PCOS and Lactation

Kristina Chamberlain, CNM, ARNP, IBCLC

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

What is PCOS?

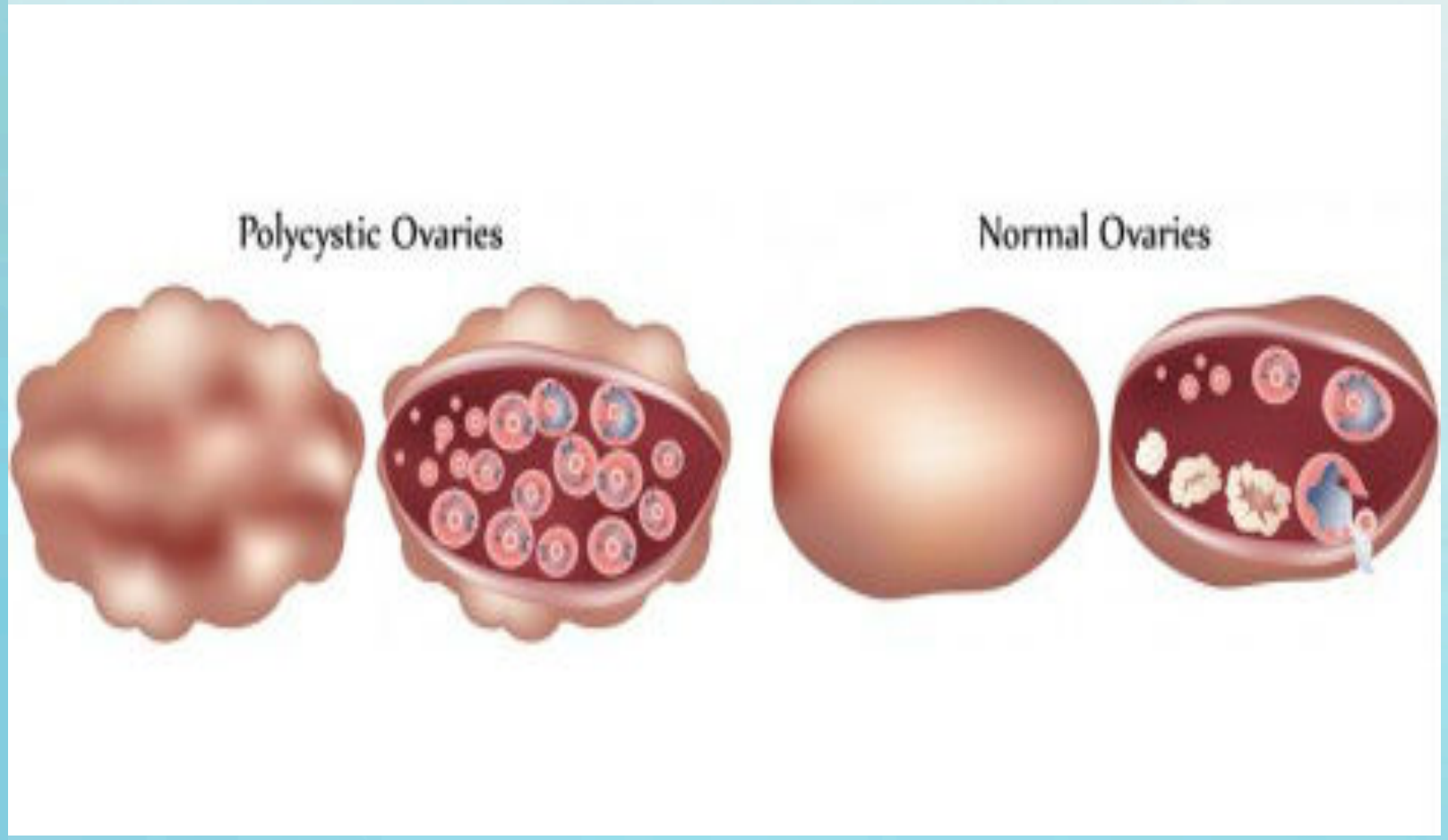
- Polycystic Ovarian Syndrome (PCOS) is an endocrine disorder.
- One of the most frequent reasons women of childbearing age see gynecologist or other women's health care provider.
- No known cause. Possible genetic predisposition.
- Affects 10% of women in the US
- Not all women with PCOS will have lactation issues.

