Involvement of Toll-like receptors on Helicobacter pylori-induced immunity.

Dendritic cells (DCs) play a major role in the innate immune response since they recognize a broad repertoire of PAMPs mainly via Toll-like receptors (TLRs). During Helicobacter pylori (H. pylori) infection, TLRs have been shown to be important to control cytokine response particularly in murine DCs. In the present study we analyzed the effect of blocking TLRs on human DCs. Co-incubation of human DCs with H. pylori resulted in the release of the pro-inflammatory cytokines IL-12p70, IL-6 and IL-10. Release of IL-12p70 and IL-10 was predominantly influenced when TLR4 signaling was blocked by adding specific antibodies, suggesting a strong influence on subsequent T cell responses through TLR4 activation on DCs. Co-incubation of H. pylori-primed DC with allogeneic CD4+ T cells resulted in the production of IFN-? and IL-17A as well as the expression of Foxp3, validating a mixed Th1/Th17 and Treg response in vitro. Neutralization of TLR4 during H. pylori infection resulted in significantly decreased amounts of IL-17A and IFN-? and reduced levels of Foxp3-expressing and IL-10-secreting T cells. Our findings suggest that DC cytokine secretion induced upon TLR4-mediated recognition of H. pylori influences inflammatory and regulatory T cell responses, which might facilitate the chronic bacterial persistence.

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