Co-Stimulatory Molecules in Ocular Cicatricial Pemphigoid

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Cicatricial pemphigoid is a chronic cicatrizing autoimmune disease of mucus membranes that affects the eyes in approximately 70% of patients with the disease, causing chronic cicatrizing conjunctivitis with progressive subepithelial fibrosis, fornix foreshortening , symblepharon formation, meibomian duct obstruction, trichiasis, and lacrimal duct compromise, with eventual corneal scarring and neovascularization. Helper T cell activity is important in this disease, and elevated levels of soluble Interleukin 2 receptors are found in the serum of patients with active pemphigoid. Optimal T cell activation requires two signals to produce maximal amounts inflammatory cytokines and proliferation: T cell receptor (TCR) occupancy by antigenic peptid-class 2 MHC complex, and second non-antigen specific costimulatory signal provided by T cell-antigen presenting cell (APC) contact. Several ligand-receptor pairs function as co-stimulators. Among these, the best characterized is the B7:CD 28 costimulatory pathway, which is the only one that appears to stimulate T cell proliferation by direct effect on IL2 production.

We analyzed conjunctival biopsy specimens from 12 patients with ocular cicatricial pemphigoid (OCP), and from 5 healthy individuals undergoing cataract surgery, by immunohistochemical/monoclonal antibody probing techniques for CD28 and B7 molecule expression. Epithelium of OCP conjunctiva showed more Langerhans' cells, B7 positive cells, and increased numbers of CD28 positive T cells and B7 positive antigen presenting cells in the stroma than did the conjunctiva from normal individuals.

The results of this study indicate that the expression of the costimulatory molecule B7 is up regulated in the conjunctiva of patients with active OCP. This increased B7 expression probably contributes to the sustained immune activation in OCP conjunctiva.