

Superficial Fungal Infections Of The Skin

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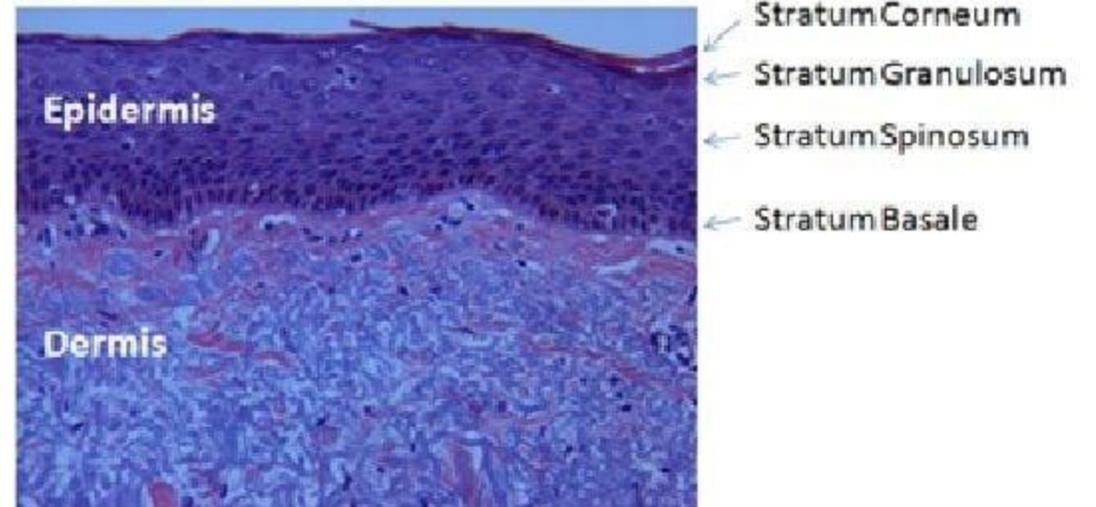
Hadeel Albawared

Mais Basil

- Superficial**: Invade **stratum corneum, hair and nails**.
- Subcutaneous**: Involve **dermis and subcutaneous** fat often due to implantation.
- Systemic (Deep)**; Dermal and subcutaneous , usually **by hematogenous spread** or **extention from underlying tissues**.
- Opportunistic**: Primary or secondary skin lesions in **immunocompramised host**

Common superficial Fungal Infection:

- Dermatophytosis
- Tinea versicolor
- Candidiasis



-Minimal if any inflammation:

- 1- TV (tinea versicolor) (M.Furfura)
- 2-Tinea Nigra(Hortaea Werncki)
- 3- Black piedra(piedra horae)
- 4- White Piedra, (Trichosporum beigeli).

