Possible Parkinson's trigger identified

A glitch in the way cells clear damaged proteins could be the trigger for the symptoms of Parkinson's disease, researchers said in a finding that could lead to new treatments for the incurable condition.

The U.S. team focused on a process called autophagy in which cells digest and recycle damaged molecules, including proteins, that develop as cells grow older. This system essentially renews cells to keep them functioning properly.

This mechanism is also important for nerve cells in the brain where defective proteins can kill cells and cause the debilitating symptoms of Parkinson's, such as tremors, said Ana Maria Cuervo, a cell biologist who led the study.

"We have found in Parkinson's there are problems in removing abnormal proteins," said Cuervo of the Albert Einstein College of Medicine of Yeshiva University.

The finding could potentially lead to drugs to treat the symptoms but not cure the disease, which affects more than a million patients in the United States alone and is marked by the death of brain cells that produce dopamine.

Dopamine is a neurotransmitter, or message-carrying chemical, associated with movement.

Cuervo had previously shown how mutant forms of a protein called alpha-synuclein -- found in a tiny percentage of Parkinson's patients -- blocked the breakdown of substances and prevented cells from clearing damaged proteins.

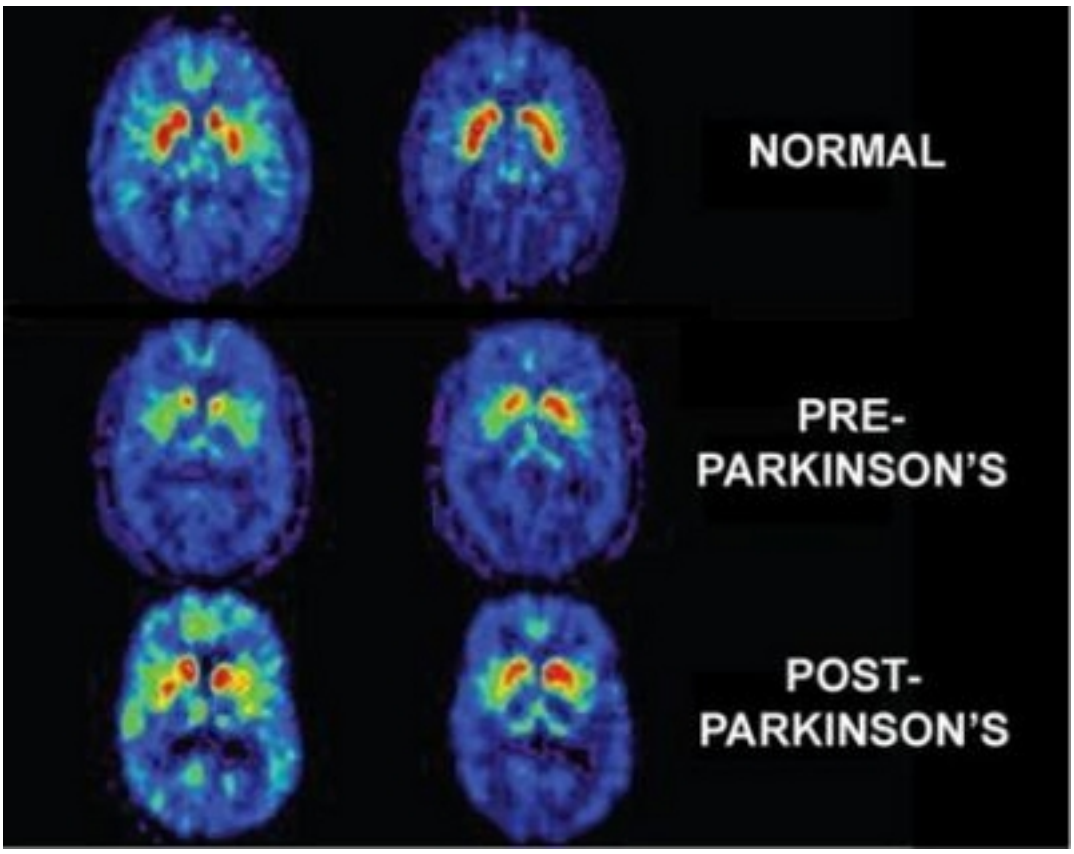
In the study in The Journal of Clinical Investigation on Wednesday, the team showed how in the majority of patients dopamine modifies normal proteins to act like the mutated ones to trigger tremors and other symptoms.

"What we have found is dopamine modifies alpha-synuclein that really resembles the mutation," Cuervo said. "That is why they have the same symptoms."

Problems in this process have also been linked with other neurodegenerative conditions such as Alzheimer's and Huntington's disease, though the specific mechanisms that cause problems in those conditions are different, she said.

Cuervo said a drug to fix the breakdown in Parkinson's patients was years away because it would take researchers time to understand fully how the process worked.

"This is not something that is going to lead to a treatment tomorrow," she said. "The hope is within five years we can get companies to find a drug able to activate this system."



A comparison of PET scans demonstrates the effects of Parkinson's disease on the brain in an image courtesy of the Department of Health. A glitch in the way cells clear damaged proteins could be the trigger for the symptoms of Parkinson's disease, researchers said in a finding that could lead to new treatments for the incurable condition