

PedsCases: Acne Part I

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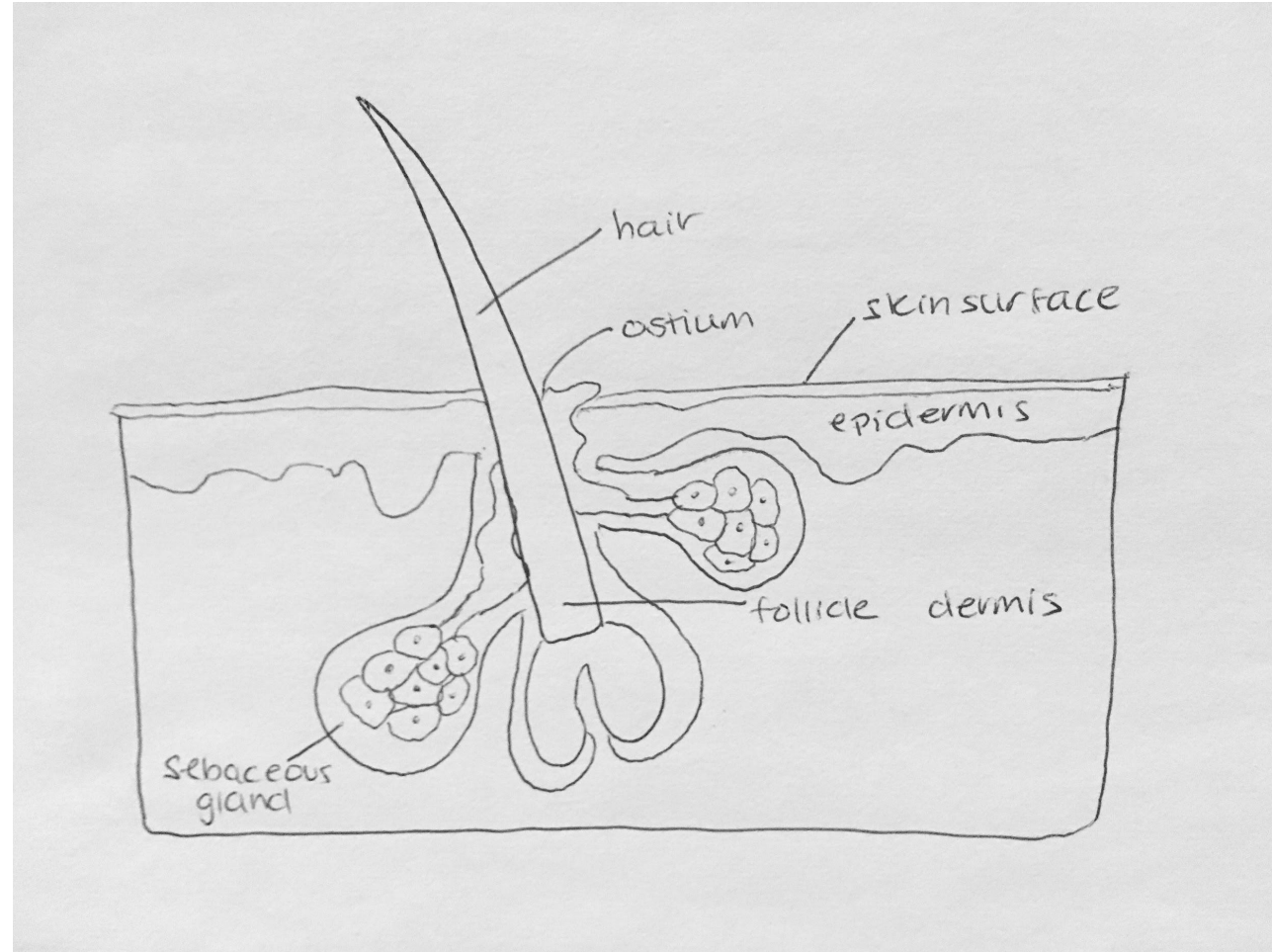
Objectives

1. Describe the epidemiology, etiology, and pathogenesis of acne.
2. Recognize the clinical presentation of acne in neonates, infants, children, and adolescents.
3. Distinguish between mild, moderate, and severe acne.
4. Recognize the complications of acne.

