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Non-invasive Method For Early, Serological Diagnosis Of Parkinson’s Disease Developed

ScienceDaily (June 12, 2009) — A research group based at the University of Granada, in cooperation with the Neurology Unit of the San Cecilio Hospital of Granada and the Department of Experimental Sciences of the University of Jaen, is studying the Neurobiology of Parkinson's disease (PD). They have developed a non-invasive method for serological diagnosis of Parkinson's disease, which is being patented by the University of Granada. To this end, the scientists analyzed and purified proteins associated with this disease, such as aminopeptidase.

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However, it is not an easy task: there are thousands of proteins in the blood, and only a few are related to neurodegenerative diseases.

Francisco Vives, Head of the Institute the Neurosciences of Granada and coordinator of the University of Granada's research group for the "Study of neurodegenerative diseases in Andalusia" says that "so far, there is not effective treatment" for Parkinson's disease. So, at the moment the only solution is palliative treatment. Therefore, "finding plasma specific proteins in patients before the first symptoms of Parkinson's disease appear, will allow us to use drugs that either stop or at least slow down the disease. An early diagnose is important to PD medication," he says.

L-dopa is a dopamine (the neurotransmitter that decreases in this disease) precursor. It is a very effective drug, but its therapeutic effects disappear within a few years of treatment. Other researchers say it even makes the disease worse. In this sense, scientists from the University of Granada have been carrying out a very complex statistical study, using blood samples from patients with PD, and they had proven than L-dopa has an antioxidant effect, that is, a neuroprotective effect.

Alpha Synuclein

Furthermore, one main feature of PD is the formation of intracellular precipitates, called Lewy bodies. The major components of this toxic precipitates are two proteins, α -synuclein and ubiquitin . Many studies have reported the detection of α -synuclein in biological fluids such as cerebrospinal fluid and plasma of PD patients. It is a matter of debate if plasma α -synuclein is a protein secreted by normal neurons or released by damaged neurons. This research group has found high concentrations of plasma α -synuclein in PD patients. But the most interesting think is that, in newly diagnosed PD patients, and before any medication, plasma α -synuclein is increased. Thus, this blood protein may be used for PD diagnose. So far, this is the first report (in press) reporting changes in α -synuclein in early diagnosed patients without treatment. The increased concentration of α -synuclein found in PD patients with and without treatment suggest that LBs are associated to neurodegeneration and that this is an early event in PD. Medication directed to prevent α -synuclein aggregates may be useful to PD treatment.

PARK-6

Sporadic Parkinson's, associated to age, is the most frequent form of PD. However, and according to experts, genetic predisposition and environmental factors play a key role in the development of the disease.

The Granada research team, with the help of researchers from the Nuclear Medicine Department of the Goethe University (Germany), have studied genetic alterations in several families from the province of Granada, with various of its members affected of PD. In all these families, there have been cases of Parkinson's at an early age. The genetic analysis proved that the presence of a polymorphism in a specific gene (PARK6) is very frequent in those families.

Despite the findings, Francisco Vives states that "there is not a sole gene responsible for Parkinson's disease, but it is rather the conjunction of several genes. Furthermore, the disease accelerates if patients are exposed to environmental toxics, so prevention and an early diagnose is the best for PD patients."

According to Francisco Vives Montero, "rare neurodegenerative diseases of previous times are now increasingly and becoming more frequent, because they are related to aging." Neurodegenerative diseases linking to aging, like Parkinson's, are estimated to affect 1.5% of people older than 60.

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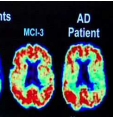
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