13.3A: Naturally Acquired Immunity

Skills to Develop

1. Give an example of naturally acquired active immunity.
2. Give two examples of naturally acquired passive immunity and state why this is important to newborns and infants.

Active Naturally Acquired Immunity

Active naturally acquired immunity refers to the natural exposure to an infectious agent or other antigen by the body. The body responds by making its own antibodies.

Passive Naturally Acquired Immunity

There are two examples of passive naturally acquired immunity: (1) The placental transfer of IgG from mother to fetus during pregnancy. These antibodies generally last 4 to 6 months following birth. The immune responses reach full strength at about age 5. (2) The IgA and IgG found in human colostrum and milk of babies who are nursed. In addition to the IgA and IgG, human milk also contains:

- Oligosaccharides and mucins that adhere to bacteria and viruses to interfere with their attachment to host cells;
- Lactoferrin to bind iron and make it unavailable to most bacteria;
- B_{12} binding protein to deprive bacteria of needed vitamin B_{12};
- Bifidus factor that promotes the growth of \textit{Lactobacillus bifidus}, normal flora in the gastrointestinal tract of infants that crowds out harmful bacteria;
- Fibronectin that increases the antimicrobial activity of macrophages and helps repair tissue damage from infection in the gastrointestinal tract;
- Gamma-interferon, a cytokine that enhances the activity of certain immune cells;

https://bio.libretexts.org/Bookshelves/Microbiology/Book%3A_Microbiology_(Kaiser)/Unit_6%3A_Adaptive_Immunity/13%3A_Naturally_and_Artificially_Acquired_Active_and_Passive_Immunity/13.3A%3A_Naturally_Acquired_Immunity

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• Hormones and growth factors that stimulate the baby’s gastrointestinal tract to mature faster and be less susceptible to infection;
• Lysozyme to break down peptidoglycan in bacterial cell walls.

Benefits of Breast Feeding

According to the Centers for Disease Control and Prevention (CDC), breast-fed infants have a lower incidence of gastrointestinal infections, ear infections, atopic dermatitis, respiratory infections, urinary tract infections, meningitis, type 2 diabetes, and sudden infant death syndrome. Benefits to the mother include a decreased risk of breast cancer, ovarian cancer, and type 2 diabetes, as well stopping post-birth bleeding and temporarily suppressing ovulation. It may also be associated with a reduced risk of pediatric overweight.

Summary

Active naturally acquired immunity refers to the natural exposure to an infectious agent or other antigen by the body. The body responds by making its own antibodies. There are two examples of passive naturally acquired immunity: The placental transfer of IgG from mother to fetus during pregnancy that generally lasts 4 to 6 months after birth; and The IgA and IgG found in human colostrum and milk of babies who are nursed.

Contributors

• Dr. Gary Kaiser (COMMUNITY COLLEGE OF BALTIMORE COUNTY, CATONSVILLE CAMPUS)