

Is the Sensitivity of the QuantiFERON-TB Gold In-Tube Test Lower Than That of T-SPOT.TB in Patients With Miliary Tuberculosis?

TO THE EDITOR—We read with interest the recent article by Kim et al on the usefulness of the QuantiFERON-TB Gold In-Tube test (QFT-GIT) in patients with miliary tuberculosis [1]. They report that the sensitivity of QFT-GIT in patients with miliary tuberculosis was 68% (95% confidence interval [CI], 46%–97%), which is suboptimal for these critically ill patients [1]. We previously reported that the sensitivity of the T-SPOT.TB test in patients with miliary tuberculosis was 93% (40/43; 95% CI, 85%–99%) [2]. Kim et al pointed out that this discrepancy might be related to differences between the assay methods as well as the clinical status of the study populations. We have reanalyzed the 43 patients included in our study [2] to see whether differences in patient characteristics could explain the discrepancy. The mean age of 53.1 years (standard deviation [SD], 15.8 years) in our cohort was significantly lower than that in the study of Kim et al (64 years [SD, 19.0]; $P = .005$). Immunosuppressive conditions were higher in our cohort (37% [16/43]) than in the study of Kim et al (11% [5/44]; $P = .009$). However, lymphopenia ($<500/\mu\text{L}$) was similar in our cohort (28% [12/43]) and the study of Kim et al (30% [13/44]; $P = .95$). Ground glass opacity (GGO) on computed tomography was also similar between our cohort (any GGO, 47% [20/43]; $>50\%$ GGO, 12% [5/43]) and the study of Kim et al (any GGO, 67% [29/44]; $>50\%$ GGO, 21% [9/44]) ($P = .10$ and $.41$, respectively). Therefore, it is difficult to explain the differences in the sensitivities of the 2 assays by a difference in the patient characteristics. Interestingly, neither lymphopenia nor GGO affected the sensitivity of T-SPOT.TB in our cohort (data not shown). However, the low number of false-negative T-SPOT.TB results in our cohort makes it

impossible to draw a firm conclusion. Further studies are needed in this area.

QFT-GIT has been performed in the routine clinical laboratory of our hospital since 2010. Of the 43 patients in our cohort, 22 who were enrolled after that time underwent QFT-GIT in the clinical laboratory as well as T-SPOT.TB in our research facility. A comparison revealed that the sensitivity of QFT-GIT (73% [16/22]; 95% CI, 49%–89%) was significantly lower than that of T-SPOT.TB (100% [22/22], 95% CI, 85%–100%) ($P = .03$). It is known that enzyme-linked immunosorbent spot assay (ie, QFT-GIT) is more sensitive than enzyme-linked immunosorbent assay (ie, T-SPOT.TB) [3]. Indeed, this has been demonstrated in a head-to-head comparison between the 2 assays [4]. We believe that the sensitivity of T-SPOT.TB is strongly affected by the antigenic load with only a slight effect of immunosuppressed status, whereas the sensitivity of QFT-GIT is strongly affected by immunosuppressed status with only a slight effect of antigenic load. This hypothesis is supported by our previous work [5] showing that neither immunosuppression nor lymphopenia were risk factors for false-negative T-SPOT.TB results, and another study [6] reporting that immunosuppression and lymphopenia were independent risk factors for negative results in QFT-GIT. A large prospective study comparing these 2 commercially available assays in patients with miliary tuberculosis is needed.

Notes

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