PCOS and Lactation

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Objectives

• Identify characteristics of Polycystic Ovarian Syndrome (PCOS) based on history, physical exam, and lab results

• Recognize potential lactation and breastfeeding issues that are a result of PCOS

• Knowledge of pharmaceutical and herbal treatments for low milk supply due to PCOS

• Identify ways to support the lactating mom with PCOS
What is PCOS?

Polycystic Ovarian Syndrome
• Polycystic Ovarian Syndrome (PCOS) is an endocrine disorder.

• One of the most frequent reasons women of childbearing age see gynecologist or other women’s health care provider.

• No known cause. Possible genetic predisposition.

• Affects 10% of women in the US

• Not all women with PCOS will have lactation issues.
The Stats

- 75-80% of women with PCOS have irregular cycles
  - 5-9 cycles/year, length: 40-65 days
- 60-80% have hirsutism
- 40-70% have alopecia
- 40-60% have acne
- 75% are overweight or obese
To diagnose PCOS, a woman must have 2 of the 3 criteria:

- Androgen Excess
  - Hirsutism, male pattern hair growth
  - Alopecia
  - Increased free and total testosterone
  - Acne
- Ovulatory Dysfunction
  - Amenorrhea
  - Irregular Cycles
  - Dysfunctional Uterine Bleeding
- Polycystic Ovaries
  - May not have polycystic ovaries at all!
There is no ovulation with polycystic ovaries.
Hirsutism can also be on chest, abdomen, and inner thighs.
• Obesity
• Infertility
• Miscarriage
• Mood disorders (depression, irritability, tension)
• Insulin resistance
• Increase in LH:FSH ratio
• Increased risk of
  – Hyperlipidemia
  – Cardiovascular Disease
  – Type 2 Diabetes
  – Gestational Diabetes
Cycle of Hormonal Imbalance

1. Hyperactive Production of Androgens
2. ↑ LH, ↓ FSH (no mature follicles)
3. Chronic Elevation of Estrogen
4. Hyper-insulinemia or Insulin Resistance
5. Low levels of Progesterone = Anovulation

- Cycle of Hormonal Imbalance
• ↑ Androgens = Hirsutism, Acne, Alopecia

• ↑ LH, ↓ FSH, Chronic ↑ Estrogen, ↓ Progesterone = Chronic Anovulation, menstrual irregularities, Infertility, Miscarriage, Polycystic Ovaries, Mood Disorders

• Insulin Resistance = ↑ abdominal fat (BMI > 30), ↑ CVD and hyperlipidemia risk, ↑ risk of T2DM and GDM

How does the hormonal imbalance present itself?
How does PCOS affect breast development?

The Role of Insulin

- Insulin Resistance and Obesity- affect breast development in puberty.
- Insulin Resistance is linked to low milk supply.
- Preliminary studies show that receptor cells in the breast must remain insulin sensitive to develop properly and function in response to other lactation hormones.
- Insulin has a direct affect on the production of milk, lactogenesis I (secretion of colostrum) and lactogenesis II (when the milk “comes in”)

How does PCOS affect breast development?
Type 1 reflects normal breast development.

It isn’t the size of the breast that indicates hypoplasia. It is the shape, placement, and asymmetry.

History

• Irregular cycles
• Overweight, difficulty losing weight (not all women with PCOS are overweight)
• Infertility- history of miscarriage or “it took a long time to get pregnant” due to irregular cycles, though may not have used reproductive technology to get pregnant
• Acne and hirsutism
• Blood sugar issues, including GDM
• No breast changes in pregnancy
• Previous unsuccessful breastfeeding experience
Physical Exam

• High BMI (women with BMI >30 are more likely to have milk production issues)

• Note acne, male pattern hair growth

• Acanthosis Nigricans- can be a marker of pre-diabetes

• Breasts:
  – Wide spaced apart (more than 1.5 inches apart
  – Breast asymmetry (one breast is significantly larger than the other)
  – Minimal glandular tissue palpated on exam
  – Tubular breast shape
  – Disproportionately large areola
Labs to Evaluate

• LH
• FSH
• Estrodial
• Progesterone- should be checked 7 days after ovulation is believed to have occurred
• Prolactin (non-lactating woman)- high levels can also indicated pituitary tumor
• Glucose Tolerance Test or Fasting Glucose Test
• Total and Free Testosterone
• Thyroid Panel
• Lipid Profile
• Pregnancy Test
Breastfeeding Scenario

