Lecture 4 Dermatology

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Fungal skin infections

1-Tinea Cruris

Tinea is fungal infection by dermatophyte known as Tinea which invade stratum corneum of the epidermis and hair and nail

Tinea can be transferred by from animal to man except T. versicolour

Tinea prefers high humidity and warm condition

Topical antimycotic agents are first-line treatment for fungal skin infections. Oral therapy is preferred for the treatment of extensive or severe infection and those with T. versicolour, T. capitis or onychomycosis.

1- Tinea Cruris “jock itch”

Infection of the groin area (inner upper thigh /buttock) where contact of opposing skin surface provide warm and humid condition for fungal growth

-Obesity and occlusive cloth (specially not cottony) will increase the infection risk

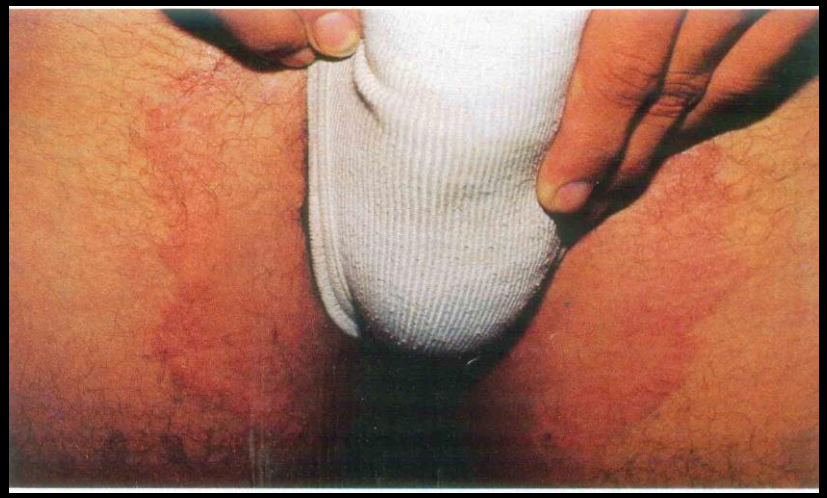
Diagnosis depend on location and presentation

presentation

Dry reddish brown lesion with sharply defined margin and inflamed border with symmetric spread with or without scale with bad odor.

Intense pruritis is common leading to scratch which may cause secondary bacterial infection and skin maceration

T. cruris



Treatment (OTC)

Treatment mainly by topical antifungal

A-Older drugs: fungistatic two weeks duration

- Tolnaftate (Tineacure®)

- Ciclopirex (batrafen)

-Imidazole group:

- clotrimazole (Dermatin®, Cansten®)
- tioconazole (Trosyde®)
- miconazole (Dactarin®)
- ketoconazole (Nizoral®)
- ecoconazole (Pevisone)
- oxiconazole (Tinox)

Treatment (OTC)

B- newer drugs :

Fungicidal and Potent only used for one week in T. cruris, corporis, pedis and for 2 weeks in T. versicolor, but should not be used In patient with liver problems

Butenafine (Tinearest®)

Terbinafine (lamisil®) available as cream, lotion, Tablets

Treatment(OTC)

topical antifungal preparations

*Tincture iodine 5%

*Castellani paint

Fuchsin.....0.4 gm
Phenol.....4.0 gm
Boric acid.....0.8 gm
Resorcinol.....8.0 gm
Acetone.....4.0 ml
Alcohol.....8.0 ml
Water to.....100.0 ml

***whitefield ointment**: 6 % benzoic acid and 3 % salicylic acid in a suitable base, such as lanolin or vaseline

Treatment(OTC)

The following may be added:

-topical corticosteroids like triamcinolone for relieving irritation(Dactacort®)

Topical antibacterial like gentamycin for secondary bacterial risk form sever scratch (Kenacomb®)

Treatment course is for **two weeks (despite rapid improvement continue untill the treatment course if no improvement**, contact physician