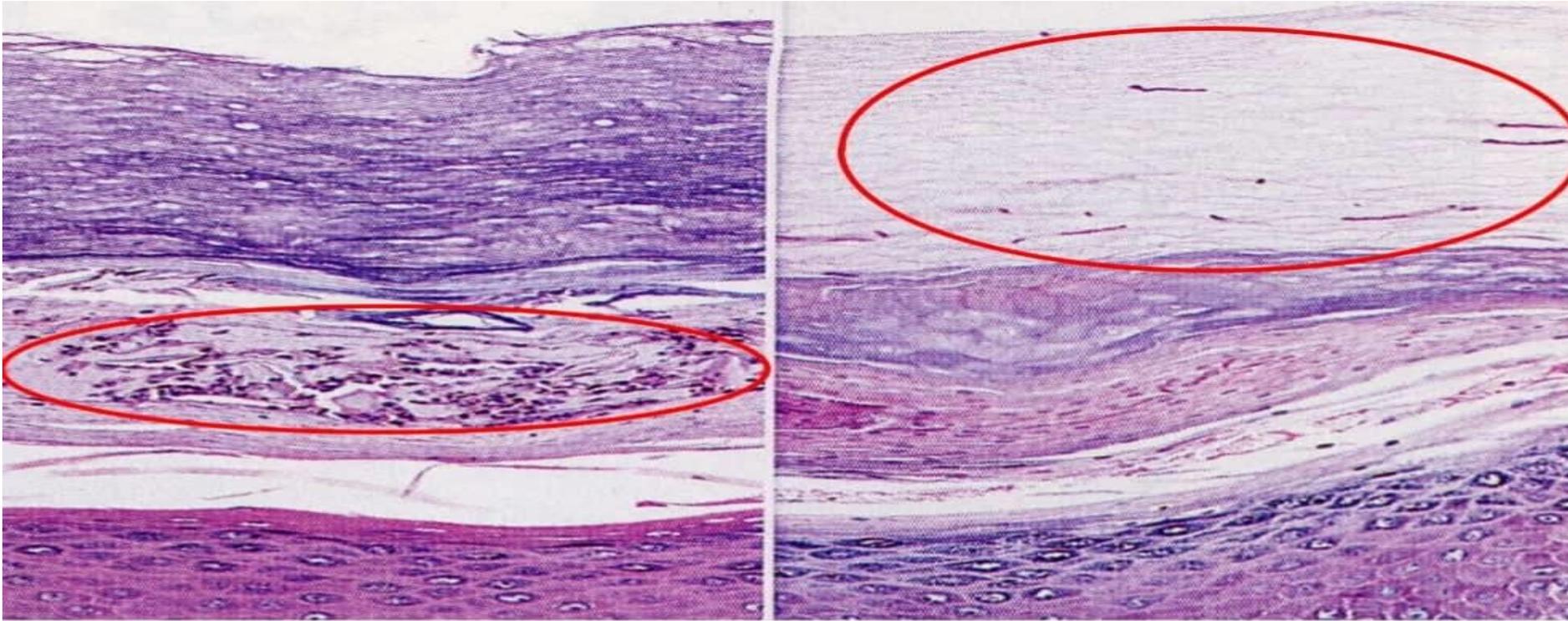
-Inflammatory response common:

- 1-Tinea capitis
- 2- Tinea barbae
- 3-Tinea faciei
- 4- Tinea corporis
- 5- Tinea cruris
- 6-Tinea manum
- 7-Tinea pedis
- 8- cutaneous candidiasis



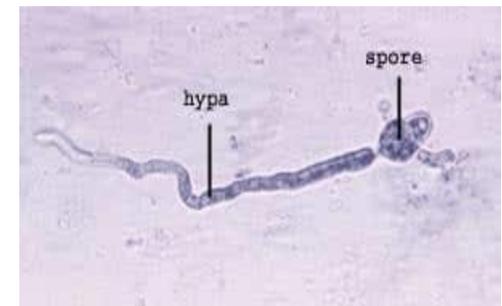
Normal skin appearance

- ❖ **Dermatophytosis: A superficial fungal infection caused by a dermatophyte: Tinea or wring worm**
- ❖ **There are three genera of dermatophytes:**
 - 1- Microsporum
 - 2- Trichphyton
 - 3- Epidermophyton
 - They digest and live on keratin
 - Skin, hair and nail involvement
- ❖ **Dermatophytes produce kertinase- assists in the invasion of the skin**
- ❖ **The skin responds by proliferation of the basal cell layer:- scaling and epidermal thickening.**
- ❖ **They can be acquired from:**
 - **People-** anthropophylic
 - **Animals-** zoophylic
 - **Soil-** geophylic
- ❖ **To describe a dermatophyte: Tinea is used as the prefix and the area involved the suffix. Exam. tinea capitis**



Inflammatory response (inflammatory cells) which will lead to thickening of the horny cell .

Spores and hyphae of the fungi



❖ Types of Dermatophytes by mode of transmission :

1- Anthropophilic:

Human to human

Mild to non-inflammatory

chronic (T. Rubrum, T. Tonsurans, E. Flocosum).

2- Zoophylic:

Animal to human

Marked inflammation

acute (T. Mentrophytes, M. Canis, T. Verrucosum).

