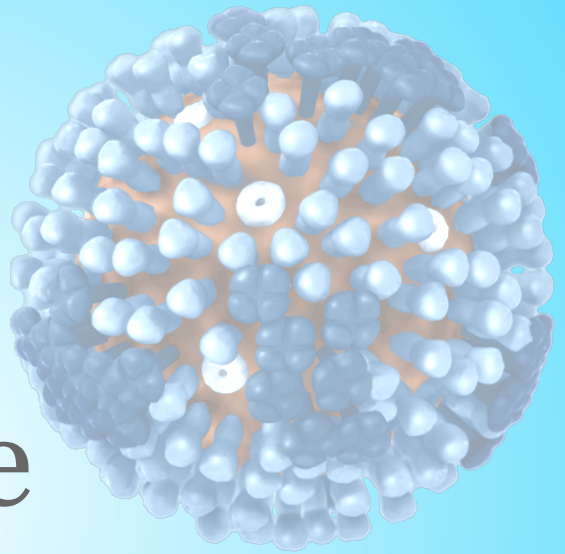
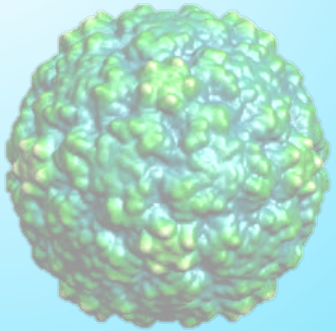


Skin and Soft Tissue Infections



Note:
All you need to know in this lecture is a little bit about each syndrome, the organism(s) causing each syndrome, and the antibiotic(s) used for each syndrome.

Red= Important Grey= Extra Info

Objectives

The major and most important objective of this lecture

1. Describe the anatomical structure of skin and soft tissues.
2. Differentiate the various types of skin and soft tissue infections and their clinical presentation.
3. Name bacteria commonly involved in skin and soft tissue infections.
4. Describe the pathogenesis of various types of skin and soft tissue infections.
5. Recognize specimens that are acceptable and unacceptable for different types of skin and soft tissue infections.
6. Describe the microscopic and colony morphology and the results of differentiating bacteria isolates in addition to other non-microbiological investigation.
7. Discuss antimicrobial susceptibility testing of anaerobes including methods and antimicrobial agents to be tested.
8. Describe the major approaches to treat of skin and soft tissue infections either medical or surgical.

Skin Structure and Infections

This picture shows the components of the skin and the type of infections that manifest in each part.

- All infections other than bone infections are known as skin and soft tissue infections

