Plasmodium vivax -- challenging the dogma of being 'benign'

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Plasmodium. vivax can cause severe malaria associated with substantial morbidity and mortality, show two studies published in *PLoS Medicine* this week. These findings challenge the current dogma that P. falciparum can be severe and life-threatening whereas P. vivax tends to be mild, according to the related commentary by Stephen Rogerson (University of Melbourne, Australia), an expert not connected with these studies.

Both these prospective cohort studies report similar rates and outcomes of severe malaria due to P. vivax or P. falciparum although they report findings in two different settings with different cultural and ethnic characteristics of the patient populations. P. vivax cases peaked at an earlier age than those of P. falciparum in young children, who were also more likely to develop clinical and severe disease. The studies also reported cases of cerebral malaria due to P. vivax which is intriguing as complications secondary to P. vivax infection have rarely been reported previously.

The first study, by Ric Price and colleagues (Menzies School of Health Research, Darwin, Australia) examined data collected from all the patients attending outpatient and inpatient departments of a hospital that serves a large area in the southern lowlands of Papua, Indonesia between January 2004 and December 2007. Among the inpatients with confirmed malaria, two-thirds were infected with P. falciparum, a quarter with P. vivax, and the rest with a mixture of parasites. Nearly one in four patients infected with P. vivax developed severe malaria compared with roughly one in five patients infected with P. falciparum and one in three patients infected with both parasites. The proportion of patients with severe disease was greatest among children below the age of five years.

The second study, by Blaise Genton and colleagues (Swiss Tropical Institute, Basel, Switzerland) enrolled everyone attending two rural health facilities in the Wosera subdistrict of Papua New Guinea over an eight-year period with symptoms indicative of malaria but without symptoms of any other disease (presumptive malaria cases). Out of 17, 201 presumptive malaria cases, 483 had severe malaria. Most of the severe cases were aged less than five years old. In this age group, 11.7% were infected with P. falciparum, 8.8% were infected with P. vivax and 17.3% were infected with both.

Both studies had limitations, such as comorbidities, including bacterial or viral infections, not being actively investigated, and microscopy for detection and speciation leading to underestimation of mixed infections. "Despite these limitations, a striking feature of the two studies is the overall comparable incidence of severe disease in P. vivax and P. falciparum infections in each setting. There were differences in the prevalence of the components of severe disease in the two locations and a notable disparity in the overall rates of severe disease." comments Stephen Rogerson.

He also comments, "With calls for increased efforts to control malaria internationally, it will be important to ensure that P. vivax receives appropriate attention. We still lack reliable estimates of its global burden, and are only now starting to appreciate certain aspects of disease presentation of P. vivax malarial infection. The burden and severity of vivax in different settings requires further study." "The two reports by Price et al and Genton et al provide information about disease burden critical to improved decision making for the public health management of P. vivax malaria."

Citation: Tjitra E, Anstey NM, Sugiarto P, Warikar N, Kenangalem E, et al. (2008) Multidrug-resistant Plasmodium vivax associated with severe and fatal malaria: a prospective study in Papua, Indonesia. PLoS Med 5(6): e128. -- medicine.plosjournals.org/perl … journal.pmed.0050128

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