



Soft tissue infections



MUDr. Anežka Gryndlerová

Content

- ▶ Bacterial soft tissue infections
- ▶ Fungal skin infections - examples
- ▶ Case studies



Bacterial soft tissue infections

Local ATB therapy

- ▶ Framykoin = neomycin-sulfate + bacitracin
- ▶ Bactroban = mupirocin
- ▶ Fucidin = fusidic acid



Bacterial soft tissue infections

- ▶ Impetigo
- ▶ Folliculitis, furuncle, carbuncle
- ▶ Cellulitis
- ▶ Erysipelas
- ▶ Necrotizing soft tissue infections
- ▶ Skin ulcers of infectious etiology
- ▶ Other (erysipeloid, erythema migrans, ...)



Impetigo

- ▶ Epidermis
- ▶ *S. aureus*, *S. pyogenes*
- ▶ Children, highly contagious
- ▶ Face, scalp, hands
- ▶ Impaired skin barrier (excoriations, stings)
 - ▶ Skin microbiota, direct inoculation
- ▶ Vesicle/pustule → „honey-colored“ crust
- ▶ Bullous form (= bullous impetigo)
 - ▶ *S. aureus* with exfoliatin production („localised form of SSSS“)



Impetigo

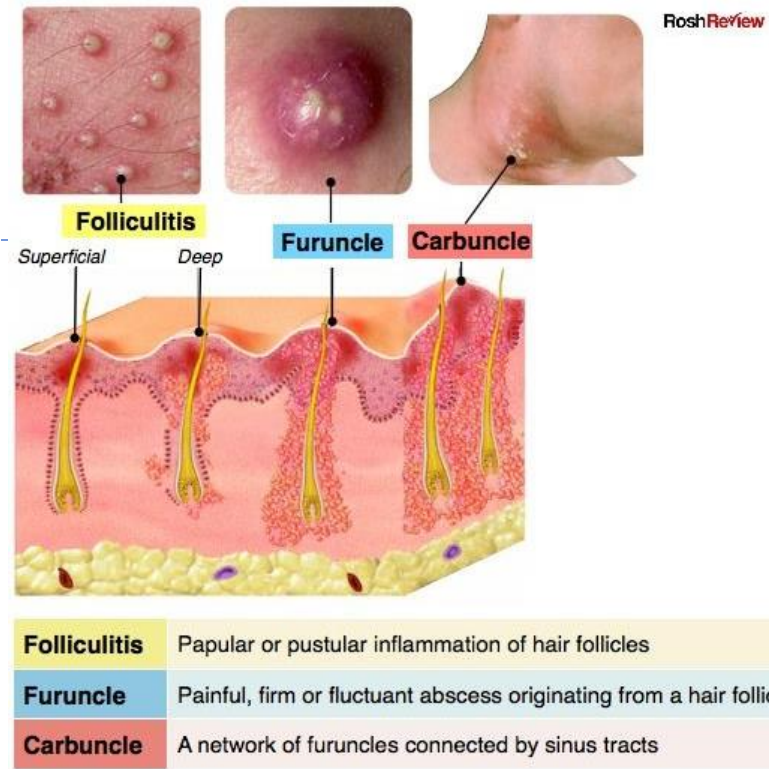
- ▶ **Diagnosis: clinical presentation, culture**
- ▶ **ATB therapy**
 - ▶ Local, systemic (penicilin V, flucloxacilin, cef. I. gen., lincosamides), combination (local+systemic)

Impetiginization – secondary purulent infection of other primary skin disease



Folliculitis, furuncle, carbuncle

- ▶ *S.aureus*, *C.acnes*
- ▶ Therapy
 - ▶ Spontaneous healing
 - ▶ Local desinfection, ATB
 - ▶ Surgery
 - ▶ Systemic (p.o./i.v.) ATB
 - ▶ Carbuncle – high body temperature, fever, febrile, shivering, fatigue, malaise
 - ▶ Oxacilin, flucloxacillin, clindamycine




Celullitis

- ▶ Purulent skin and subcutaneous infection
- ▶ Mostly *S. aureus*, *S. pyogenes*, other β -hemolytic streptococci
- ▶ Impairment of skin barrier (excoriations, trauma, chronic skin defects, surgery, drug abuse, tinea, ...)
- ▶ Local inflammation signs, diffuse margins, systemic inflammation signs
- ▶ Oxacilin, flucloxacilin, cephalosporins of I./II.gen., clindamycin
- ▶ Pus formation (→ abscess)

L03

Flegmóna - celulitida [cellulitis]
Cellulitis [Phlegmone]