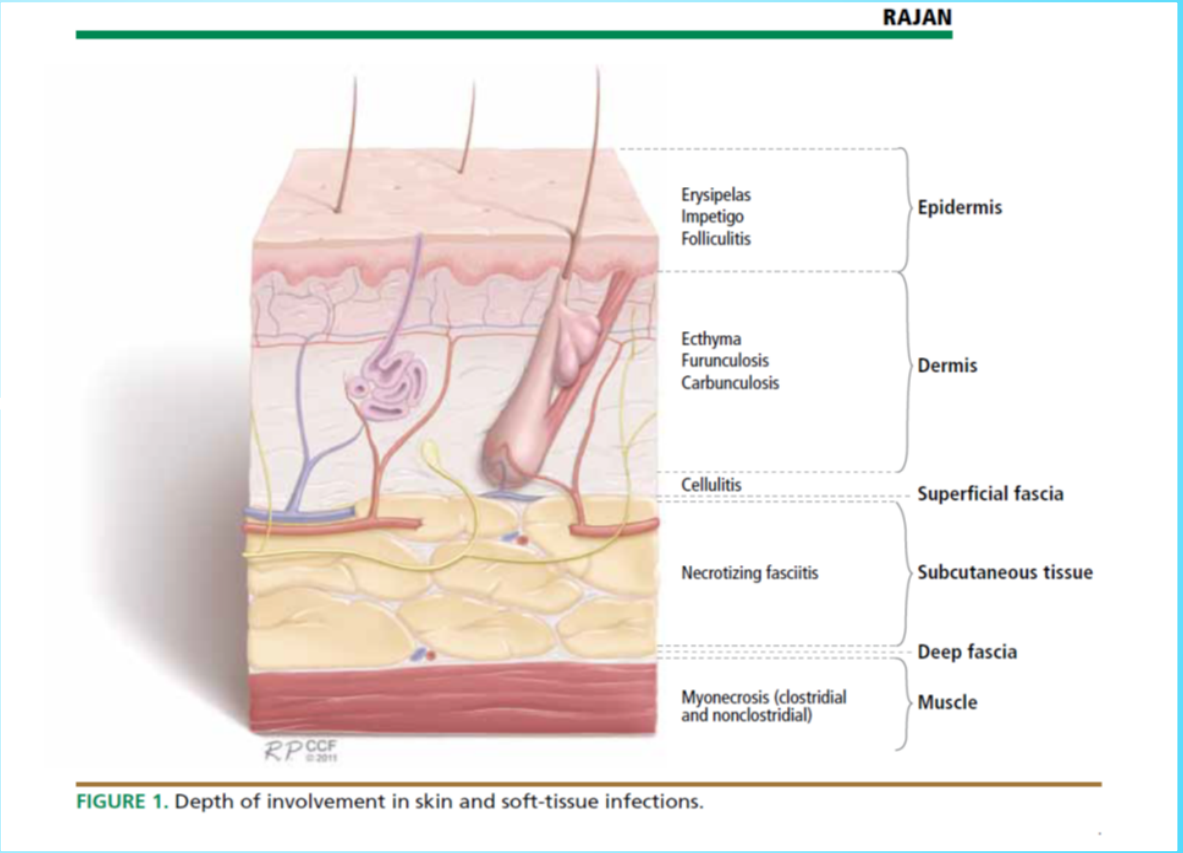


FIGURE 1. Depth of involvement in skin and soft-tissue infections.

Introduction

Group A Streptococcus and S.Aureus are the **most common for skin infections.**
Unless: It's an abscess. or deep infections (caused by anaerobes).

- The skin is the largest organ and it is commonly infected.
- The infection can be mild,moderate,or severe and sometimes fatal.
- Most infections are caused by Staphylococcus Aureus and Streptococcus (group A).
- Some bacteria are resistant to antibiotics, such as :
  1-Staphylococcus Aureus(methicillin resistance)
  2-Streptococcus pyogenes (erythromycin resistance)
- Generally, the treatments of these infections are antibiotics and\or surgery.
- Inflammation due to infection of the skin is called (dermatitis).
- Some people have staphylococcus aureus in their noise and they have recurrent infection because they are colonized with this organism so we give them mupirocin to decolonize staphylococcus in the noise.

Impetigo

- It Is one of the superficial infections of the skin. (Most commonly caused by Streptococci Group A and Staphylococci).
- It is common in children, if there is any break in the skin this bacteria can go in and cause infection.
- Impetigo is caused by Staphylococcus and Streptococcus
- usually caused by a break in the skin either due to insects bites or operation.

Effects: It will start like blister that will eventually rupture revealing a honey-like cluster that would resolve completely if treated with antibiotics.

Treatments:

Cefazolin : covers strep and staph(When there is a patient with cellulitis skin infection, first think about cefazolin).

Cloxacillin: covers staphylococcus

Erythromycin: is good for streptococci

READ FOR FURTHER KNOWLEDGE:
Why not giving Penicillin as treatment? because the bacterias causing impetigo are highly resistant to penicillin.

https://www.youtube.com/watch?v=hQ9xv2cTAyw#t=18

Cutaneous Abscess

* : Accumulation of pus cells and fluid with degraded hydrolyzed tissue, yellow colored and –usually smells bad-.

