

THE HYGIENE HYPOTHESIS – the rise of allergies and autoimmunity

With all the news about our “super-bug” adversaries from staph infections to salmonella, e.coli and even influenza outbreaks, the medical community is hyper-vigilant to control infectious disease. We are living longer lives thanks to antibiotics, immunizations, proper medical and food preparation sanitary techniques, and earlier detection and prevention of disease. Our home and work environments are cleaner than ever - we have air and water purification systems, high-tech vacuums to remove dust and dander, and we even keep our pets dirt- and disease-free.

However, there may be a downside to our very “clean” society. The Hygiene Hypothesis is a theory amongst immunologists that has been gaining popularity in the last twenty years. Humans have coexisted with microbes throughout our existence, and we now are aware that we depend on disease to stimulate our proper immune function.

In our current industrialized society, as our children get less exposed to infectious agents and succumb less to the usual childhood diseases, they may be more susceptible to developing allergic disorders such as seasonal allergies, asthma, and atopic dermatitis. In some parts of the country, in particular in large urban centers, there is an epidemic of asthma and other allergic disorders. There has also been a rise of autoimmune diseases such as inflammatory bowel disease, multiple sclerosis, and type I diabetes in our “developed” society. Interestingly, “third world countries” in Africa and Asia have an extremely low rate of allergy and autoimmune diseases, but of course have a very high infectious disease exposure rate.

The hygiene hypothesis has changed the way we think about “good” and “bad” disease. Dirt and disease most likely are necessary evils, as every subsequent allergen exposure and infection helps harden our immune system to prepare for the next latest and greatest attack. Maybe it is not the infectious agent that we need to worry about but the lack of exposure to infectious agents. While no one wants to suffer through colds or gastrointestinal ailments, if the alternative were to have a chronic debilitating ailment such as asthma or multiple sclerosis, the choice may be a simple one .

For future treatment, scientists are working on using parasites and developing normal gut flora to help stimulate immune function.

While no one is suggesting to get rid of antibiotics and vaccines and basic cleanliness techniques, we have to be aware of the consequences of our modern ultra-clean lifestyles. We do not necessarily have to go place our children in the mud everyday to get their daily quota of dirt exposure, but we should let kids be kids and allow them to play outside with other children and not worry too much about them getting exposed to dirt and germs. Also, we must depend on our doctors to decide whether or not antibiotics are warranted in times of illness. Overuse of antibiotics can of course cause the development of antibiotic-resistance and thus the rise of “super-bugs.” It can also cause changes in our normal gut flora and secondarily prevent maturing immune systems from developing and functioning properly.

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