Prevention

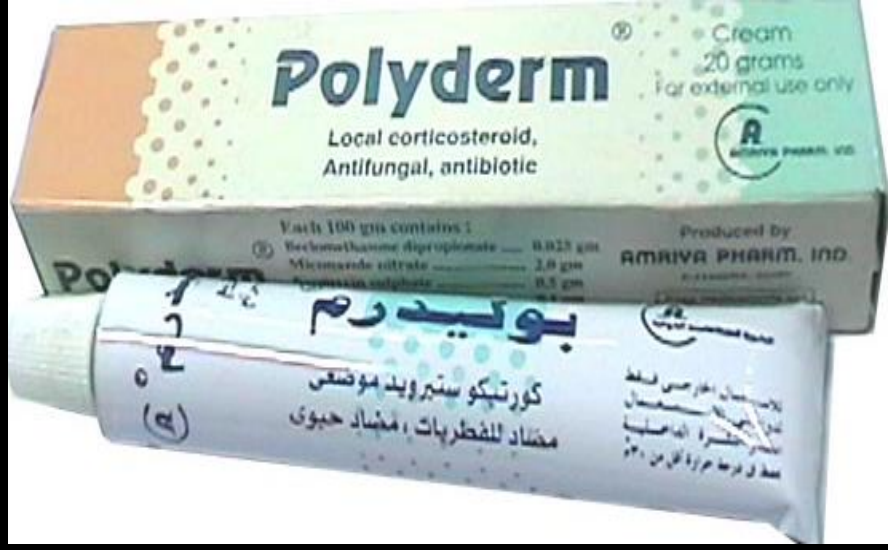
- reduce weight

- avoid occlusive clothes

-wear cottony clothes

-never wear wet clothes, well skin drying after showering

-avoid animal contact



T. Cruris Treatment

Topical antifungal pharmaceutical preparation

-creams:

common, easily washed, no greasy sensation preferred in skin folds but relative **shorter contact** time with skin

-ointment:

longer contact time, recommended for scaly or dry skin, **not preferred in skin folds** due to preventing sweating evaporation, not easily washed with greasy sensation

Topical antifungal pharmaceutical preparation

- powder:

preferred for skin folds as simply to apply, need dry skin, as wet area turn powder to cake or paste which hinder its therapeutic action

- spray:

preferred for skin fold or painful skin and large surface area, but usually high cost and many formulation problems

Topical antifungal pharmaceutical preparation

- solution: less frequent, less preferred as **more difficult to apply**. preferred in fungal infection to ear or nail

- lotion and shampoos: mainly for scalp or large surface area of the body ex: T. versicolour

Most topical antifungal are fungistatic, so even if rapid improvement occur, continue until the end of treatment duration

3- Candidal intertrigo

It is a fungal infection by Candida, also occur in the groin area and **armpit, under breast** (the word intertriginous refers to closely opposed skin)

Central moist erythematous area often bordered by **discrete pustules** in a **"satellite pattern**." Initially vesicles, pustules, or erythematous plaques, progressing to maceration and fissuring

may be like T.Cruris but the main difference are **the moist nature and inclusion of the scrotum(genitalia), axilla area, pustule presence**

3- Candidal intertrigo

Factors that may increase skin friction include:

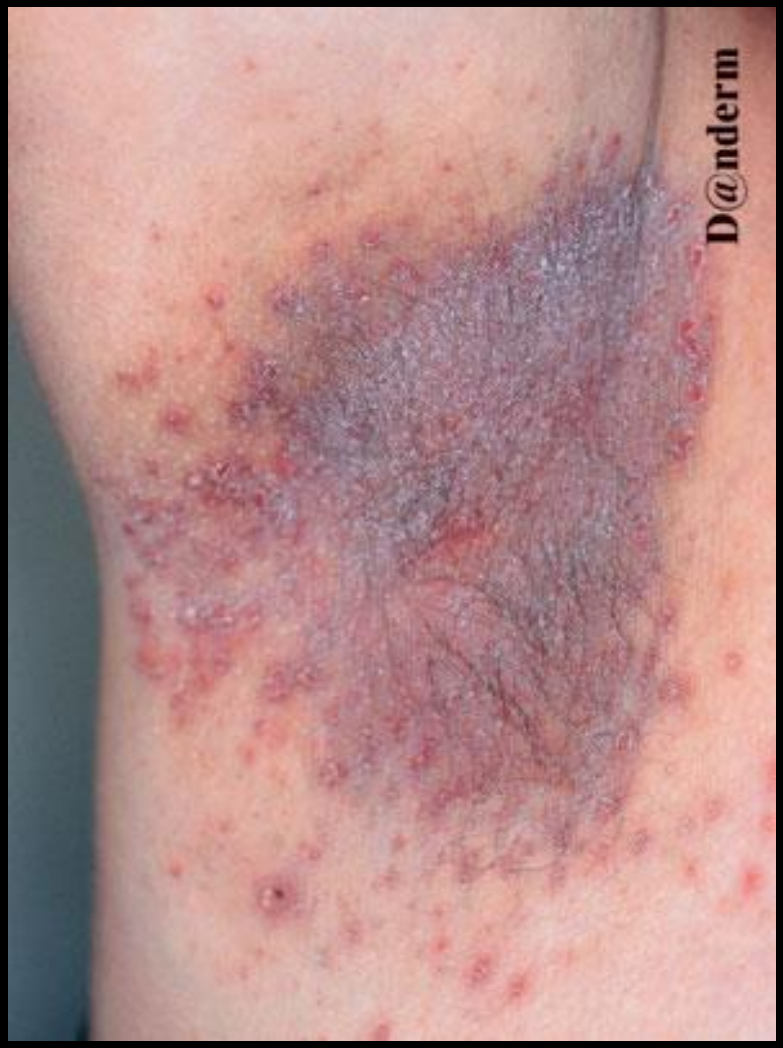
Obesity, Clothing (especially tightly fitting), and activities that promote skin-on-skin rubbing