3- Geophylic :

Soil to human or animal

Moderate inflammation(M.Gypseum)

❖ Trichphyton Tonsurans:

-commonly seen in adults who care for infected children

❖ Trichophyton Verrucosum

- may mimic bacterial furunculosis, exposure to cattle

❖ Carrier state of T. Tonsurans :

-The fungus present but **no clinical features**

- Can occur in children

-Most common in adults who **exposed to infected children**

Clinical manifestations:

- **Tinea capitis (scalp)(most common tinea in children)**
- **Tinea barbae (Beard)**
- **Tinea corporis (Body)**
- **Tinea cruris (Groin)**
- **Tinea pedis (foot) (most common tinea in adult)**
- **Tinea manum (Hand)**
- **Tinea unguium(Onychomycosis) ((Nail))**

❖ 1-Tinea capitis

- Infection of the **hair shaft**
- **Commonly caused by- T. Tonsurans and M. Canis**
- **Usually affect children between the ages 3 and 9 years**
(at this age there is decrease in sebum production , in sebum
There is fatty acids that work as antifungal)
- **Three clinical variants :**
 - 1- **Black dot .** **Be Kind Forever**
 - 2- **Kerion .**
 - 3- **Favus (T.schoenleini)**

You don't have to memorise these names .

Only say dermatophyte

➤ **How to prove the Diagnosis :**

1- **KoH preparation (scraping)**

2- **Woods light exam. –UVL(365 nm wavelength):**

- ❖ **In some cases of tinea capitis (caused by Microsporum sp.)- infected hairs show bright green fluorescence**

➤ **DDx:**

1-psoriasis 2-atopic dermatitis 3- PRP (pityriasis rubra pilaris) 4- tinea amantia 5- seborrheic dermatitis

❖ **Three pattern of Hair invasion :**

1- Endothrix: (inside hair shaft)

Anthropophylic fungi

non-flourescent (T. Tonsurans, T. Violaceum)

2-Ectothrix:,

Floutescent – Microsporum Canis

Non-Flourescens- Microsporum or Trichophyton.

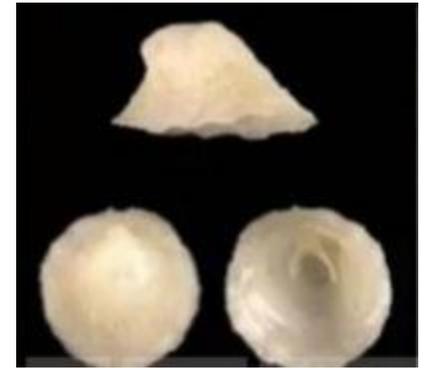
3- Favous-

The most severe form of hair infection

T. Schoenleinii, bluish flourescens by Wood`s light examination

➤ No need to memorise these names

✓ Any child presented with localised area of scale and hair loss , think of tinea capitis



✓ Black dot Tinea capitis .
Localised hair loss with scaling
These hairs are easily plugged



✓ Kerion Tinea capitis
Localised hair loss with scaling and
inflammation of scalp



✓ Favus
(Scatula)

❖ 2-Tinea **barbae** :

- Dermatophyte infection of the **beared area**
- **Not a common disease**
- Usually **unilateral** on the face or neck of a **man**
- Caused most commonly by: T. Mentagrophytes, T. Verrucosum, M. Canis
- **DDx:**

bacterial folliculitis: by clinical presentation, course, culture

Erythematous area with active border
Dx is tinea faciei



❖ 3- Tinea corporis- tinea circinata

➤ Annular lesions with central clearing and elevated scaly border

➤ All dermatophytes can cause this tinea

➤ DDx:

1-psoriasis annular type 2-annular lichen planus 3- GA (granuloma annulare .
4- discoid eczema 5- leprosy 6- MF 7- sarcoidosis 8- NLD(necrobiosis lipoidica
diabeticorum) and Bowens disease.



