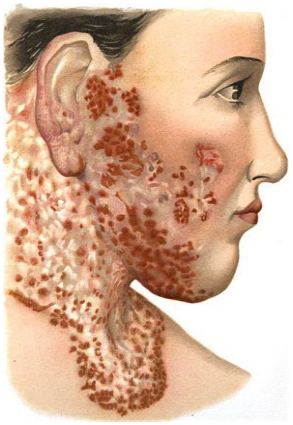
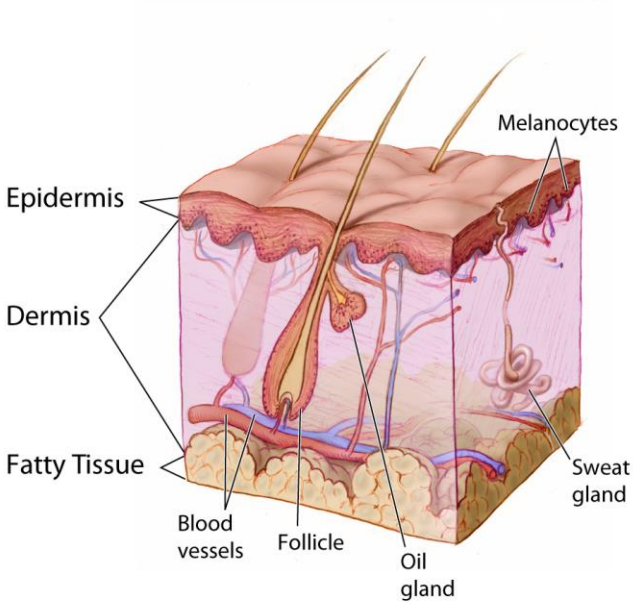
جامعة الملك سعود
King Saud University



432 Teams

Dermatology



Common bacterial and viral infections

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Color Code: Original, Team's note, Important, Doctor's note, Not important, Old teamwork

Objectives

1. **General understanding of the causative organisms of common skin infection(CSI).**
2. **Focus on CSI clinical presentation.**
3. **Overview of the basic investigations done and general knowledge of first line therapy.**

Common Bacterial Infections:

Predisposing factors:

- Previously damaged skin.
- Impaired host immunity.

Normal skin flora:

- Coagulase negative staphylococci
- Diphtheroids.

1- Impetigo:

- Superficial skin infection.
- **Etiology:**
  - Strep pyogen.
  - Staph aureus.
- **Age: children (2-5 yr).**
- **Clinical Features:**
  - **Presents as thin-walled vesiculopustules on an erythematous base that quickly turn to honeycolored crusts.**
  - Common sites: face, extremities.
  - Commonly assoc. with minor skin trauma.
  - Systemic symptoms (not usual).
  - Rarely complicated by APSGN (nephritogenic strains).
- It could be:
  - Primary: if there are no previous skin lesions
  - Secondary: if the infection occurs on top of a previous skin lesion (impetigo on top of eczema or herpes).
- **Investigations:**
  - **Bacterial cultures: confirmatory.**
  - Serology: rarely indicated.
- **Predisposing factors:**
  - Warm, humid climate
  - Poor hygiene
  - Trauma
  - Insect bites
  - Immunosuppression

- **Management**
  - Topical antibiotics.
    - Localized disease.
  - Systemic antibiotics.
    - Extensive lesions.
    - Infection with nephritogenic strains.
    -

Bullous Impetigo:

- Variant of impetigo.
- Purely caused by s. aureus (group II phage type 71).
- Clinically presents as superficial flaccid vesiculopustules
  - Rupture.
  - spread & coalescence of lesions.
  - rounded denuded areas.
- If roof of bulla is removed a shallow moist erosion will form
- **Treatment:** anti-staph systemic antibiotic.