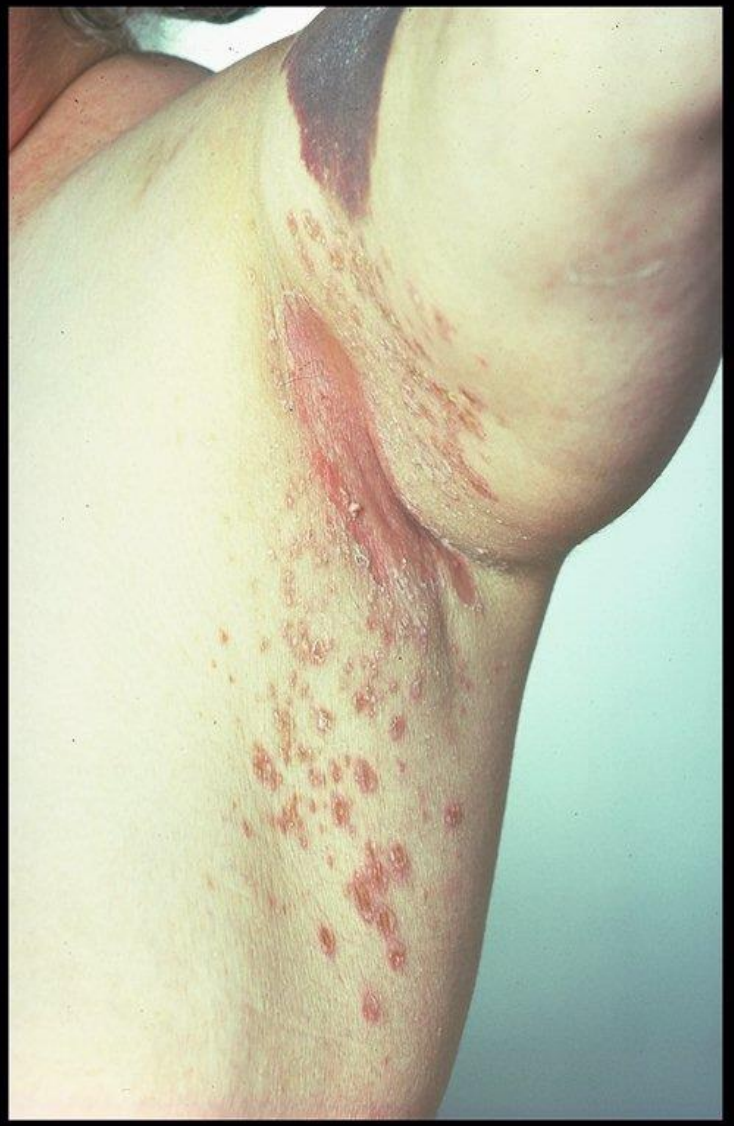
Treatment (OTC) and prevention are similar to T. cruris

keeping the affected area dry. By the use of cotton swabs or using absorbent powders to prevent moisture from building up in folds of the skin.

