B-cell exposure to self-antigen induces IL-10 producing B cells as well as IL-6- and TNF-α- B-cell subsets in healthy humans

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Abstract

Human B cells are able to secrete IL-10 after stimulation with mitogens, but their ability to produce IL-10 and regulate T-cell responses after stimulation with self-antigens is unclear. We co-cultured thyroglobulin-pulsed B cells from healthy donors with autologous T cells and observed production of IL-10 and TGF-β, in addition to TNF-α and IL-6. Pulsing with foreign antigen, tetanus toxoid (TT) induced a Th1-response with minimal IL-10 production. After thyroglobulin-pulsing, 1.10±0.50% of B cells and 1.00±0.20% of CD4+ T cells produced IL-10, compared to 0.29±0.19% of B cells (P=0.01) and 0.13±0.15% of CD4+ T cells (P=0.006) following TT-pulsing. Thyroglobulin-stimulated, IL-10-secreting B cells were enriched within $CD5^{+}$ and $CD24^{high}$ cells. While thyroglobulin-pulsed B cells induced only modest proliferation of $CD4^{+}$ T cells, B cells pulsed with TT induced a vigorous proliferation. Thus, B cells mediate self-antigen-specific IL-10, TNF-α and IL-6 production in co-cultures with T cells and contribute actively to these cytokine secretions.