CND Life Sciences™

CND INSIGHTS

January 19, 2021

We Can Perform Early Screening for Neurodegenerative Disorders? Does That Mean We Should?

Todd D. Levine, MD
Co-Founder and Chief Medical Officer

In the November 2020 issue of Movement Disorders, Dommershuijsen and his fellow researchers in the Netherlands wrote an excellent editorial on the ethical considerations of screening for rapid eye movement sleep behavior disorder (RBD) in the healthy general population. I wanted to use this blog to discuss why this question is such an important one to consider as discoveries in the alpha-synucleinopathies continue to advance.

We now know that there are five distinct disorders caused by inappropriate accumulation of alpha-synuclein within nerves of the central and peripheral nervous system Parkinson's disease, dementia with Lewy bodies, multiple system atrophy, pure autonomic failure, and RBD. It is also clear that some of these disorders may be prodromal illnesses for other diseases within the family. For example, work by physician-researcher Horacio Kaufmann has shown that almost 90% of people with pure autonomic failure will go on to develop other neurodegenerative diseases within 15 years. It has also been shown by Posthuma and others that up to 90% of patients with RBD will go on to develop other synucleinopathies, most often Parkinson's disease, over a 10- to 20-year period. These observations, although incredibly elucidating for clinicians, can be frustrating and scary for patients.

At a research level, the ability to identify patients who are 10-20 years from developing the clinical features of a progressive neurodegenerative disease opens up all types of opportunities. Instead of allowing these synucleinopathies to develop for 20 years by building up synuclein within the nerves and then hoping to identify a therapeutic agent that can reverse the process, the ability to identify misfolded synuclein when patients have only minimal symptoms introduces the possibility of neuroprotection—a mechanism through which we can prevent diseases before they occur in people who we know are at high risk.

But this also introduces significant ethical concerns. When genetic testing started becoming widely available in the 1990's, we worried about identifying people with a genetic risk factor and perhaps altering their life and their choices because they would know they carry a certain gene and thus an increased risk of a disease. Ethicists still debate how and when to genetically test asymptomatic people for this reason.

What if with a small skin biopsy, we could know who is at higher risk of developing a synucleinopathy? There certainly is no 100% accurate test in medicine, particularly when it comes to predicting one's future. How do we decide whom to test? How do we decide how to inform them of the results? And do we know what the results mean in every case? It is these concerns that were so eloquently discussed in Dommershuijsen's paper.

Their conclusions emphasized the need for clinicians to discuss these issues, including what is known and not known, before doing any testing. The authors also highlight the need for more research and to study more varied patient populations so we can learn what positive and negative results mean in the general population. They also stress the importance of considering the psychological effects of early recognition of synuclein disorders and to consider consultations with bioethicists when necessary. The one thing we do know in medicine is that once the genie is let out of the bottle, it is difficult to ignore.

We now have genetic tests for some of these synuclein disorders. And we can detect the actual accumulated synuclein protein in nerves of the skin through the simple, minimally invasive Syn-One Test™, even in those showing just the early signs of dementia or Parkinson's disease. So I propose that we look at the ability to identify high-risk individuals with optimism and hope that the therapeutic side catches up quickly, enabling us to create a future where we can prevent diseases like Parkinson's disease sooner rather than later.

Read more about the Syn-One Test at www.cndlifesciences.com