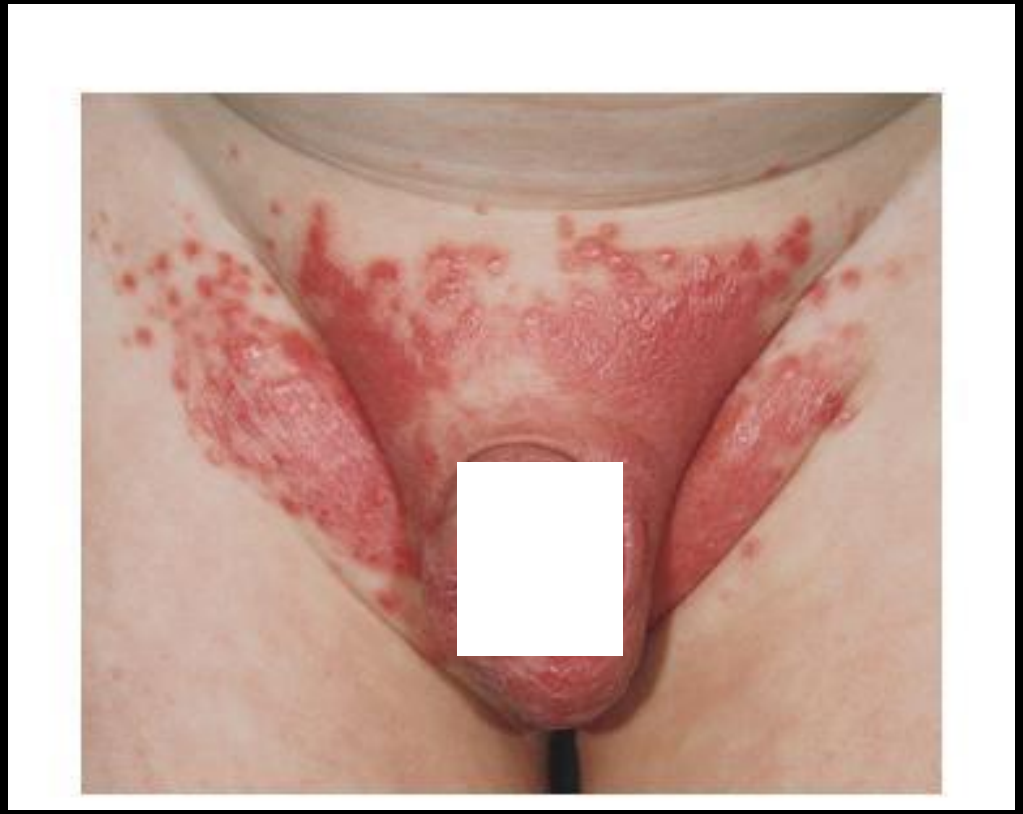
Resolve in 1-2 weeks

Candida intertrigo





Candida intertrigo in the scrotum



4- Erythrasma

a long-term bacterial infection that usually appears in the area between overlapping skin (skin folds) as the groin, armpit.

Erythrasma is caused by the bacteria *Corynebacterium minutissimum*.

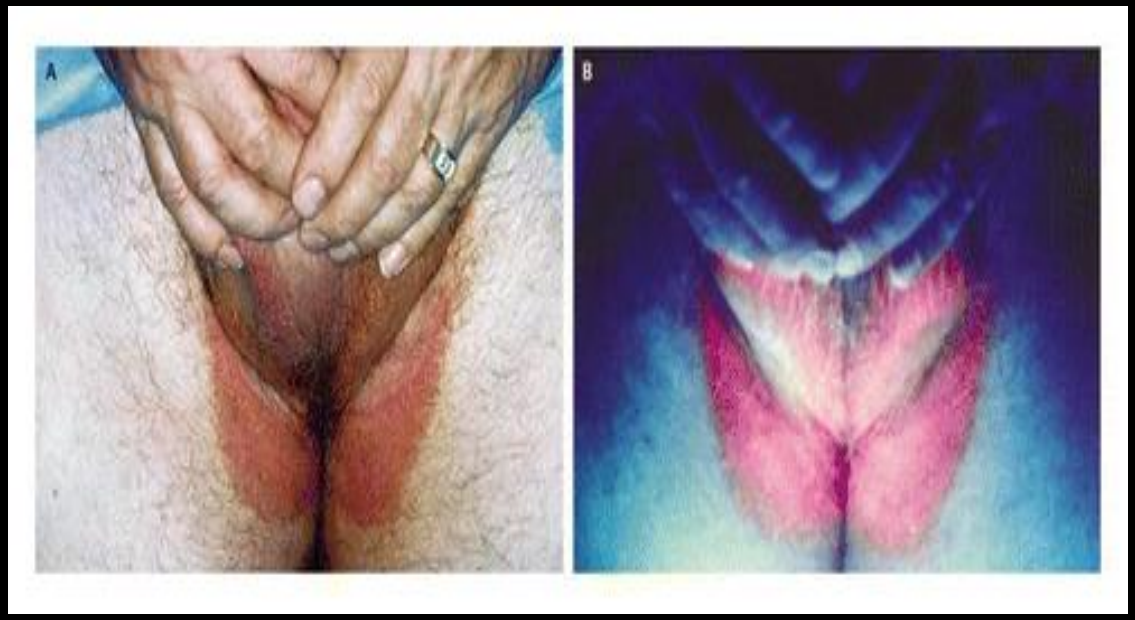
Erythrasma is more common in warm climates, more likely in overweight or **in diabetes**.

