

Jenny Thomas, MD, MPH, IBCLC, FAAP, FABM



Dr. Jen 4 Kids

www.drjen4kids.com

A Physiologic Approach to Low Milk Supply

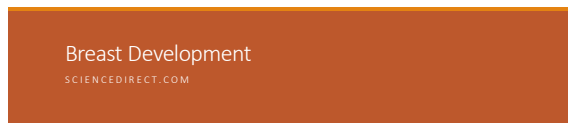
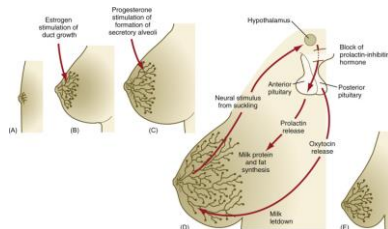
JENNY THOMAS MD, MPH, IBCLC, FAAP, FABM

1

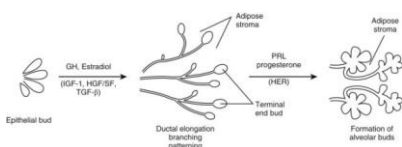
Hormones Involved in Breast Development

DID YOU EXPERIENCE BREAST GROWTH DURING PREGNANCY?

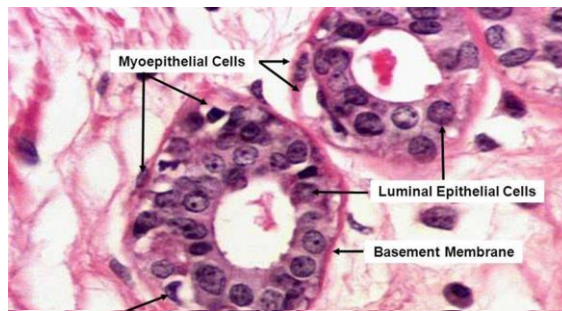
2



3

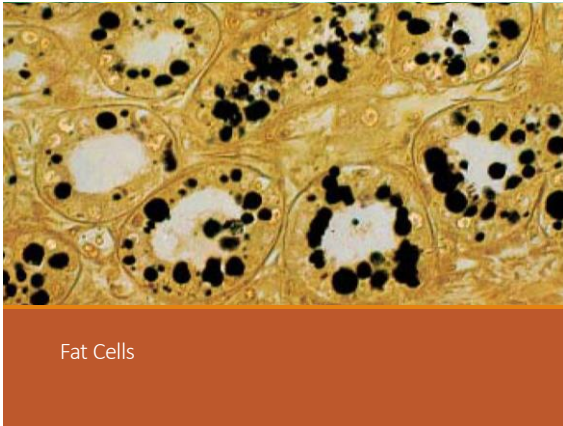


4



5

6



7

Lactogenic Hormone Complex

Estrogen in pregnancy helps increase prolactin.

The creation of milk also needs **insulin**, to help increase the number of supporting structures.

Cortisol needs to be around to help with the formation of alveoli.

8

Potential Abnormalities

- Failure to develop any part of the breast structure
 - congenital anomalies
 - Insufficient glandular tissue
- Acquired breast abnormality
 - Usually iatrogenic
- Stuff we just don't know about yet

9

What to do if no breast growth has occurred

If the answer to our breast growth question is "no" then we might need to set some realistic expectations for milk supply. If we didn't create the structures, we very well might have milk production issues.

10

Regulation of Production

Do you have any ongoing medical problems?

11

During Pregnancy

Human Placental Lactogen (HPL) and Progesterone prevent milk release.

Progesterone sensitizes mammary cells to the effects of insulin

Thyroid hormones increase sensitivity to prolactin

12

Question

- True or False?
- Insulin plays a role in breast growth during pregnancy and in milk production

13

Normal Milk Production

Lactogenesis Stage II: Secretory activation

Initiation of copious milk secretion associated with major change in many milk constituents

Triggered by withdrawal of progesterone

Requires prolactin, insulin and cortisol

14

Oxytocin and Prolactin

Regulation of Milk Synthesis, Secretion, and Ejection

15



Prolactin

- Hormone comprised of 199 amino acids
- Secreted from the anterior pituitary.
- Major role is in milk secretion
- Other roles include
 - Osmoregulation
 - Metabolism and regulation of both the immune and the nervous systems.

16

Prolactin

Known component of breastmilk

Made by the lactating breast

As a part of breastmilk, it exerts immunomodulating effects in the newborn when it helps with lymphocyte cell growth and function.

