

First insights in NK-DC cross-talk and the importance of soluble factors during infection with *Aspergillus fumigatus*.

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Abstract

Invasive aspergillosis (IA) is an infectious disease caused by the fungal pathogen *Aspergillus fumigatus* that mainly affects immunocompromised hosts. To investigate immune cell cross-talk during infection with *A. fumigatus*, we co-cultured natural killer (NK) cells and dendritic cells (DC) after stimulation with whole fungal structures, components of the fungal cell wall, fungal lysate or ligands for distinct fungal receptors. Both cell types showed activation after stimulation with fungal components and were able to transfer activation signals to the counterpart not stimulated cell type. Interestingly, DCs recognized a broader spectrum of fungal components and thereby initiated NK cell activation when those did not recognize fungal structures. These experiments highlighted the supportive function of DCs in NK cell activation. Furthermore, we focused on soluble DC mediated

NK cell activation and showed that DCs stimulated with the TLR2/Dectin-1 ligand zymosan could maximally stimulate the expression of CD69 on NK cells. Thus, we investigated the influence of both receptors for zymosan, Dectin-1 and TLR2, which are highly expressed on DCs but show only minimal expression on NK cells. Specific focus was laid on the question whether Dectin-1 or TLR2 signaling in DCs is important for the secretion of soluble factors leading to NK cell activation. Our results show that Dectin-1 and TLR2 are negligible for NK cell activation. We conclude that besides Dectin-1 and TLR2 other receptors on DCs are able to compensate for the missing signal.

Involved units

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