✓ Annular lesions with central clearing and elevated scaly border



✓ Magicchi granuloma .
Inflammatory type of Tinea corporis ,deeply affecting the hair follicle , can be missed as bacterial infection , confirmed by biopsy or KOH preparation

❖ 4- Tinea **cruris**:

- Dermatophyte infection of the **groin** area
- Most commonly caused by: T. Rubrum, T. Mentagrophytes. E. Floccosum.
- **Most common in men**
- **DDx:**
1- candidiasis 2- erythrasma 3- psoriasis 4- seb. Dermatitis.



✓ Erythematous areas in the groin area with active (means that it is gradually expanding)scaly border .

❖ 5-Tinea pedis:

- The **most prevalent of all dermatophytosis** 30-70% of **all adults** carry the pathogen
- **Most** of them do **not** have clinical disease
- Symptoms increase with age
- Young children may be affected

- Three common patterns of presentations:-

1- Interdigital pattern

2- Moccasin pattern

3-Vesicular or bullous pattern

- DDx: 1- psoriasis 2- eczema 3- pompholyx.(endogenous eczema)

Most common tinea in children is : tinea capitis

Most common tinea in adult is : tinea pedis



✓ Interdigital pattern .

Scaling and maceration between the toes .also there is nail involvement (subungual debris) so there is onychomycosis and tinea pedis



✓ **Interdigital type**
Sometimes called athlete's foot



✓ **Moccasin type :**
The whole plantar surface of the foot is involved with erythema and scaling



✓ **Vesiculobullous type**
Localised area of blisters and vesicles

❖ 6-Tinea manum:

- Present with erythema and scaling involving usually one hand
- Causes: T. Rubrum, T. Mentagrophytes, E. Flucosum.
- **DDx:**
 - 1- hand eczema
 - 2- psoriasis
 - 3- xerosis.(dryness of skin)



✓ Erythematous hand with scaling , prominent creases of the hand .



Can affect the dorsal surface of the hand (this case is treated)

❖ 7- Tinea nigra

-10-15 days incubation period

-Single sharply marginated brown to gray to green macule or patch that can be velvety or have mild scale

- **No pruritus**

-Common on **palms**

-Can appear on sole, neck and trunk

-**DDx.:**

1- Pigmented lesions

2- postinflammatory hyperpigmentation

-Treatment:

1- Keratolytics (Whitfield ointment; 6% Benzoic acid +3%S.A)

2- topical antifungal.

No need for systemic treatment



- ✓ Pigmented lesion on the hand
- ✓ Asymptomatic



❖ 8- Tinea unguium (Onychomycosis):

➤ fungal infection of the nails

➤ causes:

❖ Dermatophytes: microsporum, epidermophyton, trichophyton

❖ Candida

❖ Scopulariopsis brevicaulis

❖ Hendersonula toruloidea

❖ scytalidium hyalinum

DDx: 1- psoriasis 2-lichen planus 3- trauma 4- eczema.

❖ There are several presentations of onychomycosis:

➤ Distal **subungual onychomycosis**

➤ White superficial onychomycosis

➤ Proximal **subungual onychomycosis** (in immunosuppressed patients)and it is one of the **manifestation of AIDS**

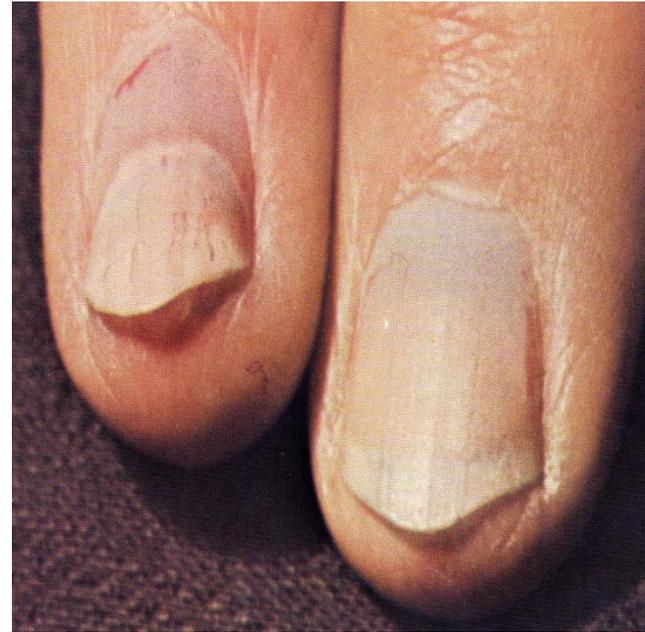
➤ Candida onychomycosis:- involves all nail plate:- in chronic **mucocutaneous candidiasis**.



