OMT FOR THE NAS INFANT
Eren Ural
OGME II
Objectives:

• 1. Review the signs and symptoms monitored for diagnosing Neonatal Abstinence Syndrome
• 2. Understand current medical management for Neonatal Abstinence Syndrome
• 3. Discuss the benefits of OMT as adjunctive therapy for the management of Neonatal Abstinence Syndrome
Definitions

• NAS = Neonatal Abstinence Syndrome
  • Defined as: postnatal withdrawal syndrome of an infant whose mother was treated with licit or illicit drugs during pregnancy
  • Determined by signs and symptoms that infant demonstrates, objectively scored with Finnegan Scores
  • “Watch period” at our hospital is 5 days minimum

• Intrauterine Drug exposure
  • Defined as: Exposure of the fetus to a licit or illicit drug, at any point prior to delivery
  • At our hospital, intrauterine drug exposure is tested using in-house urine drug screen of mom and send-out cord sample of infant
### Modified Finnegan Neonatal Abstinence Score Sheet

<table>
<thead>
<tr>
<th>System</th>
<th>Signs and Symptoms</th>
<th>Score</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Nervous System Disturbances</td>
<td>Excessive high-pitched (or other) cry &lt; 5 mins</td>
<td>2</td>
<td></td>
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<tr>
<td></td>
<td>Continuous high-pitched (or other) cry &gt; 5 mins</td>
<td>3</td>
<td></td>
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<tr>
<td></td>
<td>Sleeps &lt; 1 hour after feeding</td>
<td>3</td>
<td></td>
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<tr>
<td></td>
<td>Sleeps &lt; 2 hours after feeding</td>
<td>2</td>
<td></td>
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<tr>
<td></td>
<td>Sleeps &lt; 3 hours after feeding</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hyperactive Moro reflex</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Markedly hyperactive Moro reflex</td>
<td>3</td>
<td></td>
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<tr>
<td></td>
<td>Mild tremors when disturbed</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moderate-severe tremors when disturbed</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mild tremors when undisturbed</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moderate-severe tremors when undisturbed</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increased muscle tone</td>
<td>1</td>
<td></td>
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<td></td>
<td>Excoriation (chin, knees, elbow, toes, nose)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Myoclonic jerks (twitching/jerking of limbs)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Generalised convulsions</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Metabolic/Vasomotor/Respiratory Disturbances</td>
<td>Sweating</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hyperthermia 37.2-38.3C</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hyperthermia &gt; 38.4C</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frequent yawning (&gt; 3-4 times/scoring interval)</td>
<td>1</td>
<td></td>
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<tr>
<td></td>
<td>Mottling</td>
<td>1</td>
<td></td>
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<tr>
<td></td>
<td>Nasal stuffiness</td>
<td>1</td>
<td></td>
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<tr>
<td></td>
<td>Sneezing (&gt; 3-4 times/scoring interval)</td>
<td>1</td>
<td></td>
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<tr>
<td></td>
<td>Nasal flaring</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Respiratory rate &gt; 60/min</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Respiratory rate &gt; 60/min with retraits</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Excessive sucking</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Intestinal Disturbances</td>
<td>Poor feeding (infrequent/uncoordinated suck)</td>
<td>2</td>
<td></td>
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<td></td>
<td>Regurgitation (&gt; 2 times during/post feeding)</td>
<td>2</td>
<td></td>
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<tr>
<td></td>
<td>Projectile vomiting</td>
<td>3</td>
<td></td>
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<tr>
<td></td>
<td>Loose stools (curds/seedy appearance)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Watery stools (water ring on nappy around stool)</td>
<td>3</td>
<td></td>
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<tr>
<td><strong>Total</strong></td>
<td></td>
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</tbody>
</table>

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**Greenbrier Valley Medical Center**
Drug Therapy

- Morphine or Methadone
  - Conflicting data for length of stay differences
    - Between these 2 drugs
  - Buprenorphine is another alternative

- Morphine is primarily used at our hospital
  - Generally start with doses around **0.06 mg/kg q4h**
  - Choose to increase/decrease dose, or remain the same based on Finnegan scores
  - Policy at our hospital is never to decrease on two separate occasions within 24 hours
Supportive Care

• Breast feeding
• Rooming in
• Low stimulation environment (lights, sounds, clustering of care)
• Swaddling
• Rocking and cuddling
• Non-nutritive sucking
• Laser acupuncture (2015 Schmolzer study)

https://www.researchgate.net/figure/237839527_fig1_Figure-2-Demonstrates-the-infant-with-the-applied-laser-needle-and-the-near-infrared
OMT!