2- Cellulitis:

- Is an acute bacterial suppurative inflammation of the skin, particularly the deeper subcutaneous tissues.
- **Etiologic agents**
  - Strep A
  - Staph aureus
  - H. influenza
- **Clinical Features**
  - Preceding wound or trauma (1-2 days)
  - **Markedly red, tender, warm swelling with an edematous infiltrated appearance**
  - Common sites: face, lower extremities
  - systemic S/S: fever, tachycardia, LAP
- Risk factors: immunocompromised, DM, HTN, obesity, venous stasis.
- **H. influenzae cellulitis**
  - < 2 yrs old
  - The child may be extremely ill
  - **Dusky red or bluish dicoloration**

- **Investigations**
  - Confirmation of diagnosis is difficult
  - Cultures usually negative:
    - Needle aspiration
    - Skin biopsy
    - Blood
  - Blood Culture in immuocompramized pts.
- **Management**
  - Depends on
    - Identification of the affecting organisms
    - Use of appropriate systemic antibiotics
  - Recurrent and frequent cellulitis
    - Measures to reduce recurrent cellulitis
    - Prophylactic antibiotics
  - Periorbital and orbital cellulitis
    - Admission and involvement of ophthalmologist
  - IV penicillinase-resistant penicillin's e.g. flucloxacillin, or 1st generation cephalosporins

3- Folliculitis:

- Infection/ inflammation of the hair follicules
- Infectious vs. non-infectious
- Infectious folliculitis:
  - Primary vs. Secondary
- **Etiology:**
  - Bacterial/ fungal/ viral/ infestation
- **Morphologic presentation:**
  - Papules/ pustules/ erosion/ crust
  - Follicular distribution
- **Distibution:**
  - Face/ scalp/ legs/ trunk.
- **Course**: relapsing and chronic course.
- A carrier state is a chronic course (relapse and remission) caused by Bactria located in the nostrils, groin and axilla. We treat it by applying tropical antibiotics every week for 3 months to eradicate the Bactria.
- Prognosis: heals without scarring but post inflammatory hypo or hyperpigmentation can occur.

- **Investigations:** Swab: culture and gram stain
- **Treatment of bacterial folliculitis**:
    - Avoid predisposing factors
    - Skin care
    - Anti Bacterial
    - Topical vs. systemic
    - Directed by culture findings
    - Carrier state
    - Anti-Staph antibiotics.

4- Furuncle (431 Teams):

- Inflammation of deep portions of hair follicle (follicular).
- Organism: Staph. Aureus.
- Lesion: deep seated nodule about hair follicle, erythematous base.

- Management:
    - Swab: culture and gram stain
    - Antibacterial soap
    - Anti-Staph antibiotics

5- Carbuncle (431 Teams):

- Infection of multiple hair follicles.
- Organism: Staph. Aureus.
- Lesion: larger more deep seated, with drainage through multiple points in the skin.

- Management:
    - Swab: culture and gram stain
    - Screen for carrier state (swab nose, if +ve give bactroban)
    - Anti-Staph antibiotics

6- Erythrasma (431 Teams):

- Organism: corynebacterium minutissimum (weak bacteria**) (normal in human).**
- Site: flexor surfaces e.g. axilla, feet web spaces, groin, submammary.
- Lesion: well demarcated, red-brown, asymptomatic (non-itchy) patch.
- Asymptomatic except for subtle discoloration. Patches, sharply marginated. Tan or pinkish; postinflammatory hyperpigmentation in more heavily pigmented individuals.

Risk factors:	Management
Excessive sweating	Swab
obesity	**Wood's lamp: coral-red fluorescence**
Immunocompromised	Topical: imidazoles (miconazole) or erythromycin
DM	Oral erythromycin for 7 days

Common Viral Infections:

1- Warts:

- Warts (verrucae) are common and benign skin tumors resulting from infection of epithelial cells by human papillomavirus (HPV)
- Superficial infection.
- **HPV:**
  - Ds-DNA virus (papovavirus family)
  - 60 types
  - **Cannot be cultured**
  - Humans are the only known reservoir
  - HPV 1 deep plantar wart
  - HPV 2,4 common warts
  - HPV 6,11 condyloma acuminatum
  - HPV 16,18,31,33 genital neoplasia (Oncogenic potential)
- **Clinical Features**
  - Warts may affect any **cutaneous or mucosal surface**
  - Different appearance
    - Involved sites
    - Type of infecting HPV
    - The immunologic makeup of the host
- **Types**:
  - Common warts
  - Flat warts (children and Immunocompromised)
  - Plantar warts
  - Genital warts
  - Others
- **How warts can be acquired?**
  - by contact with infected humans
- **Requirements**:
  - Breaks in the skin (point of entry)
  - Host's susceptibility
- **Investigations**
  - Diagnosis is usually clinical
  - Skin biopsy
  - PCR detection and typing of HPVs

