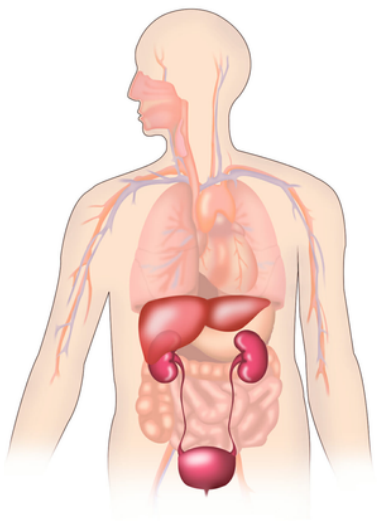
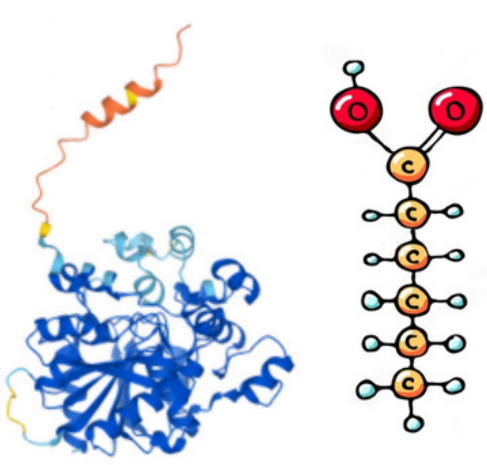
Acid Lipase Disease

By Ian Klimov



Acid lipase disease, or lysosomal acid lipase deficiency (LALD), is a rare inherited disorder where the body lacks the enzyme needed to break down lipids, leading to the harmful accumulation of fats (including fatty acids, oils, and cholesterol) in organs and tissues throughout the body. The condition manifests in two forms: infant-onset LALD disease (Wolman) and cholesteryl ester storage disease (CESD).

- **Wolman disease presents clinically very shortly after birth and death occurs before the age of 1 year**
- **CESD, being less severe, can be found in ages varying from childhood to adulthood**



Causes:

Acid Lipase Disease is primarily caused by mutations in the LIPA gene, responsible for encoding the lysosomal acid lipase enzyme. This enzyme plays a crucial role in breaking down various fats within cells. Mutations in the LIPA gene result in a deficiency of lysosomal acid lipase, leading to the accumulation of fat molecules in the body. The severity of LALD is determined by the degree of enzyme deficiency, with early-onset cases being more severe due to a complete lack of normal enzyme activity. LALD follows a recessive pattern of inheritance, meaning affected individuals inherit one defective copy of the LIPA gene from each parent. This genetic condition results in fat buildup in multiple tissues, leading to organ dysfunction and the characteristic symptoms of LALD.

Symptoms:

- **Hepatomelagy and Splenomegaly: enlargement of the liver and spleen**
- **Hyperlipidemia: increased levels of lipids in blood**
- **Delayed growth**
- **Difficulty absorbing nutrients from food**
- **Jaundice: yellowing of the skin and eyes**
- **Vomiting and nausea**
- **Diarrhea and steatorrhea**
- **Anemia**

Treatments:

Treatment options for acid lipase disease involve addressing the underlying cause of the disease. Enzyme Replacement Therapy (ERT), exemplified by Kanuma (sebelipase alfa), is a groundbreaking treatment approach. Kanuma replaces the deficient lysosomal acid lipase enzyme, effectively reducing liver fat content, liver enzymes, spleen size, and improving lipid profiles. Unlike supportive therapies, Kanuma tackles the root cause of the condition, making it the FDA-approved treatment for all age groups. While other supportive treatments like dietary restrictions, lipid-lowering drugs, hematopoietic stem cell transplantation, and liver transplantation have been explored, ERT has shown significant and promising results in clinical trials. Despite some reported side effects, ERT remains a crucial advancement in managing LAL-D, offering a more targeted and effective therapeutic option for patients. Early diagnosis is pivotal for defining a suitable treatment strategy, and ongoing research assesses the long-term benefits and challenges associated with ERT.

References:

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