Drug Detection Panel, Umbilical Cord Tissue, Qualitative

Testing for prenatal drug exposure is preferred to maternal self-reporting because drug use is generally underreported by pregnant women.\(^1\) For instance, in a recent study, 2.6\% of expectant mothers reported marijuana use to their health care providers; however, THC-COOH was detected in 22.4\% using an umbilical cord assay.\(^2\) Testing may be indicated for neonates born with unexplained neurological complications, growth restriction, or evidence of drug withdrawal symptoms (eg, neonatal abstinence syndrome [NAS]).\(^1\) Testing may also be indicated if the mother has a history of high-risk behaviors (eg, drug use, sex work), had little or no prenatal care, regularly uses nicotine, or experienced unexplained placental abruption or premature labor.\(^1\)

Umbilical cord tissue testing may be preferable to meconium testing due to the ease of collecting a large volume of specimen, a relatively fast turnaround time if specimen is sent to the laboratory on the day of birth, and a long window of detection.\(^1\)

Disease Overview

Timely detection of in utero drug exposure is critical for effective management of withdrawal syndromes and long-term needs (social and medical) for exposed neonates.\(^1,2\) The actual time window for detecting exposure is unknown and is drug dependent, but is thought to represent approximately the last trimester.\(^1\)

Detection of drugs depends on the following factors\(^1\):

- Extent of maternal drug use
- Specific drug used
- Deposition of drug analytes in umbilical cord tissue
- Performance characteristics of analytical method

Test Interpretation

Sensitivity/Specificity

- Clinical sensitivity: consistent with detection of most compounds and metabolites observed in meconium testing, but may not correlate with maternal urine results
- Clinical specificity: high; mass spectrometric methodology reduces false positives and the need for confirmatory testing

Results

<table>
<thead>
<tr>
<th>Result</th>
<th>Clinical Significance</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present</td>
<td>Drug analytes detected in umbilical cord tissue</td>
<td>Consistent with exposure to relevant drug(s) prior to birth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Does not insinuate impairment and may not affect outcomes for the infant</td>
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<td></td>
<td></td>
<td>Drugs administered during labor and delivery may be detected</td>
</tr>
<tr>
<td>Not detected</td>
<td>Drug analytes absent in umbilical cord tissue</td>
<td>Does not exclude the possibility that the mother used drugs during pregnancy</td>
</tr>
</tbody>
</table>
Limitations

- The pattern and frequency of drug(s) used by the mother cannot be determined by this test
- A negative result does not exclude the possibility that the mother used drugs during pregnancy
- Detection of drugs in umbilical cord tissue depends on extent of maternal drug use, as well as drug stability, unique characteristics of drug deposition in umbilical cord tissue, and the performance of the analytical method
- Concentrations of drugs and metabolites in cord tissue are generally lower than those found in meconium
- Interpretive questions should be directed to the laboratory

References


Related Information

Newborn Drug Testing - Meconium and Umbilical Cord Tissue
Newborn Drug Testing Algorithm
Ethyl Glucuronide, Umbilical Cord Tissue, Qualitative

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