PERSONALIZED MEDICINE: DISEASE COURSE MODIFICATION IN PARKINSON'S DISEASE

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The diagnosis of Parkinson disease (PD) is based on clinical criteria, and is needed for useful symptomatic therapy. However, it became quite clear in recent years that the same features can result from different etiopathogenic mechanisms. Thus, it is accepted now that what is called PD is the result of phenotypic convergence. Even pathological diagnosis of PD, based on the demonstration of typical distribution of alpha-synuclein deposits, is a manifestation of phenotypic convergence at the tissue level.

Since the clinical manifestations of PD can be the result of quite heterogeneous mechanisms, it is unlikely that an intervention can be developed which will be able to influence the development of the disease in all patients. Such disease-modifying therapy should be based not on clinical but rather on understanding the underling pathogenetic processes which differ among cases.

Individualized therapy to interrupt, or at least slow, disease progression must be based on elucidation of the metabolic processes. Some patients may develop PD as a result of mitochondrial damage. Correction of these abnormalities will not affect the progression of the disease among other PD patients, in whom an identical syndrome derives from defects in the proteasome system, etc.

Precision medicine can be used now to identify the underlying pathogenic mechanisms in individual patients, paving the way to the development of real disease modification.