✓ Thickened
,discolored ,
dystrophic nail .



➤ Thickening ,
hyperpigmentation .
➤ Starting from the
distal lateral end of
the nail and
extending proximally



➤ Thickening ,
hyperpigmentation .
➤ Starting from the
distal lateral end of the
nail and extending
proximally



➤ Thickening ,
hyperpigmentation .
➤ Starting from the
distal lateral end of
the nail and extending
proximally
➤ Onycholysis

❖ 9- Tinea incognito :

It is maltreated or maldiagnosed tinea , tinea infection modified by topical steroid



On trunk and extremities

Diagnosis:

1- KoH preparation (scraping)

2- Woods light exam. –UVL(365 nm wavelength):

❖ In some cases of tinea capitis (caused by *Microsporum* sp.)- infected hairs show bright green fluorescence

❖ In tinea versicolour-golden yellow fluorescence

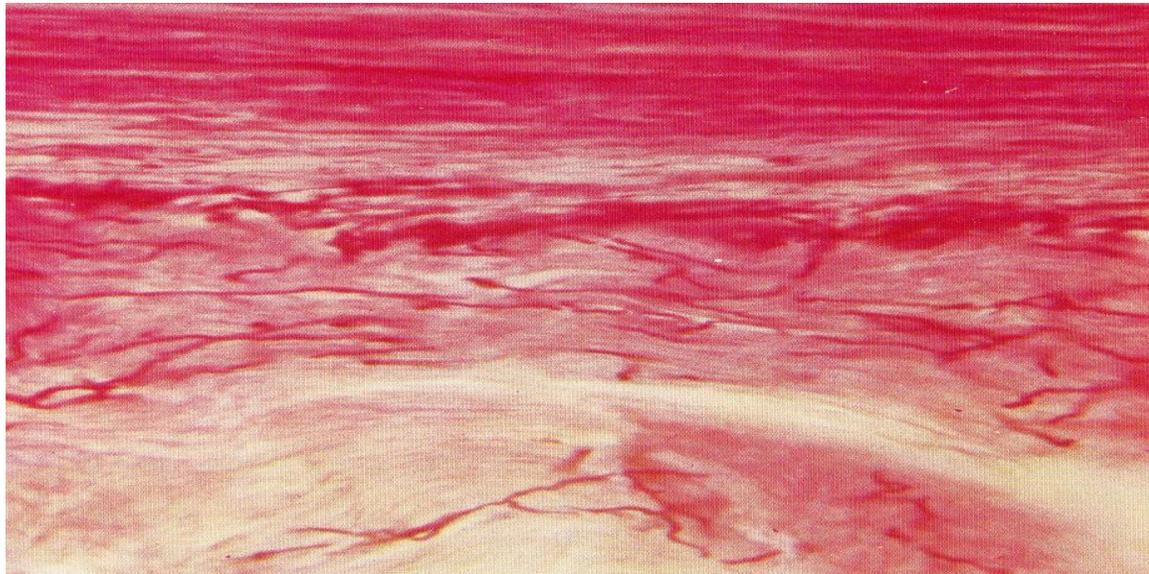
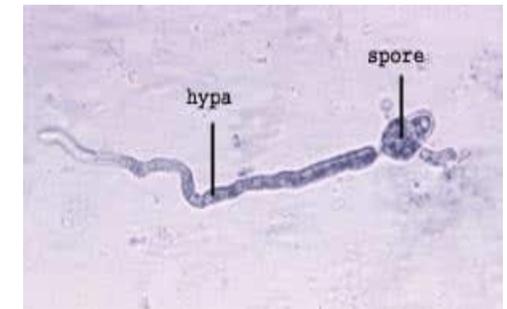
3- skin biopsy- to differentiate them from other dermatosis (PAS stain). (periodic acid –schiff stain)