The Stats

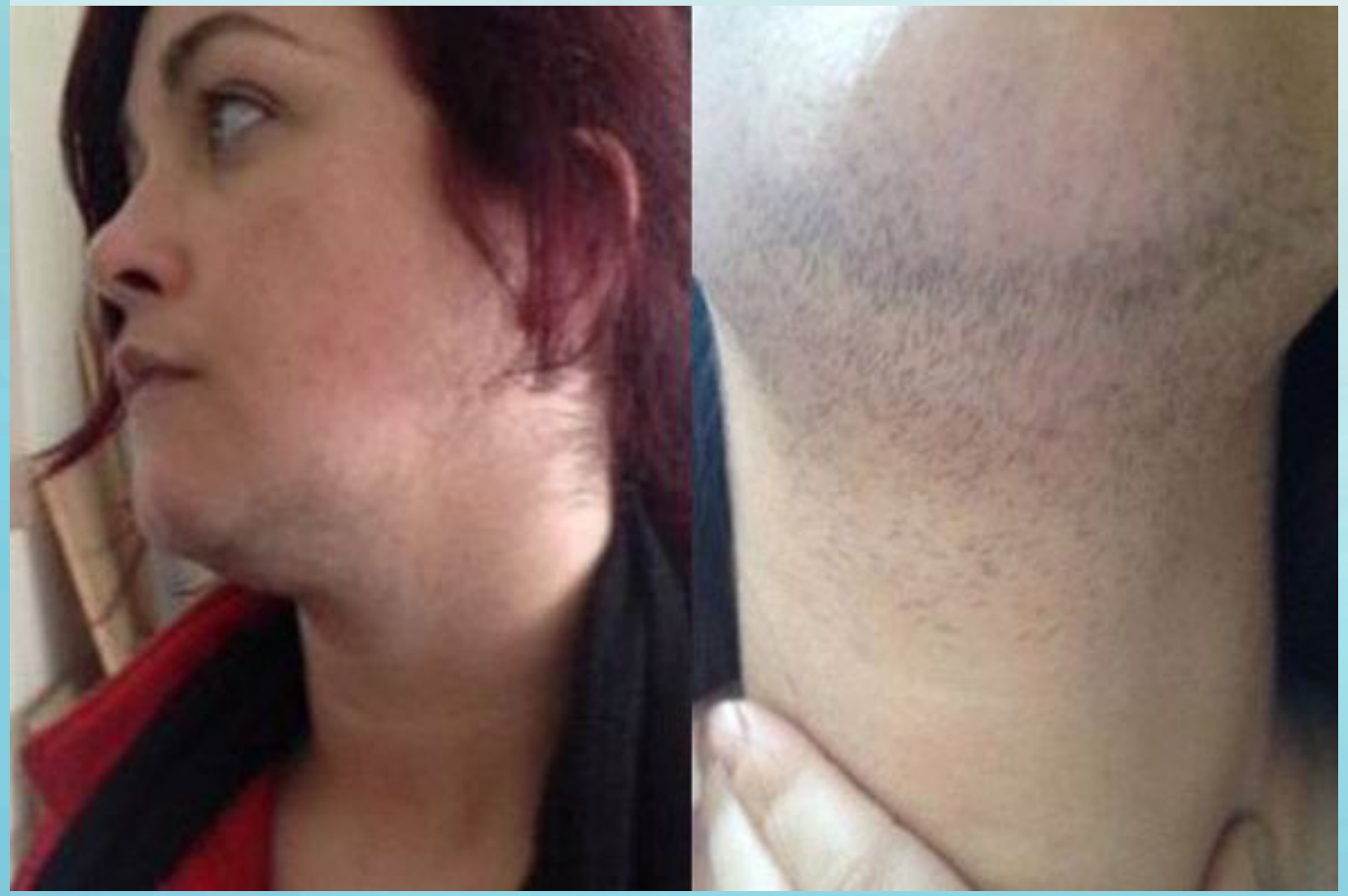
- 75-80% of women with PCOS have irregular cycles
  - 5-9 cycles/year, length: 40-65 days
- 60-80% have hirsutism
- 40-70% have alopecia
- 40-60% have acne
- 75% are overweight or obese

- 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!

Rotterdam Criteria



There is no ovulation with polycystic ovaries.



Hirsutism can also be on chest, abdomen, and inner thighs.

