropical Medicine, Nationalestraat 155, B-2000 Antwerp, Belgium (j.maltha@itg.be).

Clinical Infectious Diseases 2012;55(5):748
© The Author 2012. Published by Oxford University Press on behalf of the Infectious Diseases Society of America. All rights reserved. For Permissions, please e-mail: permissions@oup.com.
DOI: 10.1093/cid/cis522