

Immune system of our body - Working $24 \times 7 \times 365$. Do we think about it when we are prescribing antibiotics to patients?

Our environment is constantly changing but to what extent, it is mainly dependent upon the type of people. Material wealth, education and proper knowledge plays a big role in shaping our environment. People living in slums are more vulnerable to infectious diseases due to lack of sanitations, overcrowding and a diet lacking in nutritional values. Immune response that is the constitutive and induced defenses against infections begin the very moment an infectious agent such as the bacteria, virus, fungus, protozoa or the helminth invade our body and is the same for poor and the rich but the extent of encounter with an infectious agent is one parameter which the underprivileged are constantly exposed to and thus cause greater suffering than the affluent society. These persons fight off infections without antibiotics as they cannot afford the costly antibiotic. Mankind has survived in this world thousands of years before even the 1st antibiotic was put on clinical use in 1940. It is our immune system which plays the initial sentinel role in guarding our body against the marauding invaders.

Our innate/inborn/constitutive defense starts with layers which provide mainly physical barriers to microorganisms such as the intact skin and the mucous membrane. To add to these barriers, secretions of sweat and sebaceous glands containing organic acid, lysozymes in the saliva, tears, hydrochloric acid of the parietal cells of stomach, mucociliary movements supplement our external defenses. If microorganisms breach this line and enter our body, the innate arm of our immune system is available to destroy the invaders. Neutrophils, Macrophages, Complements and the Natural killer cells become fully active no matter which type of organisms are involved. This is the nonspecific response and works against different kinds of microorganisms.

The third line of defense is provided by the adaptive / specific / acquired arm of the immune system but

takes several days to become fully functional. Among the two component, the Cell-mediated arm consists of the CD4 T-helper and the CD8 Cytotoxic Lymphocytes. The T helper cells being the backbone of our immune system release cytokines and activates the Macrophages, the B-lymphocyte and the Cytotoxic T cell. In the antibody mediated arm, B-cells transforms into Plasma cell and secrete various types of antibodies which along with the complements enhance phagocytosis and neutralize the various toxins and viruses.

So, considering the firearms which our immune system possess, perhaps we should pause for a moment and consider the rationality behind prescribing antibiotics for each and every case. Injudicious and irrational use of antibiotics for a simple case of viral fever shall make us guilty of selecting antibiotic resistance in bacteria. Now-a-days, patients are dying of bacterial infections resistant to nearly all the available antibiotics even the last resort, Carbapenams.

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