- No lactogenesis II- milk doesn’t come in or comes in very late
- Baby falls asleep at the breast without getting a full “meal”
- Slow weight gain or weight loss. Doesn’t get to birth weight by 2 weeks of age.
- Poor output.
- Jaundice
- The usual treatments to increase milk supply isn’t working.
Case Study #1

- 33 yo, female, G0
- Was dx’d in 2009 with PCOS by another provider via blood tests. Never had a pelvic u/s.
- Has been on OCPs since then. No other significant gyn hx.
- Stopped OCPs 5 months ago and has had 4 periods. Expected her period 3 weeks ago. Has no PMS; is not aware when she ovulates.
- Wants to get pregnant in the next year.
- Denies any hirsutism. Reports she does get acne when she isn’t on OCPs.
Case Study #1

• VS- WNL
• BMI- 21
• No visible hirsutism or acne present.
• Breasts: normal spacing, round, glandular tissue felt, nipples evert
• The rest of the physical exam was normal.
Case Study #1

• Labs:
  – Estrogen: consistent with luteal phase
  – Progesterone: consistent with menopause
  – TSH: 1.71 (WNL) not enough blood to run T3 and T4
  – Testosterone: 81 High (normal range 2-45)
  – Lipid panel: WNL
  – HgbA1C: 5.6 (high end of normal)
  – Fasting insulin was not reported due to hemolysis of the sample.
  – Pelvic ultrasound: multiple follicles present, but not enough to be considered polycystic
Case Study #1

• Treatment
  – Pt did not want to use pharmacological treatments. Wanted a more natural approach.
  – Naturopathic Physician recommended liver and hormones support supplements.
  – Acupuncture
  – Exercise
  – Stress Reduction
  – Dietary changes to increase whole foods
Treatment Options
For women who are not lactating
Treatments

• Lifestyle changes
  – First line treatment if there are no other factors affecting fertility
  – Especially important for women with BMI >30
  – Weight loss of even 5% may be sufficient to regulate menstrual cycles and ovulation
  – Low carb/low glycemic diet
    – Refer to nutritionist or provider who can help structure a nutrition plan
    – Watch the “low fat” gimmick!
    – Whole foods. Avoid “chemical foods”
  – Exercise routine
    – Stress moving body 30 minutes daily
  – Should see changes in 3-6 months
Pharmacologic Treatments

• Metformin
  – Used to normalize insulin sensitivity and regulate blood sugars, often used to treat T2DM, though doesn’t prevent GDM
  – May also decrease testosterone levels
  – Category B
  – Does pass through breastmilk, but very low amount, so considered safe to use in lactation
  – Often used before pregnancy to improve hormonal milieu, promoting fertility
  – Can be appropriate to use this as a first line treatment
  – Can cause GI sx (nausea), dizziness, hypoglycemia
More on Metformin

• One study of lactating women with PCOS should that there was no difference in breast size before or after pregnancy while taking Metformin.

• No difference in duration of exclusive breastfeeding between moms treated with Metformin compared to those not treated with the drug.

• When asked why they stopped nursing at 3 months PP, “no or inadequate milk production” was the most common reply. Not lack of motivation.

• Study confirmed that women with no breast changes in pregnancy had a shorter duration of exclusive or partial breastfeeding. These women were more obese with higher insulin levels= more metabolic issues.

  – Vanky, E. et al Breast size increment during pregnancy and breastfeeding in mothers with polycystic ovarian syndrome: a follow up study of randomized controlled trial on metformin vs placebo. BJOG 2012, 1403-1409
Pharm Treatments Con’t

• Combined Oral Contraceptives
  – Treats acne, hirsutism, alopecia
  – Decreases androgens
  – Desogestrel and norgestimate are better choices of progestin as they are less androgenic
  – Variety of possible s/e

• Antiandrogens
  – Spirolactone treats acne and hirsutism, but causes irregular cycles. For this reason and because it can cause feminization in male fetus, it is used with OCPs.

• GnRH Agonists
  – Suppress pituitary-ovarian axis, decreasing ovarian secretion of estrogen and androgens

• Clomiphene
  – Anti-estrogen used to increase LH and FSH to induce ovulation
  – Slight increase in multiples
Herbs and Supplements

- **Chromium**
  - Regulates insulin action
  - Decreases total cholesterol and LDL

- **Vitex agnus-castus (Chaste berry)**
  - Lowered prolactin levels, improved menstrual regularity and infertility

- **Gymnema**
  - Antidiabetic
  - Hypoglycemia
  - Lipid lowering agent
  - Aids in weight reduction
Lactating Women with PCOS

