Management of Antenatal & Intrapartum Headache

Wade Cooper, D.O.
University of Michigan
Assistant Professor
Departments of Neurology & Anesthesiology
What Is Migraine?

- A chronic disorder with episodic attacks
- Integrated mechanisms and complex pathophysiology

During attacks
- Headache
- Several associated symptoms
- Functional disability

In-between attacks
- Enduring predisposition to future attacks
- Anticipatory anxiety
- Changes in brain function, eg,
  - Lack of habituation
  - Reduced nociceptive threshold

Migraine Overview

- The lining of the brain (meninges) becomes inflammed and activate pain through the trigeminal system
- Central brain structures increase activity and contribute to associated symptoms of migraine
- Headache
- Photophobia / phonophobia
- Nausea
Trigeminal System in Headache

Meningeal Nerves
- First division of V1
- First division of V2
- First division of V3

Trigeminal Nucleus descends into neck

C2, C3, C4 form Greater Occipital Nerve complex
Trigeminal Nucleus Caudalis

- Greater occipital nerve complex
- Trigeminal ganglion
- Trigeminal nucleus caudalis
Migraine Pathways

(Goadsby, 2000)
How you help makes a lasting impression
Migraine Management in Pregnancy

- Migraine affects 25% of the female population during childbearing years (18-49)
- 60-70% improve in the frequency of migraines (particularly in 2nd and 3rd trimesters)
- 4-8% of women worsen
- Approximately 10% of migraine cases start during pregnancy
- Pre-pregnancy headache pattern returns almost immediately postpartum
- 50% of pregnancies unplanned so inadvertent fetal exposure to medications likely

The Pregnant Migraineur

- A symptom-producing event
- Incidence of migraine in pregnancy is unknown
- Retrospective data showed 60% improvement during pregnancy
  - did not distinguish diagnostic categories
- Marcus study
  - patients with more frequent headaches may not improve during pregnancy
Headache Changes by Diagnosis

Impact of Pregnancy on Migraine

- 60-70% improvement in the frequency of migraines, particularly in the 2nd and 3rd trimesters
- 4-8% of women experience worsening of symptoms
- Approximately 10% of migraine cases start during pregnancy
- Pre-pregnancy headache pattern returns almost immediately postpartum
- Independent of migraine type

Impact of Migraine on Pregnancy

- No evidence of altered fertility rates
- No increased incidences of toxemia, abnormal labor, miscarriage, congenital malformations, or stillbirths were reported in a study comparing 777 migraineurs versus 182 non-migraineur controls

Migraine and Pregnancy

- 50% to 85% of migraine patients report an improvement in headache during early pregnancy, particularly when:
  - Migraine is not accompanied by an aura
  - Migraine began at menarche
  - Migraine is related to menses
- Women with ongoing headache at the end of the first trimester are unlikely to experience further reduction of headache.
- Migraine headache generally recur soon after delivery.

Maternal Use of Medications

- Pregnancy is a symptom-producing event
- Drug consumption during pregnancy is increased
- WHO study of 14,778 women
  - 86% took prescription drugs during pregnancy
    - 73% from their obstetrician
    - Did not include over-the-counter medications
- 50% of pregnancies are unplanned
WHO

“Drugs may be considered safe in pregnancy if they have not been proven dangerous.”
Medications In Pregnancy

- 10% of congenital abnormalities are thought to be due to environmental exposures
- Retrospective study from 8 HMO’s 60% of women were prescribed a medication during pregnancy
- Use of OTC’s may even be higher

Cragen J, Matern Child Health J. 2006 Sept:10 (Supple7) 129-135
Migraine Treatment During Pregnancy

For the most disabled migraineur and chronic daily headache patient, a 9-month vacation from medical therapy may not be indicated.

