New Study Shows That Patients Taking the Drug L-DOPA are Significantly Less Likely to Develop Age-related Macular Degeneration (AMD)

Researchers at the Marshfield Clinic, University of Arizona, Medical College of Wisconsin, University of Miami, Essentia Health, Stanford University and University of Southern California have made a significant discovery that might lead to the delay or prevention of the most common cause of blindness in the elderly, Age-related Macular Degeneration that affects approximately 9 million Americans.

These researchers discovered that patients who take the drug, L-DOPA (for Parkinson Disease, Restless Legs or other movement disorders), are significantly less likely to develop Age-related Macular Degeneration (AMD) and, if they do develop AMD, it is at significantly later ages.

This work grew out of basic research using albino mouse models. Mice (and humans) who have albinism have profound vision loss and changes in the structure of the eye, especially the retina, and specifically the macula, the area of the retina that is associated with best vision and loss in AMD.

The pigmented retina epithelium is the critical support layer in the retina that fosters macula development and keeps it healthy through DOPA signaling through its receptor. DOPA is made in pigmented tissues and it has been known for a long time that lower risk for AMD is associated with darker pigmentation, such that Blacks have a 5 fold less risk for AMD than Whites. The researchers postulated that signaling through the DOPA receptor may underlie racial disparities in AMD incidence.

To test this, they first examined the health records of 37,000 patients at the Marshfield Clinic for individuals with AMD, or those taking L-DOPA, or those with both AMD and taking L-DOPA. As seen in national statistics, the average age at which individuals are given L-DOPA is 67; the average age of those diagnosed with AMD is 71. Therefore, the expectation was that for patients with both an AMD diagnosis and an L-DOPA prescription, most should have gotten L-DOPA before their AMD diagnosis. Instead, the opposite pattern was seen and, in those few who got L-DOPA before being diagnosed with AMD, their AMD was diagnosed 8 years later than those not taking L-DOPA. These provocative results were then confirmed in a much larger data set of 87 million patients, where similar results were observed and the study expanded to include prevention and delay of "wet" AMD, the most devastating form of the disease.

AMD is a tragic disorder and there are only limited (and highly invasive) therapies for those with AMD and no known preventative treatment. These results imply that L-DOPA may prevent or delay AMD and illustrate the power of Precision Medicine research use of the electronic medical records of large numbers of patients to test unexpected drug interactions and find new uses for old drugs.