Recent developments in mucosal immunology and the role of nutrition.

Mateu Leo*

Department of Animal Health and Anatomy, Autonomous University of Barcelona and Animal Health Research Center, Spain

Abstract

Compared to patients fed parenterally, enteral feeding dramatically lowers the incidence of pneumonia, according to a sizable body of clinical data. The shared mucosal immune theory proposes a relationship between the respiratory and gastrointestinal tracts in terms of immunology. According to this theory, cells in the small intestine's Peyer's patches become sensitive before being dispersed to submucosal areas in both intestinal and extra intestinal places. This system is incredibly sensitive to the source and kind of food.

Keywords: Peyer patches, Paneth cells, Mucosal immunity.

Introduction

The study of immune reactions that take place at the mucosal membranes of the respiratory system, urogenital tract, and intestines is known as mucosal immunology. The mucous membranes come into frequent touch with food, inhaled allergens, and microbes. The mucosal immune system defends the body against infectious pathogens in healthy conditions while also maintaining tolerance for commensal microorganisms and benign environmental elements. Food allergies, irritable bowel syndrome, an increased risk of infections, and other pathological diseases might result from the disruption of this equilibrium between pathogen tolerance and deprivation the cellular component, humoral immunity, and defence mechanisms that stop the entry of bacteria and hazardous foreign substances into the body make up the mucosal immune system. Physical barriers (epithelial lining, mucus, cilia activity, intestinal peristalsis, etc.) and chemical components are two categories of these defence systems (pH, antimicrobial peptides, etc.) [1].

Integrity of the mucosal barrier prevents germs from physically entering the body. Age, genetics, the types of mucins on the mucosa, interactions between immune cells, nerves and neuropeptides and co-infection are only a few of the variables that affect barrier function. The immunosuppressive mechanisms used on the mucosa determine the integrity of the barrier. Tight connections between the mucosa's epithelial cells and the presence of mucus on the cell surface help to produce the mucosal barrier. The mucins that make up mucus provide static shielding against elements on the mucosa and reduce the immunogenicity of intestinal antigens by causing dendritic cells to go into an anti-inflammatory state [2].

Numerous immune cells are needed because the mucosa surfaces are constantly in contact with exogenous antigens and bacteria. For example, the mucous membranes contain almost 3/4 of all lymphocytes. These immune cells are primarily found on the mucosal surfaces of secondary lymphoid tissue. The tonsils and MALT are regarded as secondary lymphoid tissue, similar to the spleen and lymph nodes [3].

Mucosal epithelial cells are surrounded by intraepithelial T lymphocytes, which are typically CD8+. Unlike conventional T cells, these cells do not require primary activation. Instead, these cells start their effector actions as soon as they recognise an antigen, which speeds up the elimination of pathogens. The mucous membranes contain a large number of tregs, which are vital for maintaining tolerance through a variety of actions, particularly through the generation of anti-inflammatory cytokines. In healthy individuals, mucosal resident antigen-presenting cells (APCs) exhibit a tolerogenic character. TLR2 and TLR4 are not expressed on the surfaces of these APCs [4].

The adaptive mucosal immune system participates in the maintenance of mucosal homeostasis through an immune exclusion mechanism driven by secretory antibodies (mainly IgA), which block the penetration of potentially harmful foreign proteins and invasive pathogens into bodily tissues. The use of immunosuppressive mechanisms, primarily mediated by Tregs, to prevent local and peripheral hypersensitivity to innocuous antigens, or oral tolerance, is another method of adaptive mucosal immunity [5].

Conclusion

In the intestines, huge numbers of immune cells are found in Peyer's patches, which are dome-shaped structures, and in cryptopatches, which are tiny mucosal lymphoid clusters. The mucus and epithelial cells that lie above the Peyer's patches act as a barrier to prevent microbes from penetrating the underlying tissue. A crucial function of Peyer's patches is

***Correspondence to:** Mateu Leo. Department of Animal Health and Anatomy, Autonomous University of Barcelona and Animal Health Research Center, Spain, E-mail: Leo@uab.es

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antigen sampling. A significantly thinner layer of mucus exists above the Peyer's patches, which aids in the antigen sampling.

References

1. Kagnoff MF. Mucosal immunology: new frontiers. Immunol Today. 1996;17(2):57-9.
2. Dongarrà ML, Rizzello V, Muccio L, et al. Mucosal immunology and probiotics. Curr Aller Asthma Rep. 2013;13(1):19-26.
3. Xu H, Wang X, Veazey RS. Mucosal immunology of HIV infection. Immunol Rev. 2013;254(1):10-33.
4. Steele L, Mayer L, Cecilia Berin M. Mucosal immunology of tolerance and allergy in the gastrointestinal tract. Immunol Res. 2012;54(1):75-82.
5. Bernstein JM. Mucosal immunology of the upper respiratory tract. Respir. 1992;59:3-13.

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