TEXAS Health and Human Services | Texas Department of State Health Services

Newborn Screening ACT Sheet

Absent/Reduced Biotinidase Activity

Biotinidase Deficiency

Differential Diagnosis

Biotinidase deficiency; see C5-OH for non-biotinidase associated conditions.

Metabolic Description

Biotinidase deficiency results from defective activity of the biotinidase enzyme. When identified (possibly) through elevated C5-OH, 3-hydroxyisovaleric acid and 3-methylcrotonylglycine are elevated, and holocarboxylase synthase deficiency must be considered.

Take the Following Immediate Actions

- Contact the family to inform them of the newborn screening result;
- Evaluate infant. Assess clinical status (poor feeding, lethargy, hypotonia);
- **Initial testing: Serum Biotinidase (enzyme activity);**
- **Consult/refer** to a metabolic specialist to determine appropriate follow-up. (See attached list.);
- If infant cannot be seen immediately by a metabolic specialist, undertake confirmatory testing in consultation with a metabolic specialist;
- Repeat newborn screen if second screen if second screen has not been done;
- Begin treatment if symptomatic; and
- Report findings to newborn screening program.

Confirmation of Diagnosis

Enzyme assay for biotinidase reveals low activity. Plasma acylcarnitine analysis may show normal or increased 3-hydroxyisovaleric acid and 3-methylcrotonylglycine. C5-OH acylcarnitine may be high, but lack of an abnormal acylcarnitine profile does not rule out biotinidase deficiency.

Clinical Expectations

The neonate is usually asymptomatic, but episodic hypoglycemia, lethargy, hypotonia, and mild developmental delay can occur at any time from the neonatal period through childhood. Untreated biotinidase deficiency leads to developmental delay, seizures, alopecia, and hearing deficits.

Biotinidase may normalize on the second screen on affected babies, therefore an infant with an abnormal first newborn screen and normal second newborn screen will still need serum biotinidase lab. Biotin treatment is available and highly effective.

Reporting

Report diagnostic result to family and NBS program.

Additional Information

American College of Genetics and Genomics – Biotinidase Deficiency ACT Sheet
Online Mendelian Inheritance in Man (OMIM) – Entry #253260
U.S. National Library of Medicine, Medline Plus – Biotinidase Deficiency

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