Prolactin in milk also influences maturation of gastrointestinal epithelium.

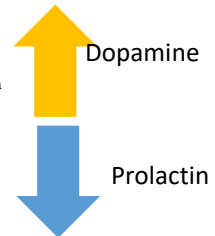
Prolactin can be affected by insulin, cortisol, thyroid hormones, parathyroid hormones and growth hormone.

17

Prolactin Regulation

Dopamine constantly inhibits prolactin making prolactin the only hormone to be regulated in a such a way.

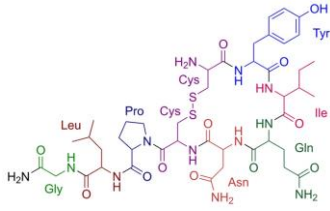
Most hormones have factors that increase or decrease hormone production to keep it in a steady range.



Wpinski A, Kasprinski M, Shew T, Fotherall BA, Rajda K, Quast TJ. Prolactin—not only lactotropin. A “new” view of the “old” hormone. J Physiol Pharmacol. 2012;204:R53-65-64.

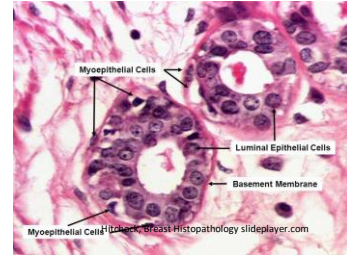
18

Oxytocin



19

Oxytocin: Myoepithelial cells



20

Oxytocin: the love hormone

- Inhibited by adrenaline



21

True or False

Poll Question

Suckling triggers the release of prolactin and oxytocin but only prolactin can be released by other mechanisms.

22

Differences in Mechanism of Release

Oxytocin and Prolactin are stimulated by nipple stimulation

Oxytocin can be released under other conditions; Prolactin cannot

Prolactin release occurs after a delay of about 10-20 minutes and lasts for at least an hour.

Oxytocin is released in short pulses that appear within minutes after suckling. The rise in oxytocin levels last only 20-30 minutes.

23

First Several days



Milk production after delivery

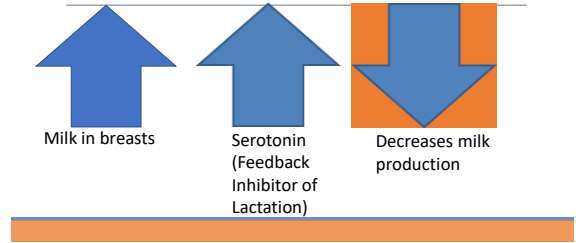
24

Normal Milk Production

- Lactogenesis Stage II: Secretory activation
- Initiation of copious milk secretion associated with major change in many milk constituents
- Triggered by withdrawal of progesterone
- Requires prolactin, insulin and cortisol

25

Feedback Control of Milk Production



26

Poll Question

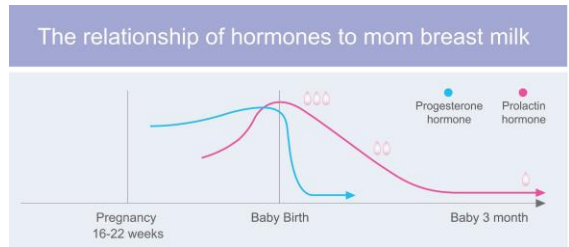
True or False

Because the process for milk production in the first days after birth is due to endocrine causes, milk supply at that time is not dependent on milk removal.

27

Retained Placental Fragments

Suspect this if mom truly has "no milk"



28

Medroxyprogesterone

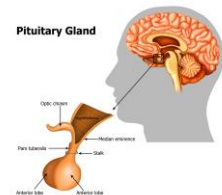
- No link found between early use of progesterone only contraceptives and low milk supply
- Current evidence is methodologically weak
- Need informed consent

Brownell, Breastfeeding Medicine, 2012

29

Stressful Delivery

- C-Section
- Post-partum Hemorrhage
- Sheehan Syndrome



30

Supporting Mothers after Birth



31

Get Ready and Anticipate Problems

- Breast growth during pregnancy
- History of medical issues
- History of fertility issues
- Plan ahead with a plan that works for both the team and the family
- Priorities are the latch and skin-to-skin

32

Researching the Latch

- Semi-prone positioning
- Feet anchored
- Hips abducted
- Allow to self-attach



33



Skin to Skin

- The transition to extrauterine life is a tricky one with amazing transitions which need to occur, quickly and efficiently
- May be one of the most dynamic and potentially dangerous times in the life cycle

34

Skin to Skin

- One established way to help with the transition
- Facilitates breastfeeding
- Maintains newborn temperature
- May be a method to promote the neurobehavioral self-regulatory responses of the infant after delivery.