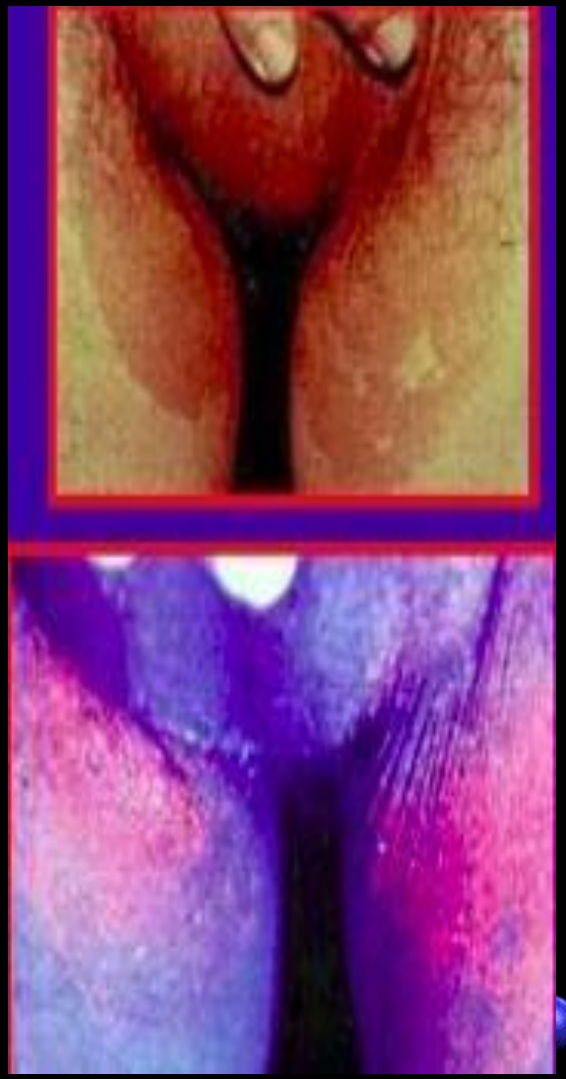
Erythrasma

The main symptoms are reddish-brown slightly scaly patches with sharp borders. The patches occur in moist areas such as the groin, armpit, and skin folds. They may **asymptomatic or itch slightly**.

Differentiated by a **Wood's lamp test** where the ultraviolet light of a Wood's lamp causes the organism to **fluoresce a coral red color**, differentiating it from fungal infections.

Eryhtrasma





Treatment (not OTC)

- **Gently scrubbing the skin patches with antibacterial soap may help them go away.**

- Topical fusidic acid or erythromycin gel applied to the skin.

- In severe cases, the physician may prescribe erythromycin or azithromycin tablets

- Complete recovery is expected following treatment.