- **Risk/Benefit**
  - Most will self-medicate
  - Dehydration
  - Exacerbation of comorbid disorders
  - Addiction (maternal/fetal)

- **Safety**
Nonpharmacological Options

- Rest
- Biofeedback
- Ice/Heat
- Massage
- Avoidance of trigger
- Exercise
- Folate
## FDA Pregnancy Categories

<table>
<thead>
<tr>
<th>Pregnancy Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td>Controlled human studies show no risk</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>Controlled studies show no evidence of risk in humans, despite adverse findings in animals. Chance of fetal harm is remote but remains a possibility.</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>Risk to humans cannot be ruled out. Adequate well controlled human studies are lacking, and animal studies that have shown risk to the fetus or mother are lacking as well.</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>Positive evidence of risk to humans from human studies or post-marketing data.</td>
</tr>
<tr>
<td><strong>X</strong></td>
<td>Contraindicated</td>
</tr>
</tbody>
</table>
## Preventive Treatments

<table>
<thead>
<tr>
<th>Pregnancy Category</th>
<th>Medication</th>
</tr>
</thead>
</table>
| **B**               | Metoprolol  
|                     | Some SSRIs (fluoxetine, sertraline) |
| **C**               | Other beta blockers and SSRIs  
|                     | Calcium channel blockers  
|                     | Topiramate, gabapentin  
|                     | Some tricyclics (protriptyline, doxepin) |
| **D**               | Other tricyclics (amitriptyline, nortriptyline)  
|                     | Divalproex sodium |
## Acute Treatments

<table>
<thead>
<tr>
<th>Pregnancy Category</th>
<th>Medication</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Acetaminophen</td>
</tr>
<tr>
<td></td>
<td>Caffeine</td>
</tr>
<tr>
<td></td>
<td>NSAIDs (after implantation and before 32 weeks)</td>
</tr>
<tr>
<td></td>
<td>Codeine (hydrocodone, oxycodone)</td>
</tr>
<tr>
<td></td>
<td>Butorphanol</td>
</tr>
<tr>
<td></td>
<td>Metoclopramide</td>
</tr>
<tr>
<td>C</td>
<td>Aspirin</td>
</tr>
<tr>
<td></td>
<td>Butalbital</td>
</tr>
<tr>
<td></td>
<td>Codeine (hydrocodone, oxycodone)</td>
</tr>
<tr>
<td></td>
<td>Isomethptene mucate</td>
</tr>
<tr>
<td></td>
<td>Phenothiazines</td>
</tr>
<tr>
<td></td>
<td>Triptans</td>
</tr>
<tr>
<td>X</td>
<td>Ergots</td>
</tr>
</tbody>
</table>
Treatment of Migraine in Pregnancy

• **Caffeine**
  - FDA category: C
  - High doses may be associated with infertility, spontaneous abortion, or low birth weight

Physician Desk Reference, 2002
Sumatriptan / Naratriptan
Pregnancy Registry

- **Sumatriptan**: Risk of birth defects for first trimester exposure 4.3% (95% CI 2.5-7.1%) [1]

- **Naratriptan**: Sample size insufficient to calculate a risk [1]

- Risk for general population 2-5% [2]

- Risk for migraineurs reported in literature 3.4% vs. 4.0% for controls [3]

[2] CDC unpublished data
Emergency Migraine Interventions

- Fluid resuscitation
- Pain control
  - IV metoclopramide
  - IV diphenhydramine
  - IV opioid
  - IV MgSO4
  - Consider occipital nerve blocks
- If recurrent frequent episodes consider prophylaxis and more aggressive management
Contraindicated for Use in Pregnancy

- Ergotamine
- Phenytoin
- Valproic Acid
- Lithium Carbonate
Treatment of Migraine in Pregnancy

• Acetaminophen
  – FDA category: B
  – No evidence of teratogenicity\(^1\)
  – Transient adverse effects on uterus and on platelet function

Physician Desk Reference, 2002
\(^1\)TERIS rating
# Use of OTC Pain Medication in Pregnancy

<table>
<thead>
<tr>
<th>Drug Name</th>
<th>FDA Pregnancy risk classification by trimester (1(^{st}), 2(^{nd}), 3(^{rd}))</th>
<th>Drug Class</th>
<th>Crosses Placenta</th>
<th>Use in Pregnancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetaminophen</td>
<td>B/B/B</td>
<td>Non-narcotic analgesic/antipyretic</td>
<td>Yes</td>
<td>Pain reliever of choice</td>
</tr>
<tr>
<td>Aspirin</td>
<td>D/D/D</td>
<td>Salicylate analgesic/antipyretic</td>
<td>Yes</td>
<td>Not recommended except for specific indications*</td>
</tr>
<tr>
<td>Ibuprofen (Advil, Motrin)</td>
<td>B/B/D</td>
<td>NSAID analgesic</td>
<td>Yes</td>
<td>Use with caution; avoid in third trimester†</td>
</tr>
<tr>
<td>Ketoprofen (Drudis)</td>
<td>B/B/D</td>
<td>NSAID analgesic</td>
<td>Yes</td>
<td>Use with caution; avoid in third trimester†</td>
</tr>
<tr>
<td>Naproxen (Aleve)</td>
<td>B/B/D</td>
<td>NSAID analgesic</td>
<td>Yes</td>
<td>Use with caution; avoid in third trimester†</td>
</tr>
</tbody>
</table>

OTC = over-the-counter; FDA = U.S. Food and Drug Administration; NSAID = nonsteroidal anti-inflammatory drug.