4- nail clipping in onychomycosis can be prepared with PAS stain to identify hyphae

5- culture on Sabourauds or dermatophyte test medium



✓ KOH preparation on the microscope showing fungal spores (circular) and hypae (linear)



✓ Nail clipping stained with PAS stain showing the fungal Hyphae(Red lines)

❖ **Treatment:**

➤ **General measures:** avoid moisture, keep the area dry and clean

➤ **Topical Rx:-**

1- miconazole 2-clotrimazole 3- econazole 4- ketaconazole

5- Whifeild oint. (6%benzoic acid + 3% SA).

➤ Topical Rx. Is not enough in cases of hair and nail involvement and in tinea incognita

➤ Must be given for an **enough period of time (3-6 Wks.)** according to the site

➤ **Systemic Rx.:-**

1-grizeofuvine 2-ketaconazole(nizoral) 3-itraconazole(sporanox) 4-fluconazole(diflucan)

5-terbinafine(lamisil)

➤ It must also be given for an **enough period of time (2Wks.-6 to 9 Mo.)** according to the site and the used drug.

➤ Pulse Rx. –e.g. itraconazole(1Wk. Rx and 3Wks. Off Rx. For the recommended period)

Finger nail need 2 pulses , toenail need 3 pulses

❖ **Prevention:**

➤ **Good personal hygiene – not to share personal things**

➤ **Avoid contact with infected persons and animals**

➤ **Early treatment and proper treatment of infected persons**

Notes	ddx	Site	
Three variants : Black dot ,kerion,favus	Psoriasis Atopic dermatitis Seborhic dermatits	scalp	Capitis
Unilateral	Folliculitis	Beard area	Barbae
Annular lesion with central clearing elevated scaly border	Psoriasis , LP,eczema , MF,granuloma annulare Bowens disease, ,Leprosy , sarcoidosis	Body	Corporis
Most common in men	Erythrasma,psoriasi,candidia sis ,seb.dermatits	Groin area	Cruris
Three variants : Interdigital , moccasin , vesicular	Psoriasis ,eczema,pompholyx	foot	Pedis
Erythema ,scaling	eczema., psoriasis ,xerosis	hand	manum
No pruritus	Pigmeted lesion	Palm	Nigra
	Psorisis, eczema,trauma,LP	nail	Unguium

❖ Tinea (pityriasis) versicolour:

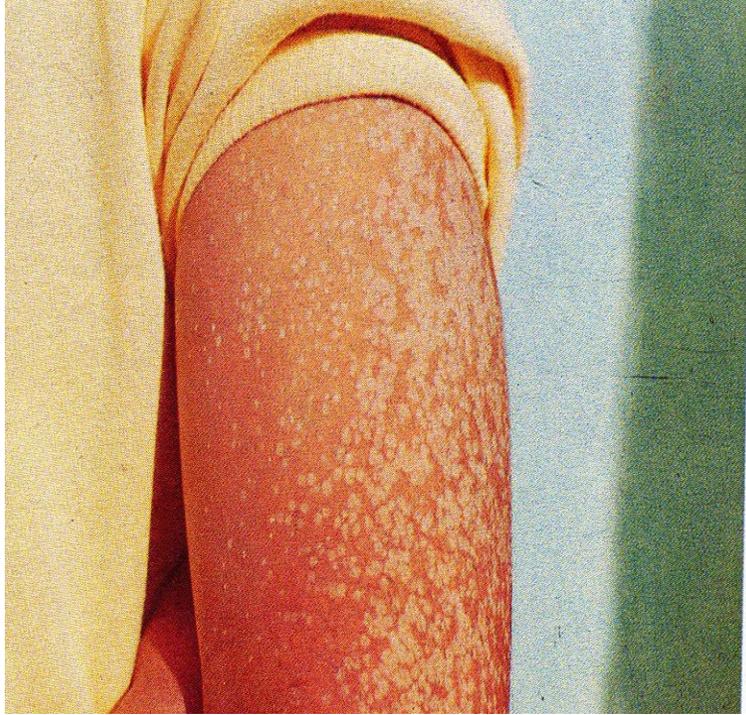
- Is caused by a yeast species (**pityrosporum orbiculare**) (**malassezia furfur**) a part of normal flora
- Worse in warm weather
- Scaly, mildly itchy, thin round to oval plaques
- **DDx-** 1-vitiligo 2-postinflammatory hypopigmentations

