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Current Laboratory Approaches to MLD

MLD is a single enzyme defect.

The Laboratory needs to know the clinical signs when sent a sample

In MLD both the Urine Sulphatides and the Blood Sulphates are extremely elevated

The Laboratory looks at the enzyme- Screen – 14 LD

Reasons for a false positive:

- An extreme deficiency may not indicate the presence of the disease
- There are Pseudodeficiencies
- Low enzyme activity is possible
- Spoilt samples are common as Arylsulfatase-A is a fragile enzyme. Correct protocols at laboratories are essential

Once a diagnosis of MLD is suspected there needs to be:

- Family Studies
- Genetic analysis
- Test common forms of MLD

Once diagnosis made then Pre Natal testing can be done.

How to achieve right results

- Provide good quality samples
- Good staff training in techniques, laboratory skills and standard operational practice
- Equipment to be well maintained and calibrated
- Need to receive enough specimens to gain experience - at present there are only 1 or 2 a year.
- Quality control – there is no QC available for LSDs
- External Quality Control

- comparison of Lab results, again difficult as not enough results/material
- Labs doing different testing/standards

New Born screening

- Enzyme testing difficult because of Pseudodeficiency and technical issues when measuring Arylsulfatase-A in blood spots
- Alternative screening possibly to measure sulfatides in urine

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Future Laboratory Directions for MLD and Lysosomal Disorders

The Lysosome is a dustbin and in MLD it is where sulfatides build up

Current problems with testing for MLD:

- Confirmation of laboratory results
- Quality of blood spot
- Stability of enzyme
- Technique

Moving forward:

Mass Spectrometry, which although expensive and takes up space, does provide:

- Multiple testing for enzymes
- Faster service
- Sulfatides occurs as an ensemble of molecular species
- Communications important between laboratories and clinicians
- Does not over complicate results

Future staff will need to be trained in enzyme testing.