Erysipelas

- ▶ Skin and superficial lymphatic vessels
- ▶ Shin, face
- ▶ *S.pyogenes*
- ▶ Skin barrier impairment
- ▶ Local inflammation signs, defined margins, systemic inflammation signs
- ▶ „St. Anthony´s fire“
- ▶ Diagnosis: clinical presentation + blood culture
- ▶ Penicilin G i.v.
- ▶ Complication – lymphatic vessels damage



Necrotizing soft tissue infections

- ▶ Severe infections, fast progression
- ▶ Toxins
- ▶ Skin above the lesion doesn't have to be excessively damaged
- ▶ Cellulitis, fasciitis, myonecrosis
- ▶ Risk factors
 - ▶ Physiologic barriers impairment (trauma, surgery)
 - ▶ Vascular supply impairment (chronic lower limb ischemia), devastating deep tissue trauma
 - ▶ Immune system impairment



Necrotizing soft tissue infections

- ▶ **Etiology**
 - ▶ Histotoxic clostridia
 - ▶ *C. novyi*, *septicum*, *histolyticum*, *perfringens*
 - ▶ Cellulitis, myonecrosis (gas gangrene)
 - ▶ *S. pyogenes* („flesh-eating streptococcus“)
- ▶ **Diagnosis**
 - ▶ swab, necrotic tissue, blood culture
 - ▶ microscopy, culture
- ▶ **Therapy**
 - ▶ Surgery
 - ▶ Penicilin G + clindamycin/linezolid
- ▶ ***S.aureus***
 - ▶ PVL, oxacilin+clindamycin/linezolid
- ▶ **Polymicrobial infections**
 - ▶ + Anaerobes, Enterobacteriales
 - ▶ Fournier´s gangrene



Other bacterial infections of soft tissue

Skin ulcers of infectious origin

- ▶ Skin ulcer - dermis
- ▶ Ecthyma
 - ▶ Malnutrition, poor hygiene
 - ▶ *S.pyogenes*, colonisation: *S. aureus*, G-rods
 - ▶ affects dermis („deep impetigo“)
- ▶ Cutaneous diphtheria
 - ▶ Poor hygiene, unvaccinated
- ▶ Ulcus durum
- ▶ Tularemia
 - ▶ + lymph node enlargement, fever
- ▶ Anthrax



Erysipeloid

- ▶ *Erysipelothrix rhusiopathiae*
 - ▶ G+ rod
- ▶ Skin injury and contact with animals/meat (butchers, fishermen, farmers, veterinary medicine,)
- ▶ Red to purple efflorescence, slowly spreading
- ▶ Diagnosis: clinical presentation + patient history
- ▶ Penicillin



Bite wounds

- ▶ *Pasteurella multocida*
 - ▶ *Capnocytophaga canimorsus*
 - ▶ Anaerobes (*Fusobacterium* spp., *Bacteroides* spp., *Prevotella* spp.)
 - ▶ *Eikenella corrodens*
 - ▶ ...
-
- ▶ Amoxicillin-clavulanate



Burnt tissue infections

- ▶ Skin barrier function impairment, immune system dysregulation
- ▶ *Staphylococcus aureus* (incl. MRSA), *Pseudomonas aeruginosa*, *Acinetobacter baumannii*, Enterobacteriales
- ▶ High risk of sepsis



Fungal skin infections

Dermatophytosis

- ▶ *Trichophyton spp.*, *Epidermophyton floccosum*, *Microsporum spp.*
- ▶ Itching, redness
- ▶ Tinea pedis, unguium (onychomycosis), inguinalis, capitis, ...
- ▶ Sampling – skin scraping - scalpel
- ▶ Antimycotics – topic application (azoles, allylamines)



Pityriasis versicolor

- ▶ *Malassezia furfur* (*Pityrosporum orbiculare*) – lipophilic yeast
 - ▶ Skin microbiota
 - ▶ Warm, humidity
- ▶ Hyperhidrosis, seborrhea (increased sebum production), immune suppression, corticosteroids



Summary

- ▶ Erysipelas
 - ▶ Cellulitis
 - ▶ Necrotizing soft tissue infections

 - ▶ *S. aureus*, *S. pyogenes*
 - ▶ Other agents: anaerobes (incl. *C. perfringens*), Enterobacteriales, *P. aeruginosa*

 - ▶ Sample for microbiological examination – swab (deep part of lesion), tissue, blood culture

 - ▶ Topical therapy
 - ▶ Penicillin, oxacillin, (cephalosporins 1st/2nd gen., clindamycin)
 - ▶ Necrotizing infections – toxin production – combination with clindamycin, linezolid
 - ▶ Surgery

 - ▶ Colonisation vs. infection; skin microbiota
-