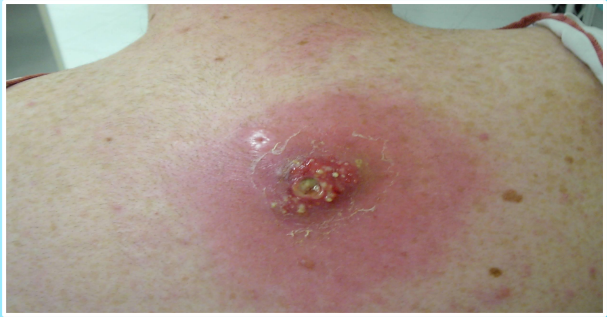
Abscess*(صديد):

- the Abscess can be superficial or deep:
  1)if it is superficial it is usually staphylococcus
  2)if it is deep it is anaerobe

- Abscess happens superficially, most common organism staphylococcus aureus (most common) and it is very tender fluctuating because there is fluid inside.

Treatments:

Most common treatment is surgery (excision of abscess) And antibiotics Cloxacillin -is the choice-.



https://www.youtube.com/watch?v=9dxnvw4kyrI#t=14

Furuncles and Carbuncles

It simply means having abscesses on the hair follicle. and when the secretion of the abscesses accumulates it will give the bacteria a good environment allowing it to multiply causing an infection.

-Folliculitis: Infection of hair follicle

-Furuncle: Bigger Folliculitis(something like a smooth boil, it is tender).

-Carbuncle: Collection of Furuncles

=So, Folliculitis, furuncle and carbuncle : It is infection of hair follicle due to obstruction.

- Multiple furuncles infected together to form a carbuncle is common in DIABETIC PATIENT

Most common organism:
Mainly Staphylococcus
(Folliculitis can be caused by pseudomonas)
Treatment:
Cloxacillin or cefazolin

Outbreak of furunculitis:
Families have folliculitis and transmit to each other
(it is in the family member)

Erysipelas

*It is same as cellulitis but it is superficial and we can differentiate it by the color.

-Note: erysipelas more common in the leg.

*Clinical presentation:

The skin is very red, swollen Edema "looks like an orange peel" and easy to demarcate.

*The Most common cause of it is: Streptococci group A pyogene

***Treatment**: penicillin (because streptococci group A doesn't have resistant to it, and it is always sensitive to it)

https://www.youtube.com/watch?v=RfNmUnl_Bxw

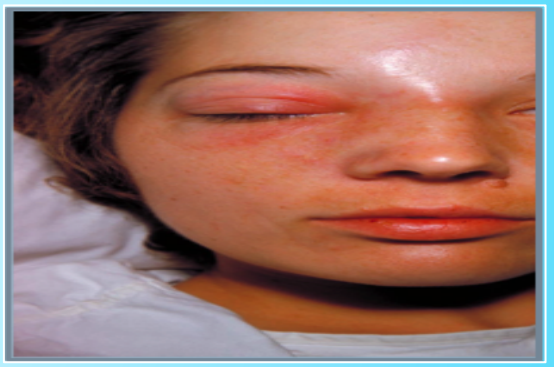
Cellulitis

*Caused by many organisms; streptococcus and staphylococcus.(mostly around the eye).

Clinical presentation:

It is deeper, not very red,it is more severe the patient will come with fever and it is very complicated organism.

Note: we can't demarcate it.



Treatment:

The drug of choice is Cefazolin

Diagnosis:

There is no clinical microbiological diagnosis but only clinically.

Causes of Cellulitis:

1. Abrasion -كشط- of the skin:

skin is the first line of defense, so when there is break in the skin organism go there.

2. Athletes foot (fungal infection):

Happens to people who have wet legs and wear socks.(without drying) They begin to develop athletes foot after a long duration of walking or athletic activity(as the name hints). People who have athletes foot are more susceptible to cellulitis, and it is treated by treating the athlete foot(the root cause).

Necrotizing fasciitis

Introduction:
It is deep inflammation of the fascia, it is systemic, very series and kills the patient(the most serious infection in microbiology) .
Sometimes they present cellulitis.

Symptoms:The patient with necrotizing fasciitis suffer from severe pain.
-It is a series condition, Patient might die.