Treatment and Case Studies
Case #2

• 31 yo female, G1
• Was dx’d with PCOS at age 16 and took Metformin x 2 years and doesn’t remember why she stopped it.
• L breast increased in size during pregnancy, but R breast did not
• Breast exam: breasts are wide spaced, minimal glandular tissue felt in all quadrants, nipple evert
• 1st visit, she comes with her 9 day old baby boy
  – birth weight: 7# 3oz
  – Baby had a frenotomy at the hospital on Day 3
  – Weight at this visit: 6# 8.8oz
# Case #2 - over 4 visits

<table>
<thead>
<tr>
<th></th>
<th>Visit 1</th>
<th>Visit 2</th>
<th>Visit 3</th>
<th>Visit 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Baby’s Age</strong></td>
<td>9 days</td>
<td>2 weeks</td>
<td>4 weeks</td>
<td>7 weeks</td>
</tr>
<tr>
<td><strong>Baby’s weight</strong></td>
<td>6# 8.8oz</td>
<td>7# 1.4oz, Gain of 8.6oz in 5d</td>
<td>8# 2.6, Gain of 17.2oz in 14 d</td>
<td>9# 15.6oz, Gain 29 oz in 21 d</td>
</tr>
<tr>
<td><strong># Breastfeeding</strong></td>
<td>Every 3 hours, transfers 12ml</td>
<td>Every 3-3.5 hours, Transfers 30ml</td>
<td>Every 2 hours Transfers 24ml</td>
<td>Every 3 hours Transfers 68ml</td>
</tr>
<tr>
<td><strong># Pumping</strong></td>
<td>P feedings, gets 1/4oz</td>
<td>P feedings, gets ¼ oz</td>
<td>2-3 x’s/day, gets 1/3oz</td>
<td>1-2 x’s/day, gets 1.2oz</td>
</tr>
<tr>
<td><strong># Supplements</strong></td>
<td>1/4oz after feedings</td>
<td>1-1.5oz (donor milk)</td>
<td>1.5oz of donor milk at each feeding</td>
<td>“at least 2oz after each feeding”</td>
</tr>
<tr>
<td><strong>Changes in Breasts</strong></td>
<td>None</td>
<td>Heavier</td>
<td>No change</td>
<td>Increase in milk</td>
</tr>
<tr>
<td><strong>Plan</strong></td>
<td>1. Check thyroid</td>
<td>1. Rec’d hospital grade pump</td>
<td>1. Discussed pharmacological treatments, rec’d she see her endocrinologist</td>
<td>1. Praised mom’s hard work and supported her commitment to nursing for bonding.</td>
</tr>
<tr>
<td></td>
<td>2. Supplement 0.5-1oz p ea feeding</td>
<td>2. Con’t herbs</td>
<td>2. Discussed how to increase supplementation as baby grows</td>
<td>2. Discussed nursing + supplementing as baby grows</td>
</tr>
<tr>
<td></td>
<td>3. CST for babe</td>
<td>3. Con’t supplementing 1.5 oz at each feeding</td>
<td>4. Reviewed to use SNS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Herbs for mom</td>
<td>4. Reviewed to use SNS</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Weight check in 3 days</td>
<td>5. Weight check in 3 days</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. RTC in 1 week</td>
<td>6. RTC in 1 week</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Working with Mamas with PCOS
What can be done prenatally?

• History: any hormonal issues- dx’d PCOS, thyroid issues, hx of GDM, irregular periods, trouble getting pregnant, any problems nursing previously?

• Breast exam early in pregnancy
  – Has she experienced breast changes?
  – Wide spaced? Shape?
  – Feel glandular tissue or is it smooth?
  – Nipples evert?

• Diet and Exercise: low glycemic diet, exercise 30 min daily
  – Refer to nutritionist
  – Possibly test for GDM early
Preparing for breastfeeding

• Don’t recommend until 38 weeks.
• Pump both breasts with electric pump x 5-10 minutes 3-4 times/day.
  – Reassure mom that she shouldn’t expect to see any milk.
  – Breast stimulation
• Help mom establish her lactation support now before she needs it
After baby is born

• Immediate skin-to-skin
• First nursing within 1-2 hours of birth
• Nurse baby/Stimulate breasts 8-12 times in 24 hours
  – After each feeding, manually express colostrum
  – After each feeding, use electric pump on both breasts x 10-15 minutes to stimulate breasts
  – Ensure that breasts are completely drained at each feeding
• Con’t with low glycemic diet
Herbal Galactogoues

- Fenugreek: 1500mg TID
- Malunggay leaves: ~1000mg TID
- Goat’s Rue: 2ml BID
Rx Medications for Milk Production