Introduction

- Acne vulgaris
- Acne is most often seen in adolescents
- Prevalence ~70-87% of children over the age of 12
- May be the first sign of puberty
- Multiple factors contribute to development of acne

Anatomy – Pilosebaceous Unit



Pathogenesis

1. Abnormal keratinization
 2. Androgenic stimulation of sebum production
 3. Inflammation (neutrophilic attack)
 4. Bacteria (*Propionibacterium acnes*)
- Genetics
 - Environmental factors
 - Stress
 - Skin occlusion
 - Medications (systemic corticosteroids for example)

Case 1

Joshua is a 3 week old male brought to your pediatric clinic by his mom for a rash on his cheeks.

Upon gathering further history, mom tells you that the rash started on his cheeks about 1 week ago. She has been using moisturizer on the rash thinking it was eczema, but it has not helped. She is worried that it is infected because of all the little bumps. She denies any recent infectious symptoms or contacts.

On exam, you note numerous erythematous papules and pustules to the cheeks bilaterally, and a few papules scattered on his chest. The rest of the exam is unremarkable.

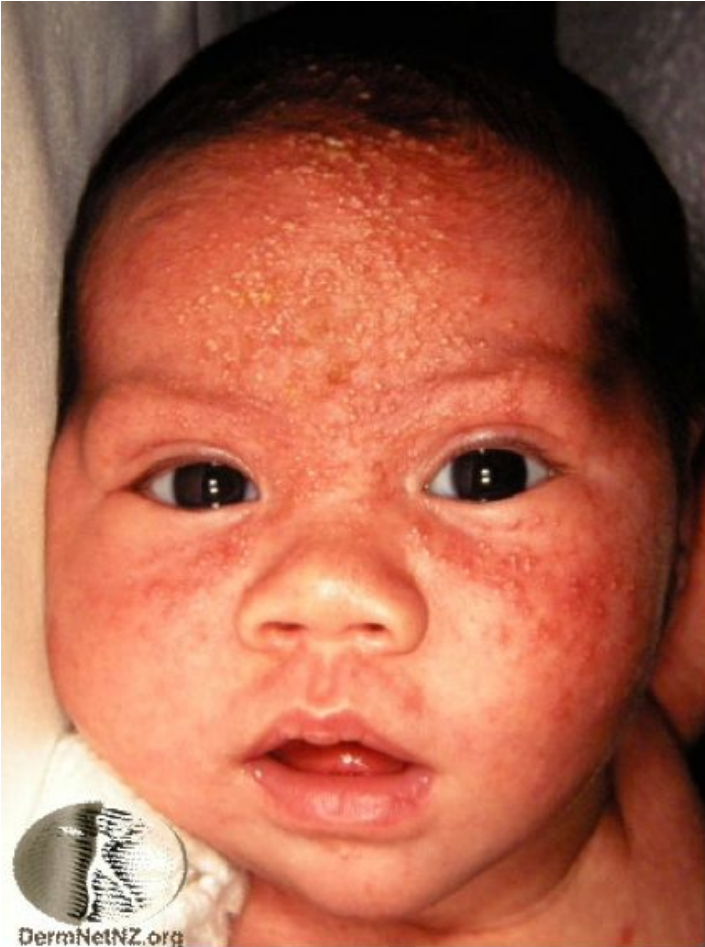
Case 1



Neonatal Cephalic Pustulosis

- Presents from birth to 6 weeks of age
- Affects ~20% of newborns
- Lesions usually present at 2-3 weeks of life, resolve by 2-3 months of age
- Mixture of papules and pustules
- Usually on the face, neck, upper chest, scalp
- Tends to affect the cheeks the most
- NO comedones
- Inflammatory reaction to *Malassezia furfur*

Neonatal Cephalic Pustulosis



Case 1

You diagnose Joshua with neonatal acne and reassure his mother that this is a self-limiting process that does not need treatment in most cases.