- **Management**
  - Treatment options include
    - Observation
    - Topical salicylic acid preparations
    - Destructive measures (cryotherapy, electrosurgery…etc)
    - others

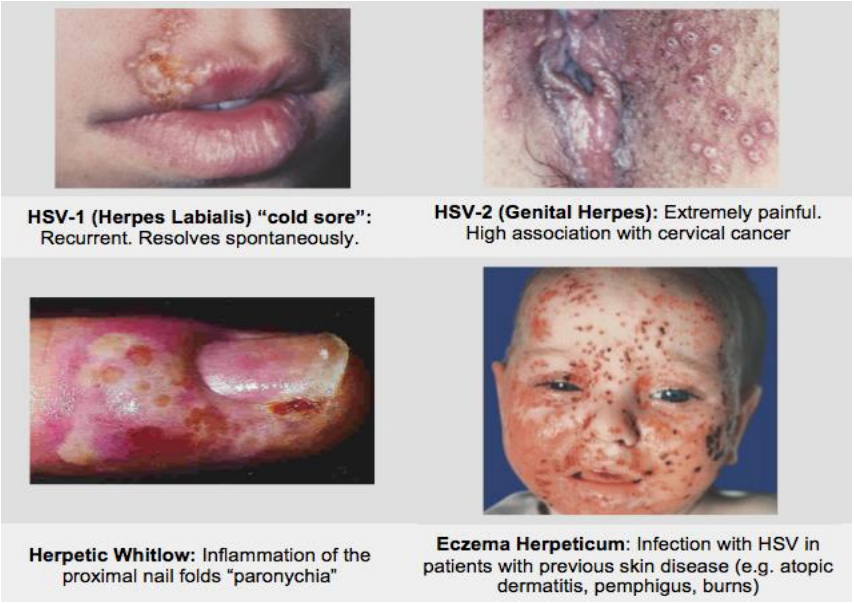
2- Molluscum Contagiosum:

- Common viral skin disease caused by a DNA poxvirus
- Children > adults
- **Presents as asymptomatic smooth surface, skin colored, translucent papules several millimeters in diameter with a characteristic central umbilication**
- Common sites: face, trunk, extremities
- Acquisition & resolution significantly affected by immunologic factors
- Children with Molluscum
  - Spontaneous involution in 6-12 months
  - Numerous papules on exposed sites
- Hundreds or thousands of lesions on immunocompromized patients
- **Diagnosis usually clinical**
- Treatment options
  - Observation
  - **Destructive** (**curettage**, cryosurgery, and electrodessication)

3- Herpes Simplex:

- Herpes Simplex Virus (HSV) infection is a common acute, self-limited usually recurrent eruption that **characterized by small grouped vesicles on a red base**
- **Etiology**
  - Herpes virus hominis (Ds-DNA)
  - **Primary infection followed by latency**
  - Acquired by direct contact
  - Types:
    - **HSV-1: oral-labial infections**
    - **HSV-2: genital infections**
- **A-Primary oral HSV**
  - HSV-1 > HSV-2
  - Usually occurs in children
  - May be subclinical
  - **Acute gingivostomatitis (commonest)**
  - Typically presents as **crops of clear to yellow vesicles on erythematous background >crust**
  - Sites: face, lips, palate, tongue
  - 2 weeks course
- **B-Primary Herpes Genitalis**
  - HSV-2 > HSV-1
  - Usually acquired after sexual contact
  - **Presents with multiple erosions on the external genitalia**
  - **Papule > vesicle > erosions**
  - Healing in 2-3 weeks
  - Assoc: severe pain, dysuria, inguinal LAP
  - > 50%: fever, headache, malaise
- **C-Recurrent HSV infection**
  - HSV-2 > HSV-1
  - Prodrome of tingling and stinging
  - Reduced local symptoms, viral shedding and healing time than primary disease
  - Frequency decreased with time
- **Complications**
  - Superimposed bacterial infections
  - Eczema herpeticum
  - Herpes encephalitis
  - Erythema multiforme