• Domperidone (Motilium)- 30-60mg/day, taper off
  – s/e: dry mouth, HA, drowsiness, abdominal cramping/diarrhea, possible arrhythmias, seizures (rare)
  – Not FDA approved so difficult to obtain in US
  – Can order online without rx, but there can be legal issues for mom

• Reglan (Metoclopramide)- 10mg TID, taper off
  – s/e: depression! Drowsiness, nausea/diarrhea, tardive dyskinesia (rare, but advised not to take > 3months)

• Metformin- doesn’t increase prolactin, but can regulate hormonal environment to support lactation
Case #3

• 36yo female with her first baby
• Hx of irregular cycles, acne, facial hair
• Dx’d with PCOS, sx improved with diet and exercise changes, no medications taken
• No significant breast changes in pregnancy
  – Breast exam today: breasts are soft spaced close together, round shape, minimal glandular tissue felt, nipples evert
• Plans to go back to work FT at 8 weeks PP
• Baby’s birth weight: 7# 4oz, at 3.5 weeks old, still not at BW
• At first visit, baby was dx’d with Type 3 ankyloglossia, but parents deferred frenotomy
# Case #3 - over 4 visits

<table>
<thead>
<tr>
<th></th>
<th>Visit 1</th>
<th>Visit 2</th>
<th>Visit 3</th>
<th>Visit 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baby's Age</td>
<td>3.5 weeks old</td>
<td>4 weeks old</td>
<td>4 weeks 5 days</td>
<td>7 weeks</td>
</tr>
<tr>
<td>Baby's weight</td>
<td>7# 2.1oz</td>
<td>8# 2oz</td>
<td>8# 7.7oz</td>
<td>10# 1.5oz</td>
</tr>
<tr>
<td># Breastfeeding</td>
<td>Every 2 hours</td>
<td>Every 2-3 hours</td>
<td>Every 2 hours</td>
<td>Every 2-2.5 hours</td>
</tr>
<tr>
<td></td>
<td>Transfers 28 ml</td>
<td>Transfers 34ml p frenotomy</td>
<td>Transfers 72ml</td>
<td>Transfers 72 ml</td>
</tr>
<tr>
<td># Pumping</td>
<td>2 x's/day</td>
<td>Every 2 hours</td>
<td>2-3 x's/day</td>
<td>Once a day</td>
</tr>
<tr>
<td></td>
<td>Gets 1/4oz each time</td>
<td>Gets 2oz each time</td>
<td>Gets 2 oz</td>
<td>Gets 2-3oz</td>
</tr>
<tr>
<td># Supplements</td>
<td>Gives 6oz of formula and EMB daily</td>
<td>Give 2-4oz at each feeding of formula &amp; EBM</td>
<td>Gives 2-3oz at each feeding of formula and</td>
<td>Give 2-3oz at each feeding of formula and</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EBM</td>
<td></td>
</tr>
<tr>
<td>Changes in Breasts</td>
<td>No engorgement</td>
<td>↑ br fullness &amp; milk output</td>
<td>No change since last visit</td>
<td>Feel fuller to mom</td>
</tr>
<tr>
<td>Plan</td>
<td>1. Rec'd frenotomy and CST for baby</td>
<td>1. Lingual frenotomy</td>
<td>1. Stressed the importance of pumping</td>
<td>1. Long discussion re: how to pump at work,</td>
</tr>
<tr>
<td></td>
<td>2. Nurse 8-12x's/day, ↑ pumping to 8x's/day,</td>
<td>2. Con't with herbs and CST</td>
<td>2. Con't with herbs</td>
<td>how decreased breast stim will affect supply.</td>
</tr>
<tr>
<td></td>
<td>supplemnt 2oz at ea fdg</td>
<td></td>
<td></td>
<td>2. Praised mom for her hard work and commit.</td>
</tr>
<tr>
<td></td>
<td>3. Hospital grade pump</td>
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<tr>
<td></td>
<td>4. Herbs</td>
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What More Can Midwives Do for Moms with PCOS?

• Rule out any issues baby might have that contribute to breastfeeding obstacles.

• Meet mom where she is- what her HER goals?
  – Does she feel more strongly about nursing or offering milk?
  – How does she feel about using donor milk
  – Would she be willing to use an SNS throughout her BF relationship?

• Refer to counselor: issues with body image, “my breasts failed”, PP depression, hx of miscarriage

• Be realistic about breastfeeding success. Help mom define what success means to her.

• Refer to IBCLC and endocrinologist who has experience with PCOS or IGT.

• More research on PCOS and lactation!
Thank you for the work you do!
Bibliography