Prevention

Maintaining good hygiene

Keeping the skin dry

Wearing clean, absorbent clothing

Avoiding excessive heat or moisture

Maintaining healthy body weight

Control diabetes

1- Tinea corporis

Also called T. circinata or T. coin, Common with - animal contact

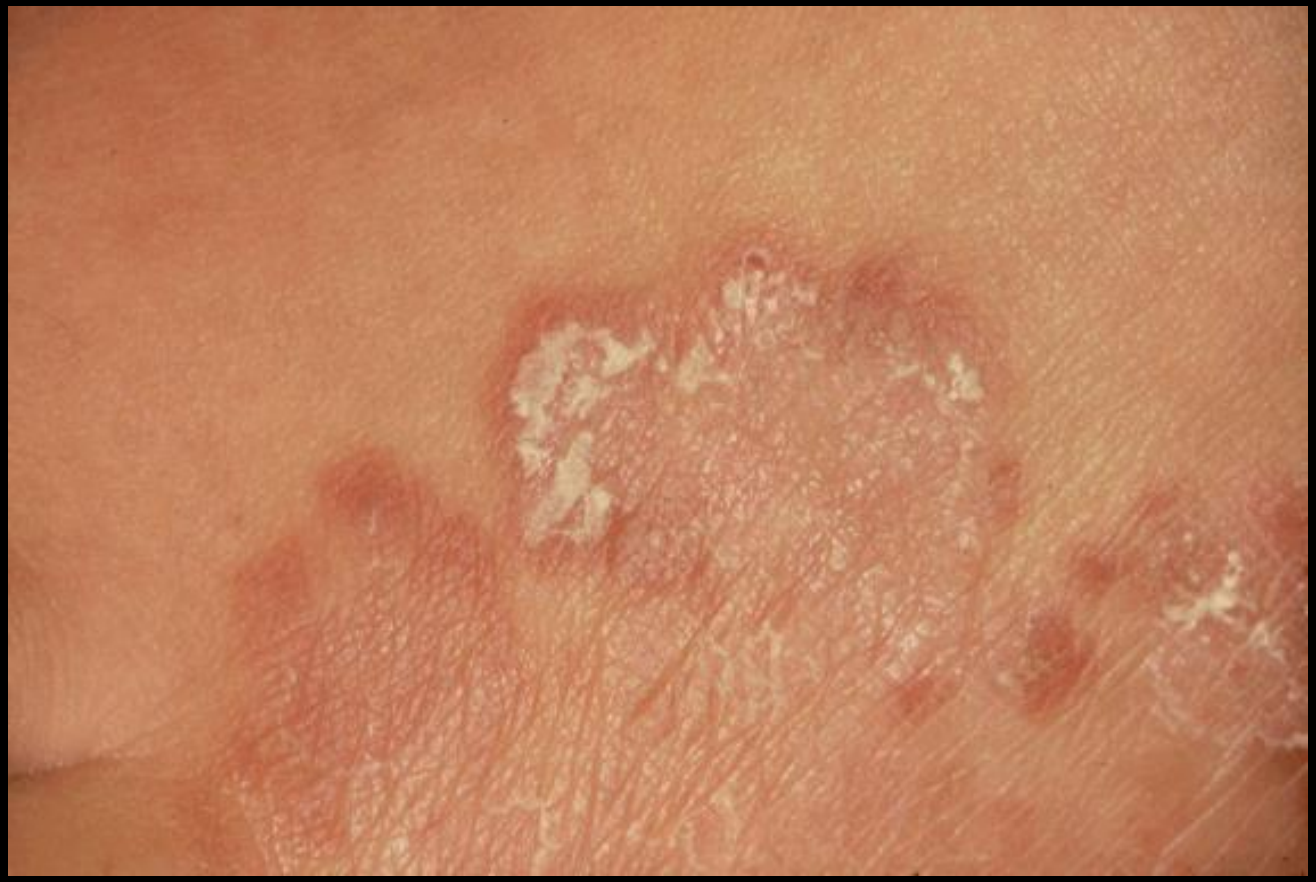
- Diagnosis depends on location and presentation

- Occur mainly in trunk and extremities excluding hand, groin, foot, scalp, finger

