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Letters to the Editor

Low Specificity of an Immunochromatographic Serological Assay for Diagnosis of Dengue Fever in Travelers Returning with Malaria

The Dengue Duo Rapid Strip Test (DDRST) (PanBio Pty Ltd., Brisbane, Australia) is a recently commercialized immunochromatographic test incorporating recombinant antigens of dengue virus (Dv); it replaces the PanBio-IC test, which is based on the same principle (2, 4, 5). The DDRST permits independent detection of Dv-specific immunoglobulin M (IgM) and IgG in about 15 min. In patients from Thailand, detection of Dv IgM was accomplished with an overall 90% sensitivity and 86% specificity and an 87% specificity in blood smear-positive cases of malaria (1).

In the present study, we evaluated the DDRST with 37 travelers admitted for febrile syndrome at the University Hospitals of Marseilles, France, with a blood smear positive for *Plasmodium falciparum*. The patients were hospitalized between October 2001 and April 2002 after returning from the Comoros islands ($n = 21$), Madagascar ($n = 1$), West Africa ($n = 9$), East Africa ($n = 1$), India ($n = 1$), French Polynesia ($n = 2$), and the West Indies ($n = 2$). All sera were tested by the DDRST, the PanBio-IC test, and the IgM capture enzyme-linked immunosorbent assay (ELISA) (PanBio) according to the manufacturer's recommendations and by a homemade IgM capture ELISA (3). Both ELISAs provided identical results and thus were considered "gold standards" with which to evaluate the performances of DDRST.

By use of the DDRST, 18 sera tested positive for the presence of IgM; of these positive results, only 2 were confirmed by ELISAs (specificity, 54.3%). All 19 sera testing negative for IgM with the DDRST were found negative with ELISAs (negative predictive value, 100%). In contrast, the positive predictive value was 11.1%. Given the low number of patients positive for Dv IgM (by ELISAs), we did not calculate the sensitivity of the DDRST. Patients exhibiting a false-positive IgM detection by the DDRST were returning from the Comoros Islands ($n = 13$), East Africa ($n = 2$), and the West Indies ($n = 1$).

Because dengue fever is a major differential diagnosis of malaria, a rapid test would be highly valuable for distinguishing between the two diseases. As underlined previously, the main advantage of immunochromatographic tests is their ability to achieve rapid diagnosis and their potential use in field settings to confirm clinical suspicion of dengue fever (1, 2, 4, 5). Although both immunochromatographic tests (the DDRST and the PanBio-IC) use the same recombinant envelope protein, it is noteworthy that the 16 sera positive by the DDRST and negative by ELISA were negative for IgM by the PanBio-IC test (1, 2, 4, 5). Therefore, the elevated rate of false-positive IgM detected by DDRST is certainly not an immunologic cross-reactivity due to the poor specificity of the recombinant envelope protein. Obviously, it is likely to be linked to the design and/or protocol of the new test (the DDRST). To correct this problem, it is to be hoped that a revised version will be made available shortly. Data reported here should not be misunderstood, as they are not intended to discredit the principle of immunochromatographic rapid tests or question the use of recombinant proteins for dengue diagnosis.

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