Identification of cytokine and adhesion molecule mRNA in murine lung tissue and isolated T cells and eosinophils by semi-quantitative reverse transcriptase-polymerase chain reaction.

Abstract

We have used a semi-quantitative reverse transcriptase-polymerase chain reaction (RT-PCR) assay to detect the expression of mRNA for inflammatory cytokines, integrins and selectins in murine lung tissue, and T cells and eosinophils isolated from lung and bronchoalveolar lavage (BAL) fluid in an in vivo model of ovalbumin (OA)-induced airway inflammation. RNA was isolated from whole lung tissue at 1, 6, 24, 48, 72 h, and 7 days after OA inhalation. mRNA for the Th2 cytokines, IL-4, -5, -6, -10 and -13 in OA-sensitized mice were significantly elevated compared with non-sensitized mice. IL-2, TNF-beta, and eotaxin mRNA were also increased, but IFN-gamma mRNA was not. P- and E-selectin mRNA levels were also enhanced in lung tissue between 6 and 72 h after challenge. Lung T cells were isolated by cell sorting with a flow cytometer at 3, 12, 24, 48 and 72 h after challenge. mRNA levels for IL-5 and -10 were greater in T cells from OA-sensitized and -challenged mice than controls at 24 h. BAL fluid from OA-sensitized and -challenged mice also had significantly higher IL-5 levels than controls. BAL
fluid T cells and eosinophils were obtained at 48 and 72 h after aerosol challenge and were purified by cell sorting. Messenger RNA for IL-1 alpha, -2, -4, -5, -10, IFN-gamma, and beta 1 were detected in T cells at both time points. Transcripts for IL-1 alpha, -4, -5, -13, TNF-alpha and beta, and alpha 4, beta 1 and beta 7 were also identified in BAL eosinophils. These data show that in addition to murine lung T cells, airway eosinophils may also contribute to the inflammatory response by their ability to express mRNA for cytokines and integrins.

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