- **Diagnostic tools**
  - The Tzanck preparation
  - **Immunofluorecent testing (more Specifc)**
  - **Tissue cultures (most definitive) But not widely available**
- **Management**
  - Pt education
  - Severe oral/genital HSV
    - Oral anti-viral
    - No effect on recurrences
  - **I.V. antiviral treatment**
    - **Immunosuppressed pts**
    - **Eczema herpeticum**
    - Severe primary genital HSV
  - Oral continuous suppressive oral anti-viral treatment for pts with frequent recurrences
  - R/O other STDs (genital HSV)



HSV-1 (Herpes Labialis) "cold sore": Recurrent. Resolves spontaneously.

HSV-2 (Genital Herpes): Extremely painful. High association with cervical cancer

Herpetic Whitlow: Inflammation of the proximal nail folds "paronychia"

Eczema Herpeticum: Infection with HSV in patients with previous skin disease (e.g. atopic dermatitis, pemphigus, burns)

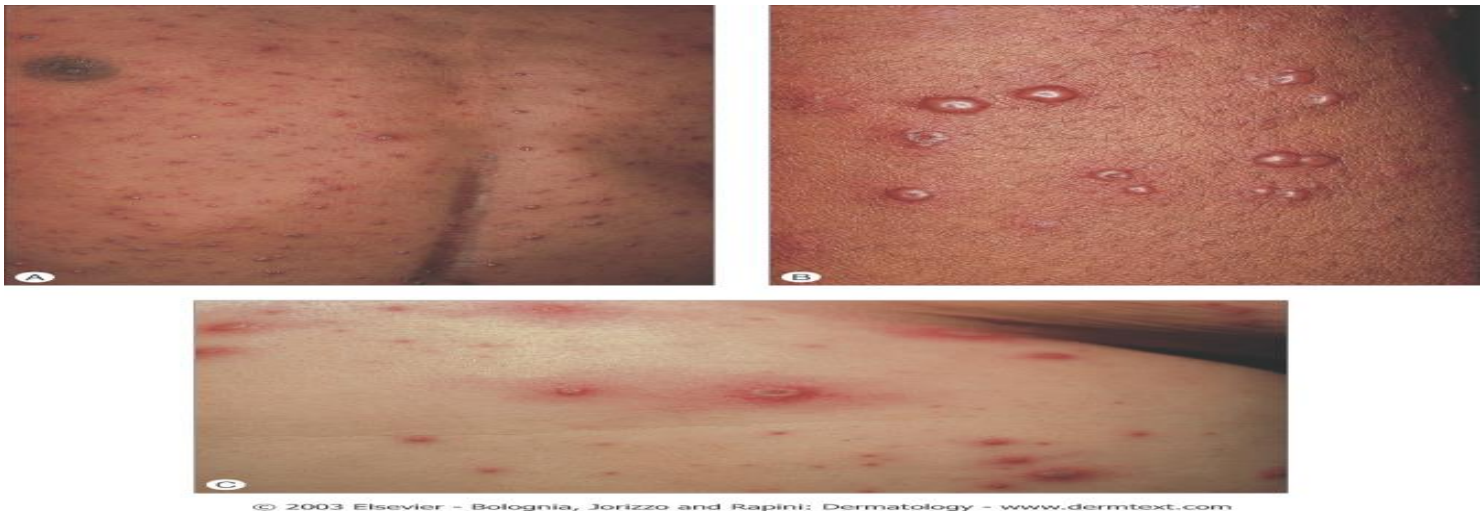
4- Herpes Zoster:

- An acute self-limited disease characterized by **painful small grouped vesicles on an erythematous base and usually localized to one or two dermatomes**
- Commonest dermatomes are thoracic (spinal) and trigeminal (cranial).
- Incidence increasing with advancing age
- **Results from reactivation of latent Varicella-Zoster Virus (VZV)**
- **Clinical stages**
  - Prodrome (1-4 days)
  - Vesicular stage
  - Crusted stage
- **Diagnostic tools**: asHSV
- **Management**:
  - Symptomatic treatment
  - Oral anti-viral agent
    - Within 48-72 hr
    - High dose
  - Oral corticosteroids
    - May decrease acute pain
    - May reduce risk of PHN (Postherpetic Neuralgia)

