



## LETTER TO THE EDITOR

# Response to the letter of Arya and Agarwal



Dear Editor,

We thank Arya and Agarwal for their interest in our article<sup>1</sup> on the role of commercial Dengue NS1 Ag STRIP (Bio-Rad Laboratories, Marnes-la-Coquette, France) in the surveillance of dengue outbreaks in Taiwan. If Dengue NS1 Ag STRIP were used alone, a quarter of patients who present early (0–3 days after the onset of illness, DPO) would have false-negative results.<sup>1</sup> Auxiliary diagnostic tools are needed to improve early detection.

We agree that a combination of nonstructural protein 1 (NS1) and serology [immunoglobulin (Ig)M/IgG] has increased sensitivity for dengue. In our cohort, about 13.0% (51/392) of patients would have false-negative results if only NS1 and IgM/IgG were used [i.e., polymerase chain reaction (PCR; +), IgM/IgG (–), and NS1 (–)].<sup>1</sup> Platelet count was available for 41 of these patients on initial presentation (unpublished data). Only 26.8% (11/41) had thrombocytopenia (platelet count  $<100 \times 10^9/L$ ) and none of them had platelet counts  $<20 \times 10^9/L$  initially. In the natural history of dengue, nadir platelet count occurs about 3 days after disease onset.<sup>2</sup> In our study, one of the independent factors influencing isolated PCR positivity [i.e., PCR (+), IgM/IgG (–), and NS1 (–)] was sample collection during the early stage (DPO 0–3). As a result, the utility of platelet count in the early stage is limited. We propose that clinical and epidemiologic features are important clues, especially when both NS1 and capture IgM/IgG enzyme-linked immunosorbent assay (ELISA) results are negative. Chaterji et al found that within 72 hours of acute febrile illness, the 1997 World Health Organization dengue case definition (WHO 1997) had a sensitivity of 95.4% for dengue.<sup>3</sup> If real-time reverse-transcription PCR (RT-PCR) analysis is not available for these patients [NS1 (–), IgM/IgG (–), and WHO 1997 (+)], a second sample during the convalescent stage is needed to confirm the diagnosis.

In Taiwan, dengue outbreaks occur almost every year, with the number of cases ranging from hundreds to thousands.<sup>4</sup> These numbers are much lower than the number of cases where dengue is endemic (e.g., Southeast Asia). To enhance vector control, it is important to detect dengue cases during the acute phase. The sensitivity of combined RT-PCR and NS1 was 99.5% for cases in the early stage (DPO 0–3).<sup>1</sup> In our opinion RT-PCR is a worthwhile diagnostic tool for dengue in Taiwan.

## References

1. Huang CH, Kuo LL, Yang KD, Lin PS, Lu PL, Lin CC, et al. Laboratory diagnostics of dengue fever: an emphasis on the role of commercial dengue virus nonstructural protein 1 antigen rapid test. *J Microbiol Immunol Infect* 2013;**46**:358–65.
2. TDR/WHO. *Dengue: guidelines for diagnosis, treatment, prevention and control*. 3rd ed. Geneva: World Health Organization; 2009.
3. Chaterji S, Allen Jr JC, Chow A, Leo Y-S, Ooi E-E. Evaluation of the NS1 rapid test and the WHO dengue classification schemes for use as bedside diagnosis of acute dengue fever in adults. *Am J Trop Med Hyg* 2011;**84**:224–8.
4. Centers for Disease Control, Department of Health, R.O.C. (Taiwan). *Guidelines for dengue control*. Centers for Disease Control, Department of Health, R.O.C. (Taiwan); 2012 [in Chinese].

Chung-Hao Huang

Division of Infectious Diseases, Department of Internal Medicine, Kaohsiung Medical University Hospital, Kaohsiung Medical University, Kaohsiung, Taiwan

Yen-Hsu Chen

Chun-Yu Lin\*

Division of Infectious Diseases, Department of Internal Medicine, Kaohsiung Medical University Hospital, Kaohsiung Medical University, Kaohsiung, Taiwan

DOI of original article: <http://dx.doi.org/10.1016/j.jmii.2012.07.011>.

*Graduate Institute of Medicine, Tropical Medicine Research  
Center, College of Medicine, Kaohsiung Medical University,  
Kaohsiung, Taiwan*

University Hospital, Kaohsiung Medical University, 100  
Tzyou First Road, Kaohsiung City, Taiwan.  
*E-mail address: [infectionman@gmail.com](mailto:infectionman@gmail.com) (C.-Y. Lin)*

\*Corresponding author. Division of Infectious Diseases,  
Department of Internal Medicine, Kaohsiung Medical

24 January 2013