*--Associated with increased perinatal mortality, neonatal hemorrhage, decreased birth weight, prolonged gestation and labor, and possible teratogenicity.

†--Associated with oligohydramnios, premature closure of the fetal ductus arteriosus with subsequent persistent pulmonary hypertension of the newborn, fetal nephrotoxicity, and periventricular hemorrhage.

# OTC Decongestants, Expectorants, and Nonselective Antihistamines in Pregnancy

<table>
<thead>
<tr>
<th>Drug Name</th>
<th>FDA pregnancy risk classification</th>
<th>Drug class</th>
<th>Crosses placenta?</th>
<th>Use in Pregnancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorpheniramine (Chlor-Trimeton)</td>
<td>B</td>
<td>Antihistamine</td>
<td>Not known</td>
<td>Antihistamine of choice</td>
</tr>
<tr>
<td>Pseudoephedrine hydrochloride (Novafed)</td>
<td>B</td>
<td>Sympathomimetic decongestant</td>
<td>Not known</td>
<td>Oral decongestant of choice, possible association with gastrochisis</td>
</tr>
<tr>
<td>Guaifenesin (Humibid L.A.)</td>
<td>C</td>
<td>Expectorant</td>
<td>Not known</td>
<td>May be unsafe in first trimester*</td>
</tr>
<tr>
<td>Dextromethorphan hydrobromide (Benylin DM)</td>
<td>C</td>
<td>Nan-narcotic antitussive</td>
<td>Not known</td>
<td>Appears to be safe in pregnancy</td>
</tr>
<tr>
<td>Diphenhydramine (Benadryl)</td>
<td>B</td>
<td>Antihistamine/antiemetic</td>
<td>Yes</td>
<td>Possible oxytocin-like effects at high dosages</td>
</tr>
<tr>
<td>Clemastine furnarate (Tavist)</td>
<td>B</td>
<td>Antihistamine</td>
<td>Not known</td>
<td>Unknown safety profile</td>
</tr>
</tbody>
</table>

OTC = over-the-counter; FDA = U.S. Food and Drug Administration.

*--Possible increased risk of neural tube defects.

Nerve Block Locations

- Auriculotemporal
- Sphenopalatine
- Occipital
- Supra Orbital
Occipital Nerve Block

- Peripheral anesthetic blockade of the greater occipital nerve
- May end Cluster Cycle
- Effective for intractable migraine
  - Especially unilateral location
- Tenderness at occipital nerve region predictive of benefit

Very safe procedure
- Not near brain
- Not near cervical cord
- Not near important vasculature
Occipital Nerve Block
Supplies

- Consent for procedure
- 5cc syringe
- 18 gauge needle to draw
- 27 gauge 1½” needle to inject

Typical injection
- lidocaine 2% without epinephrine – 2cc
- Bupivacaine 0.25% - 2cc
- Kenalog 40mg - 1 cc
Occipital Nerve Block Procedure

- Position patient in chair, chin to chest
- Palpate occipital nerve area for focal tenderness
  - 2/3 distance from occipital protuberance to mastoid
- Prep with alcohol pad or betadyne

- Place needle with cephalad projection
  - Aspirate for blood (if red, reposition)
- Inject
- Patient seated or supine after injection
  - Observe for vasovagal symptoms
- Sensory test occipital scalp for numbness

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Occipital Nerve Block
Supra Orbital Nerve Block
Sphenopalatine Ganglion
Intranasal SPG Block
Summary

Migraine is common in pregnancy
  – Typically improves

Judicious use of treatments
  – Acetaminophen / metoclopramide
  – Sumatriptan?

Consider nerve blocks
  – Occipital nerve block
  – Sphenopalatine ganglion block