Pathophysiology of Acne

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No relevant conflicts to disclose
Acne is an **inflammatory** disease
- inflammation before/during comedogenesis

- Androgens
- Sebum production
- Abnormal keratinization
- *Propionibacterium acnes*

**Inflammation**

**Innate Immunity**
**P. acnes**

- TLR-2
- keratinocytes
- inflammatory cells

**Antimicrobial Peptides**

- Lipase

- Sebum $\rightarrow$ FFAs

- NF-κB

- IL-1
- IL-6
- IL-8
- TNF-α

- PMNs
- Macrophages

- MMPs

**Inflammation**

**Follicular Wall Rupture**
Hyperkeratinization

Androgen stimulation

↑↑ sebum
Impaired follicular barrier function

↓↓ Linoleic acid

P. acnes

IL-1α

Keratinocyte activation

↓ TLR-2

NF-κB

Oxidized squalene

Hyperkeratinization
Conclusions

• Role of sebaceous glands in comedogenesis
• Better understanding of retinoid mechanisms
• Novel therapeutics
  • 5-LOX inhibitors (Zileuton approved for asthma)?
  • Topical linoleic acid?
  • Vitamin D?
  • Topical melanocortin receptor antagonists?
  • Blocking stress responses?