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Roles of matricellular proteins in host response dynamics in *Mycobacterium tuberculosis* infection

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Statement of the Problem: Elevated matricellular proteins (MCPs) including osteopontin (OPN) and galectin-9 (Gal-9) were observed in the plasma of patients with Manila-type tuberculosis (TB) in previous study. MCPs interact with variety receptors, proteases and pathogens and can modulate innate and adaptive immune system that affects the pathology of infectious diseases. The purpose of this study is quantification of plasma OPN, Gal-9 and soluble CD44 (sCD44) by ELISAs and other 29 cytokines by Luminex assay. We also studied a TB patient pleural effusion to understand their role in local immune responses.

Materials & Methods: 36 patients with pulmonary TB, six subjects with latent tuberculosis (LTBI) and 19 healthy controls (HCs) from Japan. Pleural effusion from a patient was also analyzed. EDTA plasma was used for their analysis. Mononuclear cells from heparinized blood were used for ELISPOT assay.

Findings: The levels of OPN, Gal-9 and sCD44 were higher in TB (positivity 61.1%, 66.7% and 63.9%, respectively) than in the HCs. Negative correlations between OPN and ESAT-6-ELISPOT response, between chest X-ray severity score of cavitary TB and ESAT-6-ELISPOT response were observed. Compared to plasma, pleural fluid had increased levels of IFN- γ (1.6 vs. 55.5 pg/mL), IL-10, IL-12p40, vascular endothelial growth factor (VEGF) and Gal-9 (3.0 vs. 936.0 pg/mL), respectively.

Conclusion & Significance: It was speculated that increased migration of lymphocytes toward the TB lesion in response to OPN signaling. A very high Gal-9 levels was found in pleural effusion and their permeability effect was proposed. These findings suggest that MCPs play fundamental roles in host response dynamics during TB infection.

Biography

Toshio Hattori has his expertise in understanding the immune-pathology of various infectious diseases through matricellular proteins. He has analyzed various infectious disease using two representative MCPs such as Gal-9 and OPN.

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