❖ **Diagnosis:**

1-KoH preparation:-meat balls and spaghetti

2-Woods light:-**golden yellow** florescence

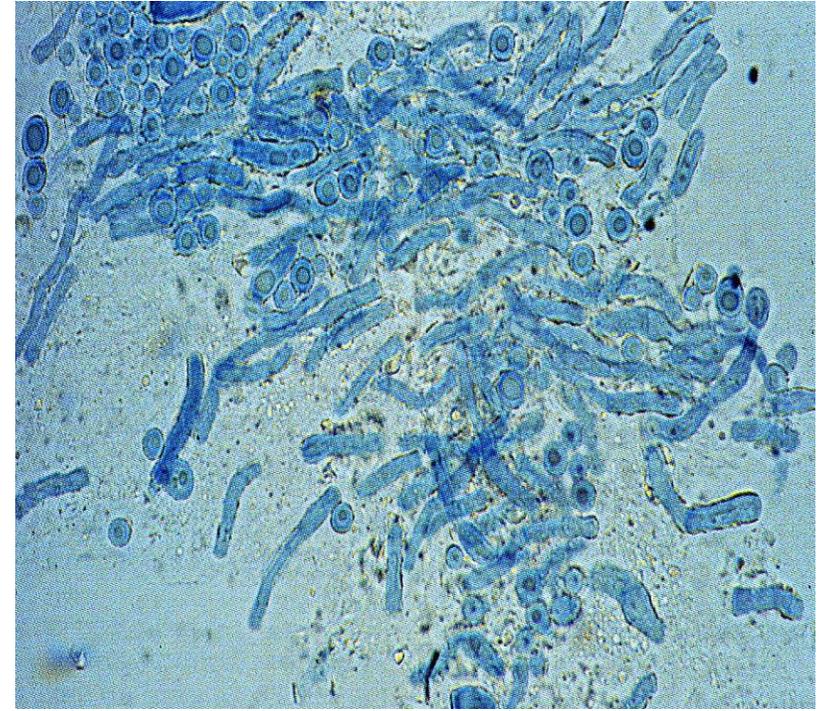




White scaly patches on the arm



hypopigmented patches on the back



✓ KOH preparation :
Showing meatballs
and spaghetti
appearance

❖ Treatment:

➤ Topical Rx:-

miconazole, ketaconazole, clotrimazole, econazole and Whitfield oint.-For 3 Wks. Selenium sulfide shampoo (5 days). Ketaconazole shampoo (5 days)

➤ Systemic Rx. :

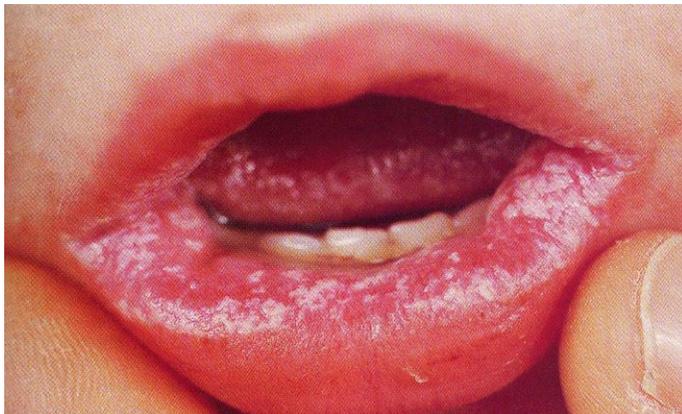
fluconazole 150 mg. 2 caps. per Wk. for 2Wks. Itraconazole caps. 200 mg daily for 1 Wk.