5- Varicella (Chicken pox):

- Varicella is a highly contagious disease of childhood & occasionally adulthood caused by a primary infection with the VZV
- Transmitted by close contact and droplet infection
- **90% of cases occur by the age of 15 yr**
- **Clinical Features**
  - **Prodrome**: respiratory coryza followed by disseminated red macules with central vesicles.
  - Successive crops of pruritic lesions on the trunk, face and scalp
    - macule > papule > vesicle > crust
    - "dew drop on a rose petal"
  - All stages of development in the same anatomic area at the same time
  - **Infectivity**:1-2 days prior to the rash up to 5-7 days after the rash
- **Varicella in adults**
  - Prodrome, extensive rash
  - > constitutional symptoms
  - Predisposition to more sever complications
- **Complications**
  - Secondary bacterial infections
  - Viral pneumonia/ encephalitis
  - Reye's Syndrome
  - Congenital/ neonatal Varicella

- **Diagnosis**
  - Usually made on clinical findings alone
- **Management**
  - Symptomatic
  - Children
    - Benign disease
    - Avoid aspirin
  - Early high-dose systemic anti-viral
    - Controversial in uncomplicated childhood varicella
    - Immunocompromized
    - Varicella pneumonia
  - VZIG
  - Live attenuated vaccine: available



Summary

❖ **Bacterial infections:**

- **Impetigo:**
  - Superficial skin infection. More common in children.
  - Presents as thin-walled vesiculopustules on an erythematous base that quickly turn to honeycolored crusts.
  - Bacterial cultures: confirmatory
  - Bullous and non bullous
- **Cellulitis**:
  - Is an acute bacterial suppurative inflammation of the skin, particularly the deeper subcutaneous tissues.
  - Etiologic agents**:** Strep A, Staph aureus and H. influenza
  - Markedly red, tender, warm swelling with an edematous infiltrated appearance
- **Folliculitis:**
  - Infection/ inflammation of the hair follicules
  - Morphologic presentation: Papules/ pustules/ erosion/ crust
  - Course: relapsing and chronic course

❖ **Viral infections:**

- **Warts:**
  - benign skin tumors resulting from infection of epithelial cells by human papillomavirus (HPV).
  - Cannot be cultured
  - Affect any cutaneous or mucosal surface
  - HPV 16,18,31,33 genital neoplasia (Oncogenic potential)
- **Molluscum Contagiosum:**
  - Common viral skin disease caused by a DNA poxvirus
  - Children > adults
  - Presents as asymptomatic smooth surface, skin colored, translucent papules several millimeters in diameter with a characteristic central umbilication.
  - Diagnosis usually clinical.
- **Herpes Simplex:**
  - Herpes Simplex Virus (HSV) infection is a common acute, self-limited usually recurrent eruption that characterized by small grouped vesicles on a red base
  - Primary infection followed by latency
  - Types: HSV-1: oral-labial infections---HSV-2: genital infections
  - Diagnostic tools: immunofluorecent testing (more specific)
  - Tissue cultures (most definitive)

- **Herpes Zoster:**
  - An acute self-limited disease characterized by painful small grouped vesicles on an erythematous base and usually localized to one or two dermatomes
  - Commonest dermatomes are thoracic (spinal) and trigeminal (cranial).
  - Results from reactivation of latent Varicella-Zoster Virus (VZV).
- **Varicella (Chicken pox):**
  - Varicella is a highly contagious disease of childhood & occasionally adulthood caused by a primary infection with the VZV
  - Transmitted by close contact and droplet infection
  - 90% of cases occur by the age of 15 yr
  - Successive crops of pruritic lesions on the trunk, face and scalp
    macule > papule > vesicle > crust
  - More severe in adults.

Questions:

1- Impetigo is more common in:
A. Elderly
B. Children
C. Adult

2- which of the following have an Oncogenic potential:
A. (HPV 1,3)
B. (HPV 16,18)
C. (HPV 31,33)
D. B&C

1- B
2- D