

# Evaluation of Significance of Tuberculosis-Interferon Gamma Release Assay in Injecting Drug Users in a Northern Regional Teaching Hospital in Taiwan

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## Background & Objective

Diagnosis and interventional treatment of latent tuberculosis (TB) infection (LTBI) are important methods in tuberculosis control. TB- Interferon-Gamma (IFN- $\gamma$ ) release assay (IGRA) tests have the characteristics of short time, high specificity, and high sensitivity and allow rapid screening of primed memory T-cells immunity in response to antigen. However, systematic studies regarding the epidemic of LTBI are still rare in northern Taiwan. We aimed to assess the prevalence and factors associated with LTBI based on the results of a domestic TB-IGRA.

## Methods

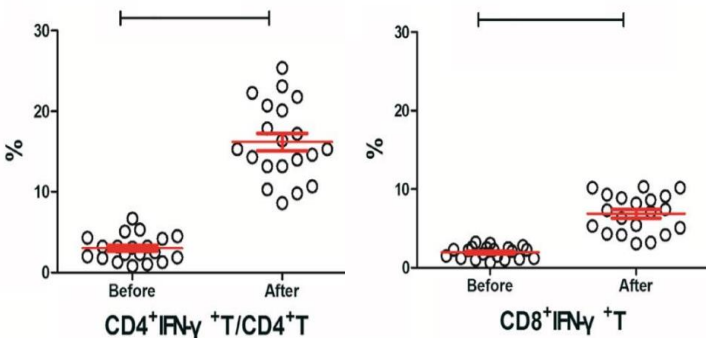
A retrospective study was carried out on positive TB-IGRA patients who were infected with TB and diagnosed at our hospital from January 2019 to November 2019 and individuals with active TB or a history of TB were excluded. 161 injecting drug users met the requirement and were analyzed in this study. The TB-IGRA, routine blood test, T-cell subgroup data were collected for statistical analysis. The TB-IGRA was performed for diagnosis of LTBI.

## Results

Figure 1. Statistical results for IFN- $\gamma$  expression in CD4<sup>+</sup>T/CD8<sup>+</sup>T cells before and after tuberculosis-specific antigen stimulate

p<0.0001

p<0.0001



## Conclusion

After the stimulation of TB-specific antigen, the proportion of CD4<sup>+</sup> IFN- $\gamma$ <sup>+</sup> and CD8<sup>+</sup> IFN- $\gamma$ <sup>+</sup> T cells were both increased and the CD4<sup>+</sup> IFN- $\gamma$ <sup>+</sup> T had positive correlation with the value of TB-IGRA. This study further expands the application scope of TB-IGRA technology in the diagnosis of TB and lays a foundation for clinical practice to understand the immunity state of the patients with TB and the application of auxiliary clinical immunity regulators.

## Relevance to HPH

Tuberculosis is a high prevalence disease in Taiwan. It is important for the government to plan a comprehensive census to combat the disease. Tracking, monitoring, and preventive treatment can reduce the infection rates. As a community-based hospital, the establishment of a complete regional inspection platform can provide people in Keelung area with timely inspection reports. This will help physicians to diagnose, treat and improve the health of the patients.

50 (31.06%) had a positive result, and positive rate gradually increased with age ( $P < 0.001$ ). Statistics analyses showed that increasing age, male gender and a history of TB exposure were risk factors associated with LTBI. TB-IGRA results were in positive proportion to the lymphocytes, CD4<sup>+</sup> T cells and CD4<sup>+</sup> CD28<sup>+</sup> T cells, whereas negative to the Treg cells.

Figure 2. Correlations between the value of TB-IGRA and CD4<sup>+</sup>/CD8<sup>+</sup>IFN- $\gamma$ <sup>+</sup> T cells

r=0.6064, P<0.005

r=0.0875, P=0.1