- Streptococci group A lead to necrotizing fasciitis.
- Clostridium perfringens lead to gas gangrene

Treatment:
Antibiotics+surgery (Surgery is the best and most effective way to treat the patient).

Antibiotics: Clindamycin+penicillin(the drug of choice)

There are 2 types of necrotizing fasciitis:
streptococci group A cause type 2 necrotizing fasciitis

Diagnostic test: MRI

Treatment: penicillin+clindamycin.
In clostridium perfringens: penicillin

YouTube
http://www.youtube.com/watch?v=mkkSHCvqdWA

Important Notes by Dr. Somaili

Syndrome	Organism	Antibiotics
Impetigo	Streptococcus/GAS/ Staphylococcus	Cefazolin/Cloxacillin
Abscess	Staphylococcus	Cloxacillin/ MRSA/ Vancomycin
Folliculitis Carbuncles	Staphylococcus	Cloxacillin/ MRSA/ Vancomycin
Cellulitis	Staphylococcus/Streptococcus	Cefazolin
Necrotizing Fasciitis	Staphylococcus/GAS/Streptococcus/C. Perfringens/	Penicillin + Clindamycin
Erysipelas	GAS	Penicillin

MCQs

1- Streptococcus pyogenes has resistance against :

a) Penicillin b) Erythromycin

c) Methicillin d) Vancomycin

2- The inflammation infection of the skin can be :

a) Dermatitis b) Edema

c) Rash

3- When you see a patient with cellulitis skin infection, the first thing to think about is :

a) Erythromycin b) Cloxacillin

c) Cefazolin d) Methicillin

4- Cutaneous abscesses can be treated by:

a) Ointment b) Surgery

c) Subcutaneous injections

5- Furuncles are clusters of Carbuncles :

a) True b) False

6- The skin is very red, swollen and easy to demarcate, and the most common cause of it is Streptococci group A; all these are features of :

a) Erysipelas b) Furuncles

c) Cellulitis

7- It is deep, not very red it is more severe the patient will come with fever and it is very complicated organism and can't be demarcated; all these are features of Cellulitis :

a) True b) False

8- Clostridium perfringens causes :

a) Tetanus b) pharyngitis

c) Gas gangrene

9- Patient presenting with redness swelling on the face well demarcated margin.

Q1: What is the most common organism?

A1: Group A Streptococcus

Q2: What's the most likely clinical syndrome?

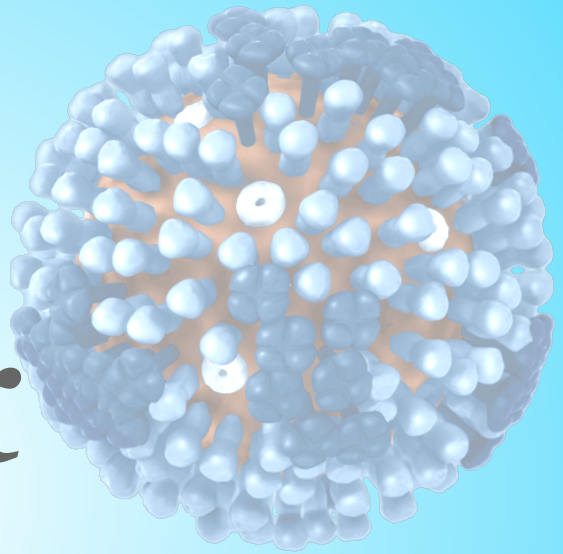
A2: Erysipelas

Q3: Whats the treatment?

A3: Penicillin

An Important question Dr. Somaili claims that it's on the exam..

Abdulaziz AlNowaibet



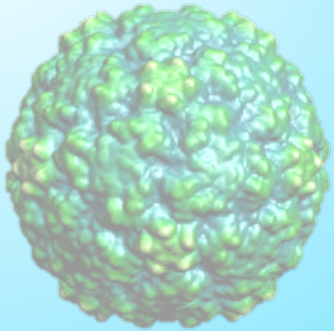
Answers:

1) B
2) A
3) C
4) B
5) B
6) A
7) A
8) C

Good Luck

Done by :

Microbiology team



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