

Study of False Positivity of Two Rapid Antigen Detection Tests for Diagnosis of *Plasmodium falciparum* Malaria

Presently, two rapid antigen detection tests are available for the diagnosis of *Plasmodium falciparum* malaria (ParaSight F; Becton Dickinson, Tropical Disease Diagnostics, Sparks, Md., and ICT Malaria Pf; ICT Diagnostics, Sydney, Australia). Both these tests are based on the detection of histidine-rich protein 2 (HRP-2) antigen, secreted by asexual stages of *P. falciparum*. Both the ParaSight F and ICT Malaria Pf tests have been reported as highly sensitive and specific by several authors (1, 4). Recently, however, false-positive test results with rheumatoid factor (RF)-positive samples have been reported by investigators using the ParaSight F kit (2). This prompted us to carry out a comparative study between these two available tests to determine the status of false positivity in RF-positive patients.

We tested blood samples of 25 RF-positive patients (2 were positive for both RF and antinuclear antibody) who were negative for the malaria parasite by Giemsa-stained thick-smear examination. ParaSight F tests were falsely positive for 60% (15 of 25) of patients, a result which is comparable to the finding of Laferl et al. (2) (67% false positive). All 25 samples were tested in parallel by the ICT Malaria Pf test. None of these samples were falsely positive.

No correlation between ParaSight F positivity and the titer of RF, the type of collagen disease, or the age or sex of the patients was found. The RF titer had no correlation with the intensity of the color on the strips.

The ParaSight F and ICT strips were used to test 20 smear-positive *P. falciparum* samples. Both systems showed positive bands for all 20 samples. In addition to this, samples from 15 patients with smear-positive *P. vivax* malaria, 1 patient with

P. malariae malaria, 4 with kala-azar, four with tuberculosis, and six with typhoid fever were tested in parallel by both tests. ParaSight F and ICT gave consistently negative results for all these samples.

The discrepancy between the results of these two tests in the presence of RF could be due to the nature of the capture monoclonal antibody (Ab) on the strip. In the ParaSight F test, the coated Ab is immunoglobulin G1 (IgG1) (1). Nonspecific attachment of RF may be responsible for false-positive results. The capture monoclonal antibody in the ICT test is IgM (3), to which RF does not bind, thus there is no false positivity.

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