Authors' response

Sir,

The comments raised by Dr Wiwanitkit and colleagues on our paper are interesting[1]. Leptospirosis is a zoonotic disease which presents with a myriad of symptoms which often mimic many infectious diseases *e.g.* dengue, malaria, hepatitis, typhoid or other viral haemorrhagic fevers. The spectrum of the disease is extremely wide[2]. We agree regarding some cases of mixed infections in our study. However, the number of such cases was very small and could not have significantly affected our observations. Concurrent infections with more than one aetiological agent can result in an illness with overlapping symptoms, resulting in a situation where the diagnosis and management could be challenging. Therefore, with our results we wanted to highlight and create awareness amongst clinicians about the common concurrent infections observed with this disease. The role of microbiology laboratory in the serological and molecular diagnosis of the disease also becomes more imperative.

We appreciate the authors' concern raised regarding diagnostic limitation such as its cross-reactivity with borreliosis and syphilis when using serological assays to diagnose leptospirosis. Since these diseases have entirely different clinical presentations (*e.g.* syphilis), these are unlikely to confound in our scenario. Moreover, borreliosis is not common in our population. Pre-analytical errors are a concern for any clinical diagnostic laboratory. In our setting, a detailed clinical history proforma and phase dependent samples are collected and sent to the laboratory using a well-established protocol. Hence pre-analytical errors could not have contributed to any error in the study[1].

We agree that different serological assays exhibit different performance characteristics. During the early acute phase of the disease, anti-*Leptospira* IgM may not have been developed or remained below detectable levels. This emphasizes the need for molecular assays which will be helpful in diagnosis during this early phase of the illness. In recent years, several molecular assays have been described. These can confirm the diagnosis in the early phase of the disease. However, molecular testing is not available in resource restricted areas.

There is a need to confirm the diagnosis using a battery of tests including molecular assay as well as to develop more sensitive and specific serological assays to detect both antigen and antibody[3-5]. Combined application of detection methods increases accuracy. Application of newer technologies such as MALDI-TOF, nano- and microparticle technology may play a key role in improving future detection methods[6].

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