MedicalXpress

Common heart medications may also protect against Parkinson's disease, study finds

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(PhysOrg.com) -- Researchers found that a type of drug used to treat hypertension and angina may decrease the risk of developing Parkinson's disease by up to 30 percet.

UCLA researchers have discovered that a specific type of medication used to treat cardiovascular conditions such as hypertension, angina and abnormal heart rhythms may also decrease the risk of developing Parkinson's disease.

In the first large-scale population-based study of its kind, Dr. Beate Ritz, professor of epidemiology at the UCLA School of Public Health, in collaboration with researchers from the Danish Cancer Society, found that a specific sub-class of dihydropyridine cardiovascular medications was associated with a 26 to 30 percent decrease in the risk of Parkinson's. The findings appear in an upcoming print edition of the journal *Annals of Neurology* and are currently available online.

Parkinson's disease, the second most common neurodegenerative disorder in the United States, is characterized by a loss of voluntary movement, the result of the death of neurons in an area of the brain known as the substantia nigra, which is involved in movement control.

Neurons of the substantia nigra that are important in Parkinson's are known to have calcium channels in their cell membranes. These calcium channels are structures that allow the cells to transmit electrical charges to each other. Muscles like the heart also contain calcium channels, and

the opening of the calcium channel in the heart causes a muscle contraction.

Because cardiac and smooth muscles depend on calcium channels to function, substances that block or modify their action have been used for decades to treat hypertension, angina and arrhythmia in humans. In the heart, the dihydropyridine class of drugs acts on a specific type of channel known as the L-type. Within the dihydropyridine class is a sub-class of medications that can cross the blood-brain barrier, giving them the potential to act on neurons in the brain. It turns out that the neurons that degenerate in Parkinson's disease also contain a type of L-type calcium channel.

For their study, the researchers turned to Denmark, a country that provides its population with free and equal access to health care. Each health service-related event and prescription is recorded in a database using a unique personal identification number assigned to each Danish citizen at birth or the granting of citizenship.

Using this database, Ritz and her colleagues conducted a population-based, case-control study to evaluate medical histories and medication usage for 1,931 Parkinson's patients and 9,651 unaffected subjects for a period up to 12 years prior to the diagnosis of Parkinson's.

By separately evaluating different classes of a variety of drugs prescribed for hypertension, researchers found that only calcium channel blockers of the dihydropyridine sub-class that cross the blood-brain barrier were associated with a significant decrease in the risk of developing Parkinson's. Other classes of anti-hypertension medications, and dihydropyridines that were not able to cross the blood-brain barrier, were not associated with a lower risk.

"The key was to consider the mode of action of these drugs and whether

or not they cross the blood-brain barrier," Ritz said. "Some do and some don't. We found that of all the hypertension medications taken by our study subjects, only the subset of dihydropyridine class drugs that cross into the brain, where they might be able to act on the calcium channels of neurons, provided a protective effect. This supports the idea that the mode of action of a given drug and whether it penetrates into the brain are important factors when studying drugs for neuroprotection."

Although the results are intriguing, Ritz cautions that more detailed studies and a more complete understanding of the biology underlying the action of these medications in the brain are warranted, particularly as some Parkinson's patients can suffer from low blood pressure, a condition which could be worsened by taking calcium channel blockers inappropriately.

In addition to Ritz, study authors included Shannon L. Rhodes and Lei Qian of UCLA, Dr. Eva Schernhammer of Brigham and Women's Hospital and Harvard Medical School, and Dr. Jorgen Olsen and Dr. Soren Friis of the Danish Cancer Society. The authors declare no conflict of interest.

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