❖ Candidiasis:

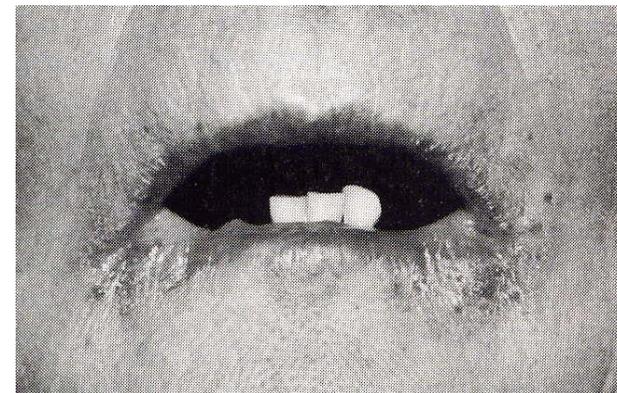
- Caused by **candida albicans**
- Candida albicans is a normal inhabitant of the skin, MM, G.I.T. and vagina
- It becomes a **pathogen** with:
 - 1-increased moisture
 - 2-administration of AB, steroids
 - 3-pregnancy
 - 4-DM and other debilitated conditions

❖ Clinical presentations of candidiasis:

1-Oral candidiasis: thrush and perleche dermatitis(in pts. With anemia and malfitted dentures).



Oral thrush with
angular cheilitis



☐ Angular cheilitis

☐ Causes :

- 1- fungal infection
- 2- drooling saliva during sleep
- 3- skin allergy

2-Balanitis and balanoposthitis



☐ Balanitis :
Maceration and
scaling of the glans
penis

3-Chronic paronychia

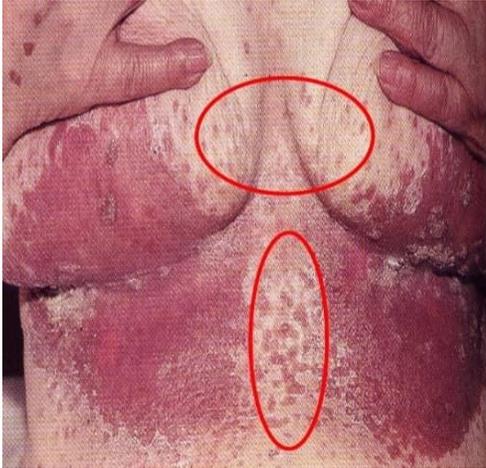


☐ Chronic paronychia
Inflammation and
edema of the posterior
fold with loss of the
cuticle.



✓ Candidal infection of nail

4-Candidal intertrigo :(napkin candidiasis, balanitis, submammary)



☐ Candidal intertrigo :
Submammary maceration ,erythema and satellite lesion (pustules) on the periphery away from primary lesion .



☐ Napken dermatitis With satellite pustules

5-Chronic mucocutaneous candidiasis:- most pts. Have a defect of the cell mediated immunity.



Very thick keratotic skin lesion.
☐ Chronic mucocutaneous candidiasis

6-Erosio interdigitalis blastomycetic

7-Neonatal candidiasis

8-Vaginal candidiasis

❖ **Diagnosis:**

1- **KoH preparation-** budding yeast

2- **Culture on Sabourauds medium-** 4 days (creamy gray mat).

❖ **Treatment:**

➤ **Topical antifungal Rx.**

➤ **For chronic mucocutaneous candidiasis long term Rx. with an imidazole is the Rx. of choice.**

❖ Conclusion:

These diseases are:

- **Infectious**
- **Treatable** with complete cure in most of them
- Should be treated early and properly ((duration and mode of treatment))
- Must be diagnosed properly and correctly
- **Steroids should be avoided in most of them (can be used in angular cheilitis with topical antifungal)**

Thank you