Challenges of Tuberculosis Diagnostics in children and potential of the TAM-TB Assay

Cristoph Geldmacher[1], Ulrich van Both[2], Laura Kohlberg[2], Peter Hoecker[1,3]

[1] LMU München Tropeninstitut, [2] LMU München Dr v. Haunersches Kinderspital, [3] Universität LMU München

Background

Tuberculosis, ranking second only to COVID-19 in terms of global infectious diseases, affects approximately 10 million individuals worldwide each year, with staggering 1.5 million fatalities reported for 2022 (WHO Global Tuberculosis Report 2022). The fundamental issue with tuberculosis is its elusive nature, rendering detection and diagnosis a formidable challenge. Especially in extrapulmonary TB and among pediatric patients it is often misdiagnosed, especially in its extrapulmonary variant (Marais BJ 2012).

Purpose

The primary aim of this study is to introduce, assess and compare a novel diagnostic approach for TB infection, known as the TAM TB Assay (Damien Portevin et al. 2014).

Methods

Our research approach involves the collection of blood samples from pediatric TB patients. These samples are subsequently stimulated with TB-specific antigens (MTB125, ATB116). We employ Flow Cytometry to measure T cell activation markers (TAM), including CD38 , CD27, HLA-DR, Ki -67and IFy expression. Utilizing the cutoff determined via ROC analysis (Kroidl et al. 2022), we distinguish between specific T cell activation marker and IFy composition, facilitating differentiation between active TB, latent TB and enabling the monitoring of changes throughout the course of treatment. Our choice of TB-specific antigens, MTB125 and ATB116, aims to to further evaluate their potential in stimulating T cell responses. We will then compare the results over time, with disease/ therapy progression and with the current gold standard of TB diagnostics, Interferon-gamma release assays (IGRAs).

Results

Results are expected in March/April.