Other symptoms of PCOS

- 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

- ↑ 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?

- 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 lactogeniesis II (when the milk “comes in”)

How does PCOS affect breast development?

The Role of Insulin

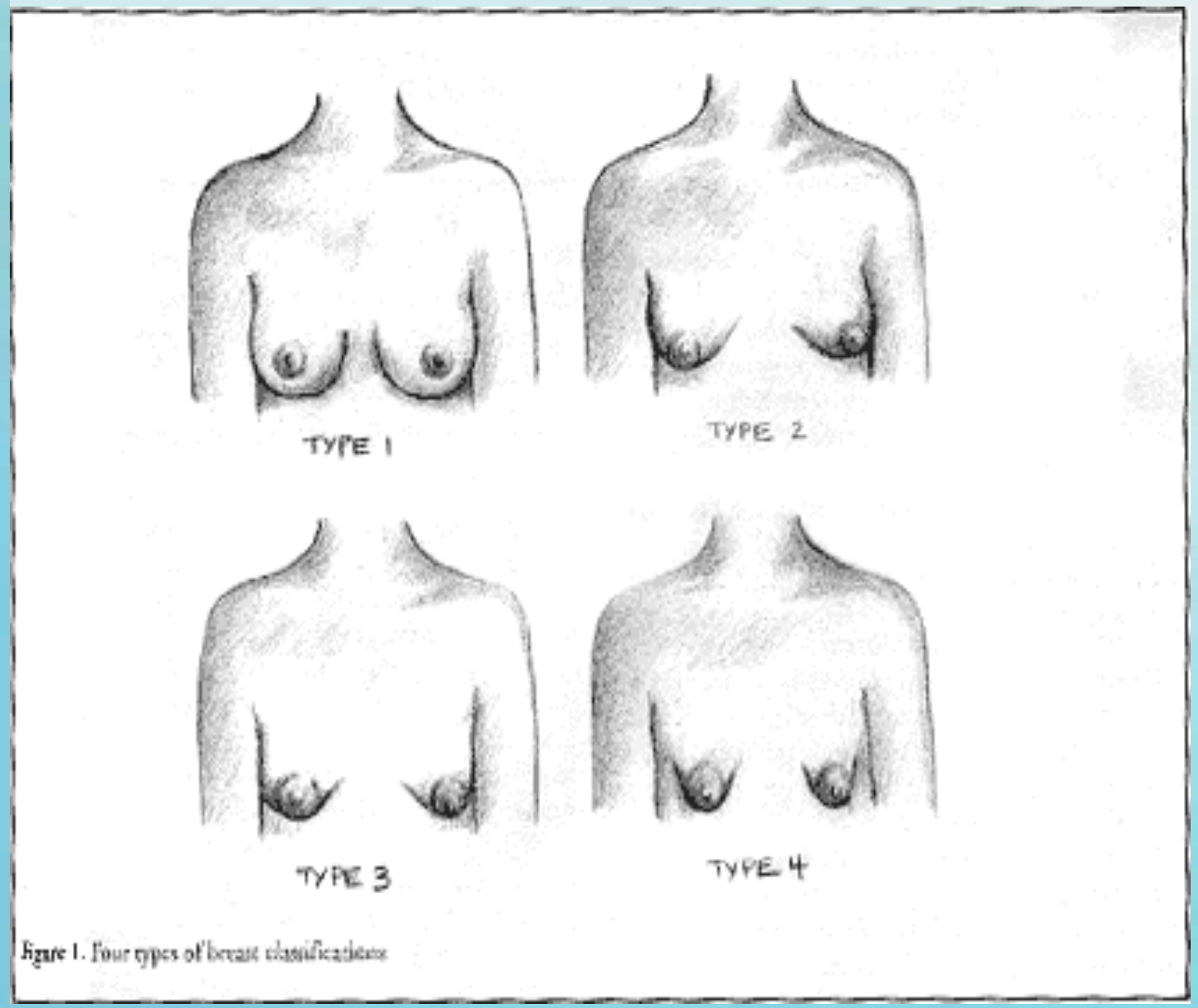


Figure 1. Four types of breast classification

Type 1 reflects normal breast development.

