Game plan

Lecture

Case Studies: Skin and eye diseases <u>Lab</u>

Major Unknown

Major Unknown Quiz

Skin- first line of defense



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• Structural:

Epidermal and dermal layers

Stratum corneum contains keratin

 Physical and chemical defense factors

Lacrimal apparatus- first line of defense



• Physical and chemical defense factors

Skin/Eye Lesions

- Causes:
 - Direct penetration of pathogen
 - Hematogenous spread of pathogen to site
 - Cutaneous manifestations of systemic diseases
- Classified by anatomical level of infection
 - Superficial
 - Deep (necrotizing fasciitis)
- Lesion type important for diagnosis

Lesions





(a) Vesicle







(c) Macule

Staphylococcal infections

- Clinically divided by coagulase positive or negative
- Characteristics of coagulase-positive *S. aureus*:
 - Can survive for months on solid surface
 - Produces toxins: hemolysins, enterotoxins, superantigens
 - Blocks chemotaxis of neutrophils
 - Produces toxins that kill neutrophils
 - Resistant to opsonization
 - Resistant to lysozyme
 - Human antibodies unable to prevent multiple infections
- Can causes folliculitis, sty, abscess, impetigo, bullous impetigo and scalded skin syndrome

Staphylococcal infections- scalded skin syndrome





Streptococcal infections

- Clinically divided by hemolytic ability
- Characteristics of β-hemolytic *S. pyogenes*:
 - 80 immunological subtypes that vary by M protein
 - M protein prevents activation of complement (and thus downstream effects)
 - Contains streptokinases, hyaluronidases, deoxyribonucleases, streptolysins
- Can cause strep throat, leading to erysipelas, and necrotizing fasciitis ("flesh-eating" bacteria) due to exotoxin A

Streptococcal infections- erysipelas and impetigo



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Invasive Group A Streptococcal (GAS) Infections







Pseudomonas aeruginosa infection and infectious granuloma



Papillomavirus spp- dermal warts



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Papillomavirus spp- A little something different



Variola virus- smallpox



Varicella zoster virus- chickenpox and shingles



Measles (Rubeola)





Tinea infections- cutaneous mycoses



(a) Ringworm

(b) Athlete's foot

Blastomycoses dermatitidis- subcutaneous mycoses



Figure 19-17a Microbiology, 6/e © 2005 John Wiley & Sons

Candidiasis



(a) Candida albicans

(b) Oral candidiasis, or thrush

Candidiasis



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Soil organisms (*Madurella* and actinomycetes)-Madura foot or Eumycetoma





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Figure 19-19a Microbiology, 6/e © 2005 John Wiley & Sons

Sarcoptes scabiei- Scabies



Chlamydia trachoma- trachoma