35

Polycystic Ovarian Syndrome

36

PCOS

- Affects up to 18% of reproductive aged women
- Problems that affect breastfeeding
 - increased androgens
 - insulin resistance
 - obesity

37

PCOS: Hormone issues

- Postulated role of Metformin in helping with breastfeeding
- No connection found
- Connection between breast growth during pregnancy and breastfeeding overall success

38



39

Outcome of Pregnancy



40

Maternal Outcomes

- Gestational diabetes
- Preeclampsia
- Urinary tract infections (risk for preterm labor)
- Induction of labor
- Elective C-Section

41

Maternal Outcomes

- Fetal Macrosomia
 - Anemia
 - Prolonged labor
 - Emergency C-section
 - Increasing severity of tears
 - Post-partum hemorrhage

42

Risk to Baby

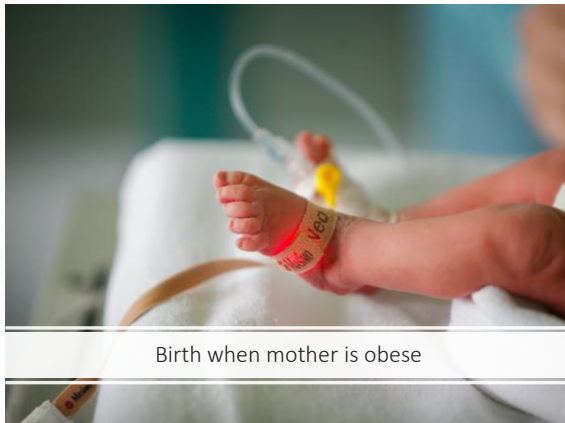


43

Antenatal Milk Expression

• DAME study: There is no harm in advising women with diabetes in pregnancy at low risk of complications to express breastmilk from 36 weeks' gestation. (Forster, Lancet, 2017)

44



45

Breastfeeding issues

A woman's ability to act on her intentions to breastfeed may be affected by the medical consequences of her obesity.

46

Breastfeeding Problems

- Lack of social support
- Difficulty positioning baby at breast
 - Due to obesity
 - Due to large breasts
 - Both
- Due to C-section, birth trauma

47

Prolactin and Obesity

Overweight and obese women (BMI>26) had a lower prolactin response to suckling during this critical time for milk production.

After day 7, the response to prolactin is the same as non-obese women.

48

Management: skin-to-skin



49



Management

- Avoid or minimize separation of the mother and infant
- Target these moms for lactation consultant visit
- Know that you know the problems, watch for them

50

After the First Few Days

- Poor supply
 - Any number of latch issues
 - Tongue-tie
 - Other baby anatomical issues like cleft lip and palate.
- Supplementation
 - Birth weight
 - Bilirubin
 - Blood sugars
- Confidence

51

Perceived Insufficient Milk Supply

- Do, or do not. There is no try.
- Misperception of actual milk supply
- Mothers are supplementing and weaning because they feel as if they have "no milk" or "I can't satisfy him"



52

Perceived Insufficient Milk Supply

- Is as important as Star Wars.
- It's a cultural phenomenon. It's everywhere.
- It's marketed, and grosses lots of money.
- And the story is passed down from generation to generation.

53

Perceived Insufficient Milk Supply

- Lack of social support
- Marketing practices of infant formula companies
- Non-evidence-based maternity care practices
- Maybe "I don't have enough milk" is a socially acceptable way to stop breastfeeding.

54

After Breastfeeding is Going Well

- Work, pumping
- Contraception
- Depression
- Baby sleeping longer
- Pregnancy
- Oversupply- lost the latch
- New medications

Summary



Take a great history



Anticipate problems and make a plan



Fix problems that can be fixed: fixing the latch and pumping might not help

55

56



Summary

- Did you have breast growth during pregnancy?
- If no, we may need to set realistic expectations



Summary

- Do you have any medical problems?
 - If thyroid disease, advocate to fix them
- If insulin-related issues,
 - emphasize importance of glucose control
 - Pumping at 36 weeks

57

58



Summary

- If obesity-related
 - Importance of positioning, skin-to-skin
 - Prolactin sensitivity increases after day 7
- If a stressful delivery
 - Latch
 - Skin-to-skin
 - Supplement as necessary



Questions



59

60