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

Huggins, K., Petok, E., Mireles, O. *Markers of lactation insufficiency: a study of 34 mothers*. Issues in Clinical Lactation. 2000, 25-35

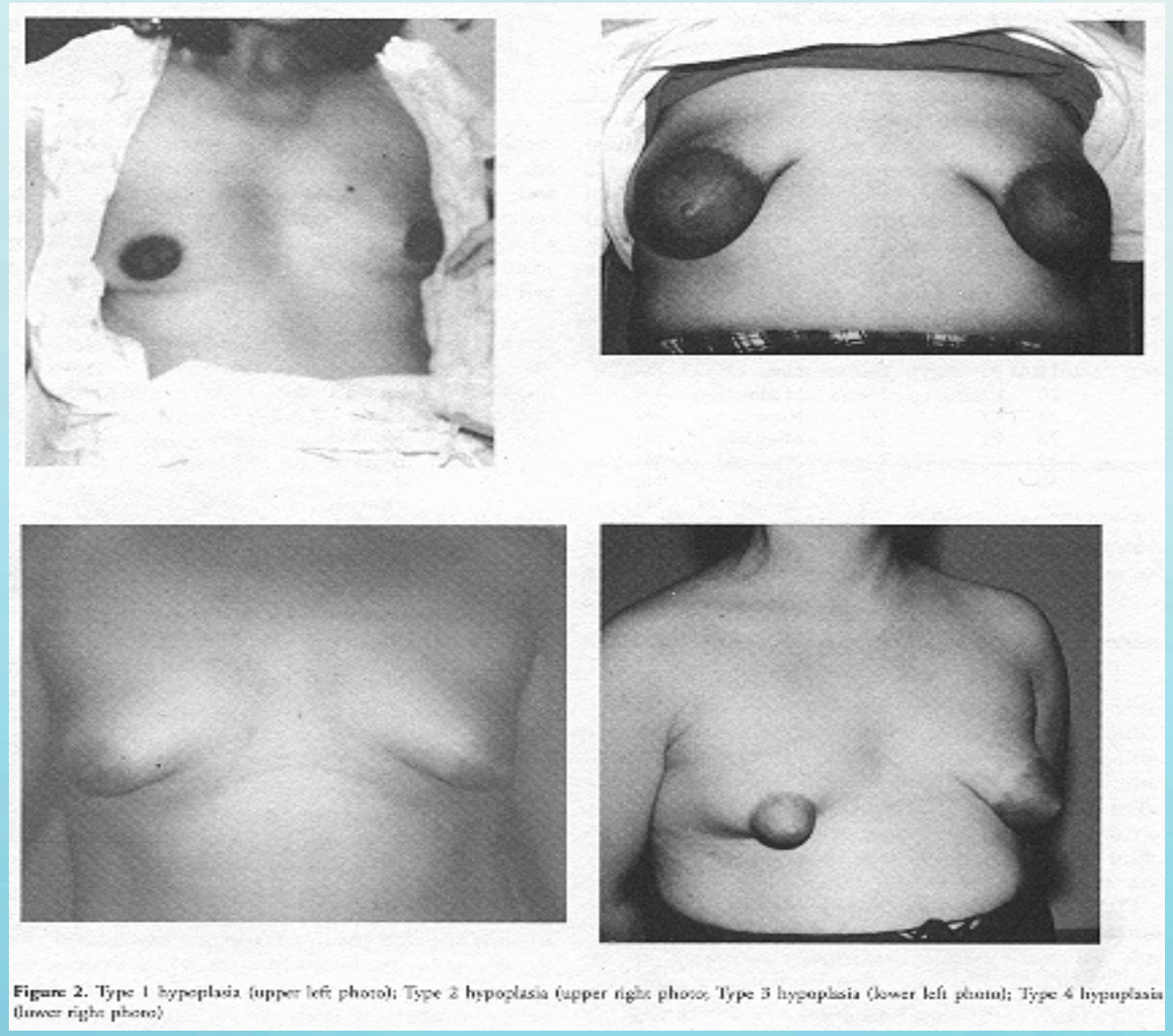


Figure 2. Type 1 hypoplasia (upper left photo); Type 2 hypoplasia (upper right photo; Type 3 hypoplasia (lower left photo); Type 4 hypoplasia (lower right photo)

Huggins, K., Petok, E., Mireles, O. *Markers of lactation insufficiency: a study of 34 mothers.* Issues in Clinical Lactation. 2000, 25-35

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

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

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
  - http://newborns.stanford.edu/Breastfeeding/HandExpression.html
  - 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

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

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!

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