Immunity in Children

1) What is Immune system?

The immune system is a host defense system comprising many biological structures and processes within an organism that protects against diseases. It is a complex network of cells and proteins that defends the body against infections. The organs or organ systems involved with the immune system are Thymus gland, Spleen, Lymphatic system, bone marrow, white blood cells (T & B Lymphocytes), etc.

Every living organism has its own species specific immune system including unicellular organisms such as bacteria.

2) How does the immune system function?

The main function of the immune system of an individual is to fight against infections acquired from micro-organisms (when they enter the body, are considered as foreign body). Apart from this an individual's immune system can be over-active or under-active. The over active immune system leads to allergic or autoimmune disorders. The underactive immune system (immunodeficiency) fails to fight against infections.

3) How does the immune system of an individual evolve from childhood to older age?

The immune system of an individual is immature in infants (<1year of age), which matures with exposure to antigens (pathogens / micro-organisms) by natural infection or by vaccine and develops active immunity. Children have the ability to rapidly produce natural antibodies. So the evolution has endowed a survival advantage to children to combat known and unknown pathogens.

The adult is also well protected by the balance of cells with high and low specificity. With aging, malnutrition, immunosuppression and other co-morbid states, our immune system loses the ability to adapt to the novelty.

4) When does the immune system of the newborn baby gets activated or triggered?

The fetus in the mother's womb is grown in sterile environment. A newborn baby gets exposed to the micro-organisms right from the time of delivery through the birth canal. The birth canal of the mother is colonized with different microbes (physiological microbial flora). During the process of natural delivery, the newborn is likely to swallow the microorganism present in the birth canal thereby the sterile digestive tract of the baby becomes colonized with microbes. That is how the immune system of the baby gets activated. Adding to this, it should be known that the bacterial flora of the digestive tract of babies born by natural delivery and caesarean section are different.

5) Most parents of children aged between 1 - 3years, complain that their child is getting sick too often.

During the first months of life, maternal antibodies (passive immunity) protect the child from the microorganisms that the mother has encountered previously. These maternal antibodies (Ig G) are transferred to the fetus during the last weeks of pregnancy and protect their infant for about 9months to 1year of age from acquiring infections. The maternal protective antibodies transferred to the fetus, gradually disappear during the second half of their first year and the child begins to develop their own antibodies against individual antigens after being exposed to them.

When child starts going to school, Nursery represents a major milestone for a child for various different reasons. This is also important from their immune system development point of view.

6) What is a Vaccine?

Vaccines are antigenic contents of the microorganisms (bacteria or viruses) injected into the body in small quantities which trigger the immune response in the recipients. There are live attenuated vaccines, inactivated or killed vaccines, conjugate vaccines and toxoid vaccines. After vaccination, the immune system triggers the production of antibodies against specific pathogen which helps in preventing infection when subsequently exposed.

7) How to boost up the immune system naturally?

Adhere to breast feeding whenever possible, include natural fruits and vegetables in diet, adequate sleep, exercise as a family, prevent passive smoking exposure, and maintain personal hygiene. Vitamin supplementation - Vitamin C and Vitamin D are powerful immune booster, Vitamin B6, Vitamin E - an antioxidant to fight off infections, Vitamin A - to prevent skin and GI infections.

8) How do you know if the child is having poor immunity?

Child falls sick too often, failure to thrive (physical growth), skin lesions, poor feeding, gastroenteritis etc. You should seek the help of your doctor for further evaluation to rule out any organic cause.

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