THE ROLE OF SYK EXPRESSION IN MYELOID CELLS IN CONTACT HYPERSENSITIVITY

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Background: Allergic contact dermatitis (ACD) is one of the most common inflammatory skin disease, triggered by repeated exposure of the skin to contact allergens. ACD and its animal model, contact hypersensitivity (CHS) is a T-cell mediated delayed-type hypersensitivity reaction. It is well known that in many cell types which are essential in the CHS (dendritic cells, macrophages and neutrophils) the spleen tyrosine kinase (Syk) is important in several signaling pathways. Therefore, we tested whether Syk plays a role in CHS development, with particular emphasis on the importance of Syk in myeloid cells.
Materials and methods: To investigate the role of Syk, we generated bone marrow chimeras with $Syk^{-/-}$ hematopoietic system, by fetal liver transplantation. Myeloid- and neutrophil-specific Syk deletion was achieved by crossing LysM and MRP8 promoter-driven Cre recombinase transgenic (LysM-Cre and MRP8-Cre) mice with $Syk^{flox/flox}$ animals (LysM-Cre $Syk^{f/f}$ and MRP8-Cre $Syk^{f/f}$). CHS was triggered by sensitization with the contact allergen 2,4,6-trinitrochlorobenzene (TNCB) in acetone or acetone alone as a vehicle control, followed by elicitation with application of TNCB on the ears 5 days later. We detected the level of inflammation by measuring the ear thickness 24 hours after the elicitation.
Results: While there was a robust increase in ear thickness in TNCB-sensitized wild type mice, no significant increase could be observed in $Syk^{-/-}$ mice compared to the control group, indicating that Syk-deficient mice are resistant to CHS. In contrast to wild type mice, there was a significant reduction in the ear thickness in the myeloid cell-specific Syk deficient LysM-Cre $Syk^{f/f}$ mice. There was also a partial but statistically significant decrease in the ear thickness in the MRP8-Cre $Syk^{f/f}$ mice, showing that Syk expression in neutrophils is important in CHS development.
Conclusions: Our results show that the presence of Syk is indispensable in the CHS. This effect is at least partially due to the expression of Syk is neutrophils.

I would like to present my work as a POSTER.
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