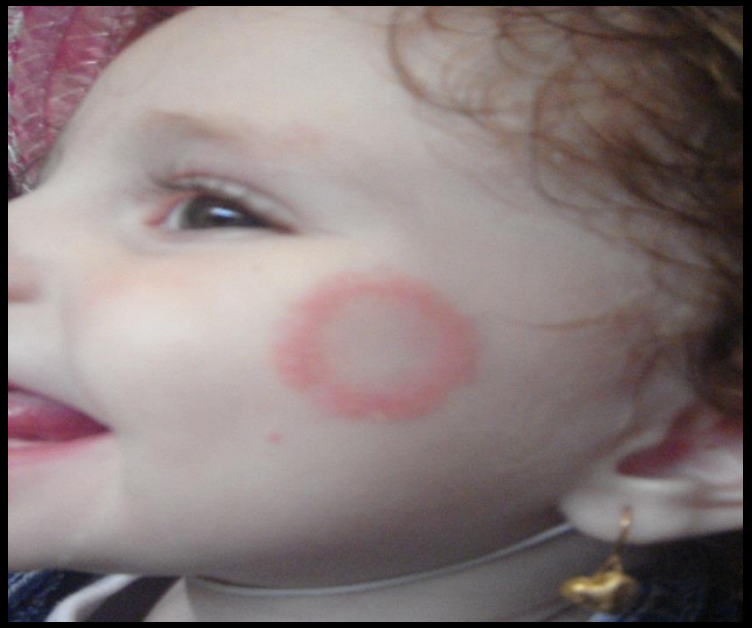
- Appear as oval or round scaly patch of inflamed circinate border with clear (normal) center

