Diagnostics and biomarkers

PO - (8179) - THE MEAN LEVELS OF ENDOPLASMIC RETICULUM (ER) STRESS CHAPERONE PROTEIN - BINDING IMMUNOGLOBULIN PROTEIN (BiP) DECREASES FOLLOWING SUCCESSFUL TB TREATMENT

Motaung, Bongani (South Africa)1; Loxton, Andre G. (South Africa)2

1 - Stellenboch University Immonology Research Group; 2 - Stellenbosch University Immunology Research Group

Background: Mycobacterium tuberculosis (M. tuberculosis) infection is one of the leading causes of mortality worldwide. Even though treatment is readily available the emergence of drug resistance amongst M. tuberculosis strains highlight the need for new advances in the TB field such as host directed therapies (HDT). Recent studies have highlighted the importance of BiP in cells, which can become a target in many diagnostic settings as it has been implicated in conditions including arthritis, cancer, bacterial infection and autoimmune diseases. In our studies, we are aiming to identify expression differences of BiP in different M. tuberculosis infection stages to help us understand the change of function in immune cells in relation to infection stress. Method: BiP secretion levels were assessed in plasma samples using ELISA technique. This included participants at TB diagnosis (TBDx), TB Treatment group (Week 1, Month 2 and Month 6) and Healthy (unexposed) participants. BiP concentration results were analyzed using GraphPad Prism 7.

Results: Secretion of BiP was comparable between newly diagnosed untreated TB cases and healthy unexposed controls, with levels obtained in healthy group (42.64 µg/ml) and in TBDx (40.88 µg/ml). Highest levels of plasma BiP during treated TB was observed by W1 (mean 68.57 µg/ml) and declined by M2 with 60.92 µg/ml and M6 with 51.40 µg/ml.

Conclusion: Detection of BiP in plasma samples indicated metabolic change in immune cells due to stress posed onto cells by M. tuberculosis burden. This is due to the amount of protein product required by the immune system to mitigate the spread of the pathogen. Even though not significant, we observed a decrease in the mean levels of BiP over the course of TB treatment which correlates with a reduction in the accumulation of unfolded polypeptides in the ER. This observation requires further testing in larger prospective studies.