CE12.1

Barrier Dysfunction in Allergic Rhinitis

Anne Marie V. Espiritu
Manila Doctor's Hospital I Philippines

The importance of epithelial cells in immune responses in normal conditions as well as in atopic diseases has been a focus of research and scientific discussion over the past decade.
The mucosal epithelium functions to regulate innate and adaptive immune responses in reaction to foreign molecules. Dysfunction or abnormalities of the epithelial barrier allow penetration of allergens and pathogens, influencing or possibly initiating the course of allergic diseases

In vivo and in vitro studies show that there is decreased resistance and increased permeability of epithelium from allergic rhinitis patients as opposed to healthy subjects and idiopathic rhinitis patients. Messenger RNA expression of the transmembrane protein occludin and of the cytoplasmic linker protein zonula occludens-1 are likewise decreased. Such decreased expression is influenced by release of IL-4 from TH2 cells. The rapid decrease in transepithelial resistance during the early allergic immune response may be prevented with the use of a histamine receptor-1 antagonist, suggesting an important role for histamine in weakening epithelial integrity. The use of anti-IL4-Rα antibodies may also prevent increased transmucosal permeability.
Diesel exhaust particles have also been recently shown to exacerbate allergic rhinitis through disruption of tight junctions. Use of a reactive oxygen species scavenger suppressed such disruption.
Treatment that targets protection of the mucosal epithelial barrier may, in the future, become an important therapeutic approach for allergic rhinitis.