

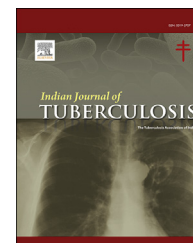


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Letter to the Editor

Indeterminate mycobacterium tuberculosis QuantiFERON post Moderna mRNA Covid-19 vaccination

ABSTRACT

Keywords:

Mycobacterium tuberculosis
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We report an interesting case of an indeterminate MTB QuantiFERON for a 26-year-old healthy soldier planned for a routine field exercise to Brunei. Further medical history revealed that the patient had a Moderna mRNA Covid-19 vaccine the day before his MTB QuantiFERON test. The patient was subsequently asked to repeat a T-spot test which was non-reactive, there were no longer any issues with the positive control for the T-spot test.

Current Covid-19 research suggests that infection causes a dysregulation of the immune system, perhaps this might also be extrapolated where a Covid-19 vaccine might provoke an immune response which might interfere with some immunological assays. In summary there should be more research invested into the immunological interactions that the newly developed Covid-19 vaccinations have with our existing immunological tests such as QuantiFERON tests which forms a key cornerstone in our fight against tuberculosis.

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Dear Editor

We read with interest the recently published article positive QuantiFERON test and the severity of COVID-19 disease: A prospective study. It was interesting to note that a negative mycobacterium tuberculosis (MTB) QuantiFERON test was a strong predictor of mortality in severe Covid-19 diseases.

In response, the authors would like to report an interesting case of an indeterminate MTB QuantiFERON for a 26-year-old healthy soldier planned for a routine field exercise to Brunei. As part of the pre-departure health screening, soldiers in Singapore are supposed to be screened for MTB, of which the preferred method is the MTB QuantiFERON assay. This patient was referred by the military medical officer due to the indeterminate (MTB) QuantiFERON result. The reason for the indeterminate result was due to the positive control being not interpretable as the mitogen minus tube did not have a sufficient amount of activation. The patient was asked multiple screening questions regarding recent infective symptoms, recent illness/Covid-19 infection, chronic medication or complementary medication usage. A thorough history of

sexually transmitted infections, risky sexual behavior and risky sexual behavior was also performed. All of the above questions were negative. Further questioning about recent vaccinations did reveal that the patient had a Moderna mRNA Covid-19 vaccine the day before MTB QuantiFERON test. The patient was subsequently asked to repeat a T-spot test which was non-reactive, there were no longer any issues with the positive control for the T-spot test.

This is an interesting and likely first reported case of an indeterminate MTB QuantiFERON result post mRNA vaccination in an otherwise healthy patient. Currently the Centre for Disease Control in the United States of America stipulates that a QuantiFERON test be delayed 4–6 weeks if a patient has been vaccinated with a live attenuated virus.¹ As current evidence shows that vaccination with live viruses (such as the MMR vaccine) can cause mild immune system suppression. This may reduce the reactivity of the tuberculin skin test and possibly causing a false-negative reaction.² While inactive vaccines do not interfere with TB test results. Currently there is little data regarding mRNA vaccines in the setting of a QuantiFERON test. There have been studies

regarding QuantiFERON in the setting of severe Covid-19 infection. Current evidence suggests that there is an increased rate of indeterminate QuantiFERON results in critically ill COVID-19 patients with most showing huge reduction in mitogen stimulus thus suggesting gross general unresponsiveness of T cells.^{3–5} It seems that Covid-19 infection causes a dysregulation of the immune system, perhaps this might also be extrapolated where a Covid-19 vaccine might provoke an immune response which might interfere with some immunological assays.

In summary there should be more research invested into the immunological interactions that the newly developed Covid-19 vaccinations have with our existing immunological tests such as the tuberculin skin tests, QuantiFERON tests and T-spot tests which forms a key cornerstone in our fight against tuberculosis.

Author contributions

All authors contributed to (1) concept or design, (2) acquisition of data, (3) analysis or interpretation of data, (4) drafting of the manuscript, and (5) critical revision for important intellectual content.

All authors had full access to the data, contributed to the study, approved the final version for publication, and take responsibility for its accuracy and integrity.

Conflicts of interest

The authors have none to declare.

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