

Foreword

Immunodeficiency—Improving the Deficiency of Knowledge



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How many infections are too many before one starts an immunodeficiency work-up? This question has been with us for as long as we started measuring serum immunoglobulins. In the past, many of us considered an immunodeficiency work-up only when someone experienced more than 4 to 5 respiratory infections per year, or more than one infection with an unusual pathogen. This approach is now being challenged. One could argue that a single protracted infection is too many. After all, our immune system is, in theory, prepared to recognize and respond to millions of foreign antigens. Thus, a single protracted infection could indicate the presence of a weak and malfunctioning component in the immune system. This argument has now gained substantial support from many recent discoveries, especially from studies of patients with susceptibility to mycobacterial infections. Interferon-gamma and pathways leading to the production of interferon-gamma play a crucial role in defense against mycobacteria. Thus, any perturbation in this pathway (eg, IL-12/IL-23-STAT4-IFN-gamma) leads to unusual susceptibility to mycobacterial and, in some cases, *Salmonella* infections. This is just one of many milestone discoveries that have been made in recent years in clinical immunology.

Many immunologists and other clinicians would love to have an “immune profile” done on their patients, just like they do the lipid profile to

predict cardiovascular diseases. At this time, this type of personalized immune profile is a bit premature. We have a long way to go, as the genetic cause of susceptibility to most pathogens still remains unknown. Tests for some of the recently discovered immunodeficiency disorders are commercially available but their cost is prohibitive to most people. Given the advances in technology, it is likely that in the not-so-distant future we will be able to order an immune profile that will accurately predict the susceptibility of our patients to specific pathogens.

This update on immunodeficiency showcases the triumph and victory of immunology research and presents future perspectives. It exemplifies how basic science knowledge helps untangle the mysteries of clinical medicine. Dr. Jordan Orange, one of the young starts in the field, has invited the leaders and ultimate experts to present their recent discoveries. Their writings make us feel proud, joyful, and highly optimistic about the future.

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