Letters to the Editor

The Panmalarial Antigen Detected by the ICT Malaria P.f./P.v. Immunochromatographic Test Is Expressed by *Plasmodium malariae*

The ICT Malaria P.f./P.v. test is a rapid immunochromatographic assay, manufactured in test card form (2). The assay detects *Plasmodium falciparum*-specific histidine-rich protein 2 antigen (HRP2) (4) and a panmalarial antigen. Recent field studies (5) have reported the ability of the test to detect *P. falciparum* vivax, but no data on antigen expression by *P. malariae* is available. Dyer et al. (1) reported a failure of the test to detect *P. malariae*. In contrast, we here present evidence that the panmalarial antigen is expressed by *P. malariae*.

Details of the ICT test are described elsewhere (2, 5). Briefly, 10 μl of whole blood is added to a sample pad containing colloidal gold-labeled antibodies followed by a buffer reagent to induce cell lysis. The released HRP2 and panmalarial antigens bind the antibodies on the pad. Antigen-labeled antibody complexes migrate up the test strip, where they cross two test lines and a control line. Interpretation is *falciparum*-positive if the HRP2-specific line is visible, whether or not the panmalarial antigen line is seen. When all three lines are observed, the test is interpreted as indicating a panmalarial infection. When the HRP2-specific line is not visible, the sample is positive for a malaria parasite other than *P. falciparum*.

During field and hospital studies in 2000, we detected three cases of single *P. malariae* infections with the ICT test (#ML02 Lot 011190, expiration April 2001), at two sites in Southeast Asia. A blood smear from a hospital patient in Sangkhlaburi, Thailand, showed *P. malariae* infection by Giemsa microscopy (6,000 parasites/μl), and this observation was confirmed with nested PCR using species-specific primers (3). Two other cases of *P. malariae* infection were found in patients from Mandalay Division, Myanmar, and diagnosis was made by acridine-orange microscopy and confirmed by the same species-specific primers. The ICT test for both patients showed only panmalarial antigen and the control lines. Parasitemias were estimated to be 1,260 and 2,025 parasites/μl.

Another patient with *P. malariae* infection from Sangkhlaburi, Thailand, was nested PCR positive but ICT negative. The parasitemia (330 parasites/μl) of this patient was much lower than those of the ICT-positive patients, suggesting that the threshold for detecting the panmalarial antigen in *P. malariae* is on the same order of magnitude as that of *P. vivax* (J. R. Forney, C. Wongsrichanalai, A. J. Magill, J. Sirrichaisinthop, and R. A. Gasser, Abstr. 49th Annu. Meet. Am. Soc. Trop. Med. Hyg., abstr. 239, 2000).

The ICT test line configuration is known for its limitations. When *P. malariae* appears with *P. falciparum* in a coinfection, it is not possible to assess whether the panmalarial antigen is expressed by the first organism. The inability of ICT to differentiate non-*P. falciparum* species also limits its use as an epidemiological tool. In areas of endemicity such as Myanmar, where *P. vivax* is not the only common non-*P. falciparum* species (3), we can no longer assume that samples with *Plasmodium*-positive, *P. falciparum*-negative ICT tests are due to *P. vivax*. It has yet to be shown that *Plasmodium ovale* can be detected with the kit.

REFERENCES


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