Approach to Lysosomal Disorders

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Gholamreza ZAMANI MD

Lysosomal storage diseases (LSDs) are a group of inherited metabolic disorders caused by the malfunction of lysosomal enzymes. If untreated, will result in death within several years.

At least 50 distinct genetic diseases are known, each one resulting from a deficiency of a particular lysosomal protein/activity or, in a few, from non-lysosomal activities that are involved in lysosomal biogenesis. Mutations in the gene encoding for specific enzymes is the basis of the LSDs, which are mostly inherited in an autosomal recessive fashion.

Since enzyme replacement therapy (ERT) has become amenable for a number of LSDs, such as Gaucher's Disease (1st) and Fabry's Disease (2nd) common forms of the LSDs, rapid diagnosis is critically important. Enzyme replacement therapies have been developed for a number of the LSDs; these can halt disease progression and even reverse part of the existing pathology, As many patients with LSDs do not fit in the rigid classical descriptions appeared in textbooks, physicians should not discard LSD from the differential diagnosis based on the incongruity with any fixed complex of signs and symptoms. In patients with attenuated phenotype, where initial disease may cause inconspicuous symptoms and signs once a clinical suspicion is raised, relatively simple blood tests, including enzyme activity assays, can be performed to confirm a particular LSD diagnosis. LSDs have been traditionally classified into the attenuated and severe phenotypes with intermediate forms for some of these disorders.

Most pediatricians would have little difficulty in recognizing severe phenotypes such as early-onset forms of mucopolysaccharidosis MPS I) (previously called Hurler syndrome) presenting with Joint stiffness, skeletal deformities, coarse facial features, complete stopping of growth and developmental delay.

Pompe disease may also initially present in early infancy as a combination of, non-specific symptom, progressive and severe hypotonia (floppy baby), cardiomyopathy, and respiratory insufficiency in the first year of life will not easily be missed as manifestations of infantile-onset Pompe disease.

However the clinical presentation of less rapidly progressive, attenuated forms of Gaucher, Fabry, MPS I and Pompe disease during childhood that display subtle signs or symptoms, are far more challenging and need to be always considered in differential diagnosis.

Finally, early diagnosis is of great importance, as early initiation of therapy may alter the progression of somatic disease manifestations and improve

Associate Professor of Pediatric Neurology, Children's Medical Center, Tehran University of Medical Sciences (TUMS), Tehran, Iran

Corresponding Author:
Zamani Gh. MD
Children's Medical Center,
Gharib Ave, Tehran, Iran
Tel: +98 21 66935848
Email: ghr_zamani@yahoo.com

quality of life. Any patient suspected of LSD based on clinical findings does not have a confirmed diagnosis until the suspected enzyme activity deficiency is established. After a definitive diagnosis has been made in laboratory, patients may benefit from early therapeutic intervention.

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