• A modality not well studied for NAS infants in literature
• Huge potential to provide benefit:
  • Normalize **sympathetic tone**
    • Vagus nerve
    • Sympathetic chain ganglion
  • Increase **CSF and blood flow**
  • Reduce **fascial strains** developed in utero or during delivery
  • Encourage proper inspir/expir of visceral organs

http://www.osteopath4kids.co.uk/cranial-osteopathy/Cranial-Osteopathy.html
ONMM Consult
for structural evaluation and cranial treatment

Subjective:

• 3 day old male with reported intrauterine drug exposure, unconfirmed based on urine and cord results.
  • Subutex and 3+ PPD smoker

• Born term, via Cesarean section, to a G4P4 mother.
  • Mother was on subutex throughout previous 2 pregnancies

• Patient currently breast feeding, with reported good latch.
  • Mother is currently rooming in for breastfeeding, due to long distance travel
ONMM Consult for structural evaluation and cranial treatment

Objective:

- **Hyperactive** extremities with *jittery* appearance
- Multiple *sneezing* episodes noted during exam and treatment
- Consolable only in mother’s arms
- Normal Moro, Babinski, rooting, and sucking reflexes
- Opens eyes and looks around attentively
- Average Finnegan scores: 10
ONMM Consult for structural evaluation and cranial treatment

Objective:

• Structural exam:
• Right condylar compression with diminished CRI 6/10
• Minimal right rotation long axis throughout axial skeleton
• Significant right SI and right pelvis restriction
• Pelvic diaphragm right rotation

http://www.mommyshorts.com/2013/05/30-of-the-funniest-baby-memes-all-in-one-place.html
ONMM Consult for structural evaluation and cranial treatment

Assessment:

- 3 day old male with intrauterine drug exposure and suspect NAS
- Somatic dysfunction of head, sacrum, and pelvis

http://www.mommyshorts.com/2013/05/30-of-the-funnest-baby-memes-all-in-one-place.html
ONMM Consult for structural evaluation and cranial treatment

Plan:

• Mother informed and consented to OMT, present throughout entire treatment
• Risks and benefits were discussed prior to treatment
• Gentle OMT performed was indicated to improve cranial motion and promote normal growth and development
• Patient tolerated treatment well, will continue to follow

• Condylar decompression
• Indirect OCF to cranium and sacrum
• Indirect MFR to diaphragms and axial skeleton
• Direct MFR to sacrum
Day 2

- Finnegan scores range 7-17, with average of 12 over 24-hour period

- Structural exam:
  - Bilateral condylar compression worse on left
  - Diminished flexion aspect throughout both occipital bones
  - Sagittal suture dysmobility
  - Right rotation long axis though axial skeleton
  - Right SI and pelvis restriction
Day 2

- Treatment Plan:
- Condylar decompression
- Direct OCF to cranium
- Sagittal suture spread
- Direct MFR through axial skeleton and sacrum/pelvis
- Indirect OCF to sacrum
Follow up

• Patient was discharged the next day, on day 5 of admission and “watch” period
Technique:
Myofascial release for occipital condyles

• Also called Occipital/Condylar Decompression
  • Differs from Suboccipital Inhibition/Release

• Infant lies supine with you at head of the bed
• Contact cranial base, with—
  • Index fingers on mastoid processes
  • Middle fingers on occipital condyles
  • Ring fingers on supraocciput
• Gently pull occiput in a posterior lateral direction while resisting mastoid process movement—until slight occipital give is completed equally on both sides
• Reaccess

Technique:
Myofascial release – sacral balancing

- Infant lies supine with you at foot of the bed
- Contact lateral aspects of sacrum, with—
  - Pointer and middle fingers near sacral base bilaterally
  - Pinky and ring finger near sacral ILA bilaterally
- Gently apply pressure at sacroiliac joint in an anterior lateral direction—until slight sacral give is completed equally on both sides
- Reassess
Technique: Myofascial release through the axial spine

• “Unwinding” technique
• Pick up infant in supine position
  • Top hand contacting occipital condyles, cervical vertebrae, and upper thorax, perpendicular to axis of body
  • Bottom hand contacting lower lumbar region and sacrum, directly upon axis of body
• Note flexion/extension, sidebending, and rotational myofascial drag through the entirety of the axial skeleton
Technique: Myofascial release through the axial spine

• Gently encourage tissues into the extreme of indirect barriers in all directions, and follow tissues carefully as they unwind
• End point is breathing of the tissues, full restoration of CSF flow, and a relaxed, extended feel to the entirety of the axial skeleton
Questions?
References


Q1

• Which of the following are commonly used as drug therapy for infants diagnosed with NAS?
  • A. Morphine
  • B. Methadone
  • C. Buprenorphine
  • D. A and B
  • E. A and C
Q2
• Which of the following is not a sign or symptom included in Finnegan scoring?
  • A. Nasal stuffiness
  • B. Increased muscle tone
  • C. Hypothermia
  • D. Frequent yawning
  • E. Excessive sucking
Q3

• Which of the following is not a proposed benefit of OMT as adjunctive therapy for management of NAS in the neonate?
  • A. Normalizing sympathetic tone
  • B. Increasing CSF flow
  • C. Increasing blood flow
  • D. Normalizing bladder contractility
Q4

- Which of the following OMT techniques was not specifically discussed as beneficial for the treatment of NAS infants?
  - A. Myofascial release through the axial spine
  - B. Myofascial release for occipital condyles
  - C. Myofascial release – sacral balancing
  - D. Myofascial release – rib raising
Q5

• Which of the following NAS symptoms would not be influenced by the vagus nerve (able to be affected though OMT of the occipital condyles)?
  • A. Excessive and uncoordinated sucking
  • B. Increased muscle tone
  • C. Regurgitation
  • D. Excoriation
  • E. Tachypnea