Ethyl Glucuronide, Umbilical Cord Tissue, Qualitative

Ethyl glucuronide testing can be used to detect prenatal exposure to alcohol for infants born to mothers with risk factors (e.g., history of alcohol/drug use, mental health issues, and injuries), little or no prenatal care, or previous children with fetal alcohol spectrum disorder (FASD). Evaluation for prenatal alcohol exposure is indicated if an infant presents with characteristic facial anomalies, prenatal growth deficiency, and/or abnormal neurophysiology. Testing for ethyl glucuronide in umbilical cord tissue may be used as an alternative to urine ethyl glucuronide screening for a newborn.

DISEASE OVERVIEW

Screening/Detection

Identification of in utero alcohol exposure may aid in early diagnosis of adverse outcomes known as fetal alcohol spectrum disorders (FASD), and can help facilitate timely follow-up and effective management of long-term social and medical needs for the exposed newborns. Acute ethanol exposure is not predicted by testing umbilical cord tissue but detects ethyl glucuronide, which

- Has a longer window of detection than ethanol
- Is a good biomarker of alcohol use in pregnancy

Umbilical cord tissue testing may be preferable to meconium due to

- Ease of collection of a larger specimen
- Reduced turnaround time (if specimen is sent to the laboratory on the day of birth)

TEST INTERPRETATION

Sensitivity/Specificity

- Clinical sensitivity: consistent with detection of ethanol metabolite(s) observed in meconium testing
- Clinical specificity: high; mass spectrometric method reduces false positive and the need for confirmatory testing

Results

<table>
<thead>
<tr>
<th>Results</th>
<th>Result Description</th>
<th>Interpretive Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detected</td>
<td>Ethanol metabolite detected in umbilical cord tissue</td>
<td>Does not insinuate impairment and may not affect outcomes for the infant</td>
</tr>
<tr>
<td>Not detected</td>
<td>Ethanol metabolite absent in umbilical cord tissue</td>
<td>Does not exclude the possibility that the mother used alcohol during pregnancy</td>
</tr>
</tbody>
</table>

Limitations

- Detection of ethyl glucuronide in umbilical cord tissue is intended to reflect maternal alcohol use during pregnancy
  - Pattern and frequency of alcohol used by the mother cannot be determined by this test
  - False positive results may be caused by postcollection production/synthesis of ethyl glucuronide
- A negative result does not exclude the possibility the mother used alcohol during pregnancy
- Detection of ethyl glucuronide in umbilical cord tissue depends on extent of maternal alcohol use, as well as ethyl glucuronide stability during sample storage and/or transport, variability in ethyl glucuronide formation, and placental transfer of ethanol and metabolites, and analytical performance
- Incidental exposure from ethanol-containing products (e.g., hand sanitizers and wipes, mouthwash) may be detected when used directly on the specimen or used nearby during sample collection


RELATED INFORMATION

Alcohol Use Biomarkers
Newborn Drug Testing - Meconium and Umbilical Cord Tissue

RELATED TESTS

Drug Detection Panel, Umbilical Cord Tissue, Qualitative 2006621
Method: Qualitative Liquid Chromatography/Tandem Mass Spectrometry

Marijuana Metabolite, Umbilical Cord Tissue, Qualitative 3000256
Method: Qualitative Liquid Chromatography-Tandem Mass Spectrometry

Drugs of Abuse Panel, Meconium - Screen with Reflex to Confirmation/Quantitation 0092516
Method: Qualitative Enzyme-Linked Immunosorbent Assay/Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Ethyl Glucuronide Screen Only, Urine 2012695
Method: Qualitative Enzyme Immunoassay

Ethyl Glucuronide Screen with Reflex to Confirmation, Urine 2007912
Method: Qualitative Enzyme Immunoassay/Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Ethyl Glucuronide and Ethyl Sulfate, Urine, Quantitative 2007909
Method: Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Ethanol, Serum or Plasma - Medical 0090120
Method: Quantitative Gas Chromatography

Carbohydrate Deficient Transferrin for Alcohol Use 0070412
Method: Quantitative Electrophoresis

Phosphatidylethanol (PEth) 2012130
Method: Quantitative Liquid Chromatography/Tandem Mass Spectrometry