Case 2

Joshua's lesions resolve within a month. Everything was going well until 3 months later, you see his name on your schedule again.

When you see Joshua today, mom tells you the rash that he had when he was younger is back. Mom says the rash started as a few red bumps and now involves his cheeks, nose, and forehead.

When you examine Joshua, he has numerous comedones, papules, and pustules on his cheeks bilaterally and some scattered papules and comedones on his nose and forehead. There are no signs of hyperandrogenism or endocrine disease such as breast development, pubic hair, increased muscle mass, or testicular growth.

Case 2



Infantile Acne

- Affects babies 6 weeks to 12 months of age
- Usually presents between 3 and 6 months
- Can persist for 6-12 months or more
- Presents with comedones*, papules, pustules, sometimes nodules
- Most cases self-resolving
- Rule out underlying endocrine disorder

Infantile Acne



Case 2

You explain to mom that this time, the acne lesions are due to hormonal changes at this age.

You are confident that this is infantile acne, and not neonatal acne because Joshua is now older and you can see comedones.

You reassure her that the acne will go away with time, and that he is otherwise very healthy. You recommend a mild, pH neutral baby face wash for now.

Case 3

You don't hear from Joshua and his mom for a while.

Several years later, you see Joshua's name on your schedule again. The receptionist had booked him in yet again for a “rash”. This time when you see Joshua and his mom, the rash looks quite different. Mom asks you if this is acne again, but you tell her that acne in this age group is quite rare. This time, the lesions are in the child's groin, armpits, behind the knees, and on his neck. He doesn't have any lesions on his face.

You take a closer look at the individual lesions and note that they are flesh colored to pink papules with an umbilicated centre. They appear to have a shiny, waxy surface. Some of the lesions are in a linear pattern, as if they had spread from scratching.

Case 3



Case 3



Case 3

You diagnose Joshua with molluscum contagiosum, a common viral infection in kids. You advise mom that no treatment is necessary, as the infection will clear on its own with time, but reinforce the importance of hand hygiene and avoiding any scratching as this can spread the virus.

Mid-Childhood Acne

- Rare for acne to present in this age group
- Between age 1 to 7
- Hormonal axis is suppressed and adrenal androgen production is low
- Investigate for causes of hyperandrogenism if true mid-childhood acne is present and refer to Endocrinology when appropriate
- Consider other causes for the lesions

Case 4

Joshua's molluscum lesions go away eventually and you don't hear from him or his mom for a while.

One day, you see Joshua marching down your clinic hallway. You check your schedule and realize his 9 year old sister, Marissa, is booked in to see you. When you go to see Marissa, mom tells you she has had a rash on her face for a few months now and thinks it is acne. Mom also noted that Marissa seems to be more moody lately.

When you examine Marissa, you note numerous comedones to her chin, nose, and forehead. You agree that it is acne and inform mom that Marissa is likely starting puberty.

Case 4



Preadolescent Acne

- Presents in children between age 7 and 12
- More commonly in girls in this age group
- Typically affects the T-zone (forehead, chin, nose)
- Usually consists of comedones
- Inflammatory lesions uncommon
- If severe on presentation or other signs of excess androgens, consider endocrine disorder in differential

Comedones



Case 4

You educate Marissa to start using benzoyl peroxide 2.5% applied to her face at bedtime, as her acne is fairly mild. This can be bought over the counter.

You also advise her to use a mild soap to wash her face twice a day, like Dove or Aveeno. She tries this for a few months and tells you it works well for her.

Case 5

Years go by, and Joshua returns to your clinic with another rash. You check his chart and he is now 14 years old! How the time flies.

When you go in to see him, he tells you he has developed a rash on his face and upper body over the past few months. He has tried washing his face more often and showering with a new shower gel. Nothing seems to be helping. He just started playing hockey again for the season and he finds the rash has become worse since then. He plays goal tender, so he wears a lot of protective padding. He is really distressed about his skin, and said his hockey friends are starting to make fun of him all the time. He is also finding the lesions to be painful now, and sometimes can't sleep because his skin hurts.

