Investigating Genetic Testing for Parkinson’s Disease

with Direct to Consumer Company 23andMe

Patricia Ramirez

University of Cincinnati

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About two years ago, my grandfather was diagnosed with Parkinson’s after he began to show symptoms of the disease. With the aid of new medication, so far he has been able to control his symptoms and live the life of an average senior. Even though he developed the disease as an older man, it is very possible he carries the genes or markers that are believed to increase an individual’s likeliness of getting Parkinson’s disease. I researched my grandfather’s disease on 23andMe’s website because I wanted to learn more about the genetic predispositions for Parkinson’s that scientists have discovered as of late, and I know 23andMe is one of the more well known and advertised genetic testing companies.

The test being offered at 23andMe is called 23andMe’s Personal Genome Service ® and it includes a large range of gene analyses used to determine both ancestry and the impact of genes on health. The service identifies mutations for 243 diseases and conditions including Parkinson’s disease; for individuals of European ethnicity within a 30 to 79 age-range, testing for this specific disease, there are eight genes and eight markers tested for risk. The genes and their corresponding markers tested for risk include: LRRK2 and rs34637584, DGKQ and rs11248060, and GBA and i4000415, SNCA and rs356220, PARK16 and rs947211, MAPT and rs393152, BST1 and rs4698412, and STK39 and rs2390669.

Of all the genes tested, mutations in the LRRK2 gene are the best studied and it has been concluded, “the chance that a person with the [LRRK2] mutation will develop Parkinson’s is much higher than average and increases with age.” While it is estimated that only about 2.06% of the European population has the rs34637584 marker, 26% of individuals with the marker will not show symptoms of Parkinson’s while “people carrying the mutation have a 28% chance of developing Parkinson’s by 59, 51% by 69 and 74% by 79” with the symptoms affecting “people over the age of 50” in a gradual manner. On a positive note, it has been seen that early detection can delay the progression of the disease and the symptoms even if the process cannot be stopped.

A positive family history could indicate if a person has genes that increase the risk of the disease, in general, for Europeans the percent heritability of Parkinson’s is only 27%. For the rs34637584 marker there is a familial rate of about 4.5% and a sporadic rate of about 1% for Parkinson’s associated with the mutation in Europeans; while, “up to 40% of people with [Parkinson’s] who are of Arab-Berber ancestry and 20% of Ashkenazi Jewish people with [Parkinson’s] have the mutation.” Not much different from the general population’s probability of getting Parkinson’s, a European individual without the influential rs34637584 marker would only have a 1.5% probability of getting Parkinson’s disease. In fact, genetics doesn’t play quite as large a role in determining a person’s risk for the disease as much as certain environmental factors like exposure to toxins, stress, and lack of exercise do.

After investigating in such depth the statistical information about Parkinson’s disease and discovering the true lack of influence family genetics has on this disease, if presented with the opportunity to undergo genetic testing, I think I would surely decline. I was not aware of the low heritability amongst Europeans for my grandfather’s condition; now that I know that it is much too insignificant to consider, unless the very rare rs34637584 marker is present in my grandfather’s LRRK2 gene and it got passed down to me through my father, I don’t believe I am at more than average risk for getting Parkinson’s in my later years. Therefore, I would not require any genetic testing for Parkinson’s disease to feel at ease with my health or my future children’s health.

References

Get tested to learn what your genetics say about: Parkinson’s Disease. *23andMe.* Retrieved October 2, 2012, from https://www.23andme.com/health/Parkinsons-Disease/