On exam, you see numerous papules, pustules, nodules, and cysts involving most of his face (especially his forehead and chin) upper back, and chest. He also has some scarring from older lesions on his face and back.

Case 5



Adolescent Acne

- Affects teenagers between the age of 12 and 19
- Can present as mild, moderate, or severe
- Many types of lesions including comedones, papules, pustules, cysts, and nodules may be present
- Comedones: blackheads & whiteheads
- Papule: small, raised, red bumps
- Pustule: pus-filled papule on an erythematous base
- Nodule: solid elevation <1 cm in diameter, deeper than it is wide
- Cyst: nodules that contain fluid or semisolid material

Papules and Pustules



Nodules and Cysts



Adolescent Acne

Mild acne

- Comedonal acne with few scattered papules
- Involves mainly the face, particularly the T-zone

Moderate acne

- Many papules and pustules
- +/- comedones
- 1-2 nodules
- Involves the face, chest and/or back
- May cause some small, shallow scars

Adolescent Acne

Severe acne

- Many papules, pustules, nodules
- +/- comedones
- Cysts and/or sinus tracts
- Involves the face, chest and/or back
- Painful, may cause bleeding or visible drainage
- Can cause extensive scarring

Acne Conglobata: severe nodulocystic acne with sinus tracts and abscesses

Acne Fulminans: sudden onset nodular and suppurative acne with systemic signs and symptoms; requires emergent assessment by a dermatologist

Case 5

We will discuss the rest of Joshua's case, including what we chose for treatment, in our next Podcast!

Other Considerations

- Mental health
- Self-esteem
- How much acne bothers your patient
- Comprehensive adolescent care

Conclusion

- Acne can occur in any age group
- Red flag if it presents for the first time in children between 12 months of age and 7 years old
- Pathogenesis: abnormal keratinization, excess sebum production, inflammation, and bacteria
- Acne can be classified as mild, moderate, or severe depending on the predominant lesion
- Can also be classified as non-inflammatory or inflammatory
- Acne fulminans is a systemic disease and requires emergent assessment by a dermatologist
- Remember to address the impact acne has on your patient's mental health and social functioning

References

Images:

Slide 6: <http://www.dermnetnz.org/topics/neonatal-cephalic-pustulosis>

Slide 8: <http://www.dermnetnz.org/topics/neonatal-cephalic-pustulosis>

Slide 11 & 13: <https://www.dermnetnz.org/topics/infantile-acne>

Slide 16: <http://www.dermnetnz.org/topics/molluscum-contagiosum/>

Slide 18: <http://www.dermnetnz.org/topics/molluscum-contagiosum/>

Slide 21: <http://www.dermnetnz.org/topics/comedonal-acne>

Slide 23: <http://www.dermnetnz.org/topics/comedonal-acne>

Slide 26: <http://www.dermnetnz.org/topics/acne-vulgaris/>

Slide 30: <http://www.dermnetnz.org/topics/acne-vulgaris/>

Slide 31: <http://www.dermnetnz.org/topics/inflammatory-lesions-in-acne/>

Slide 32: <http://www.dermnetnz.org/topics/acne-vulgaris/>

Slide 33: <http://www.dermnetnz.org/topics/acne-affecting-the-back-images/>

Literature References:

1. Eichenfield LF, Krakowski AC, Piggott C et al. Evidence-based recommendations for the diagnosis and treatment of pediatric acne. *Pediatrics* (2013): 131(3); S163-186.
2. Basak SA, Zaenglein AL. Acne and its management. *Pediatrics in Review* (2013): 34(11); 479-497.
3. Habif, TP. *Clinical Dermatology: A color guide to diagnosis and therapy*. 6th Ed. Elsevier 2016. ppg . 225-226.
4. Bologna JL, Schaffer JV, Duncan KO, Ko CJ. *Dermatology Essentials*. Elsevier 2014. pp. 246.