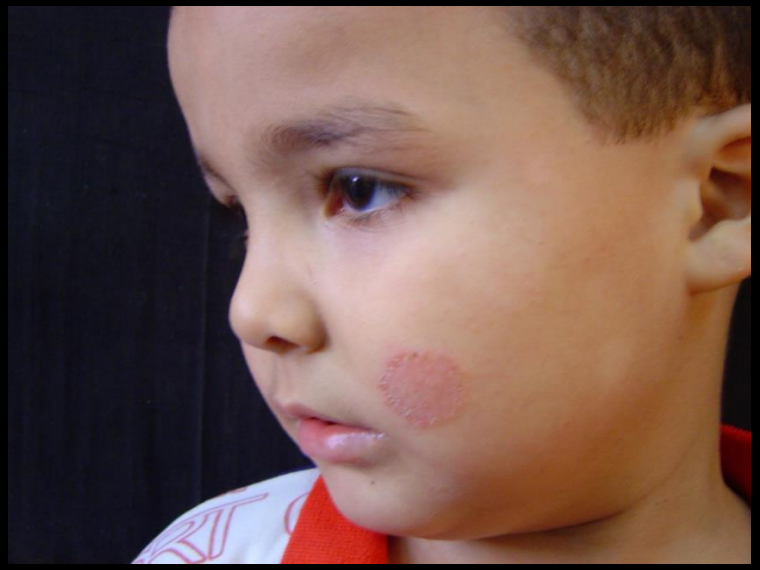
usually asymptomatic

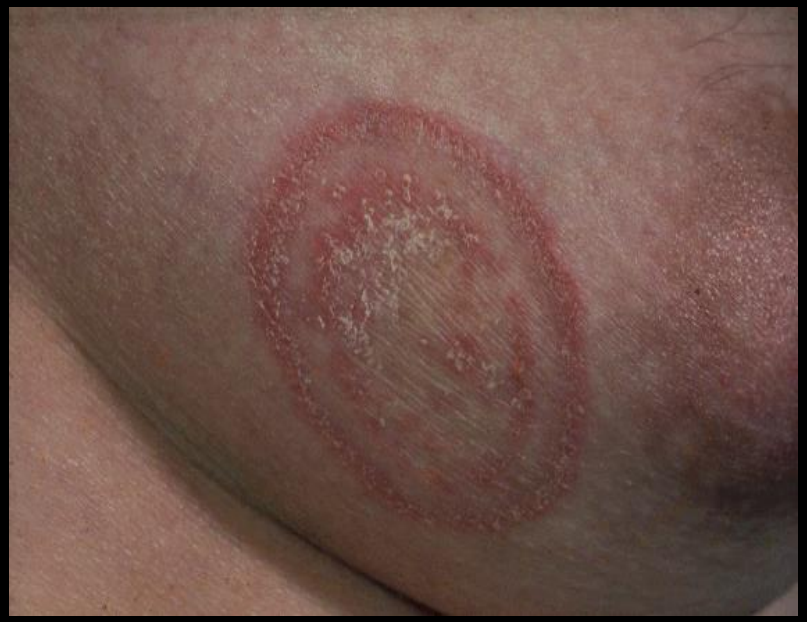
T. corporis



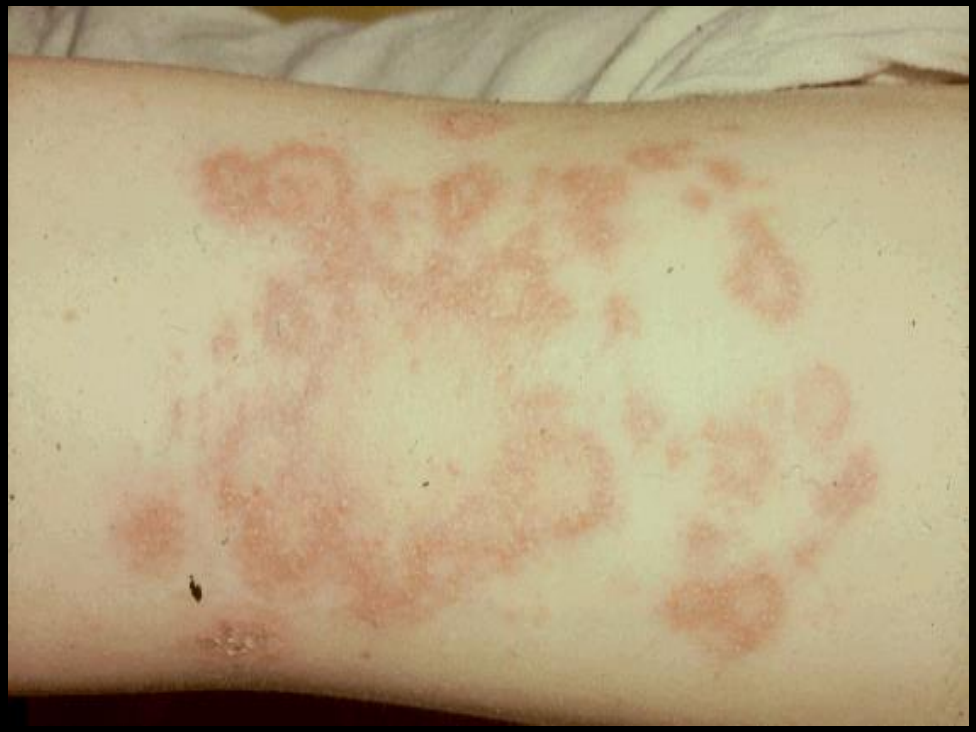
T. corporis

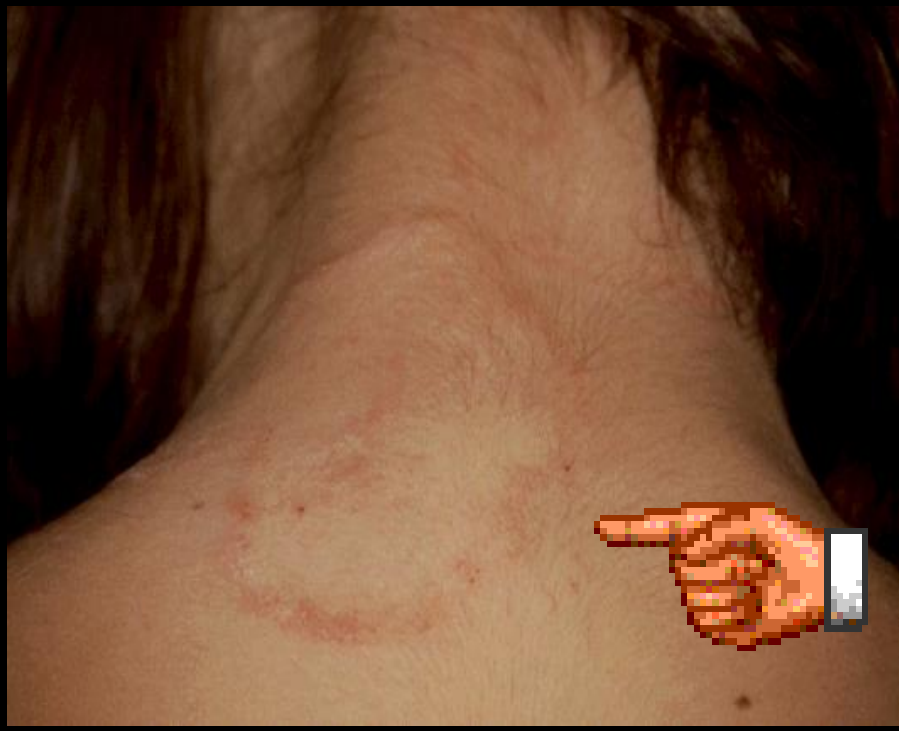




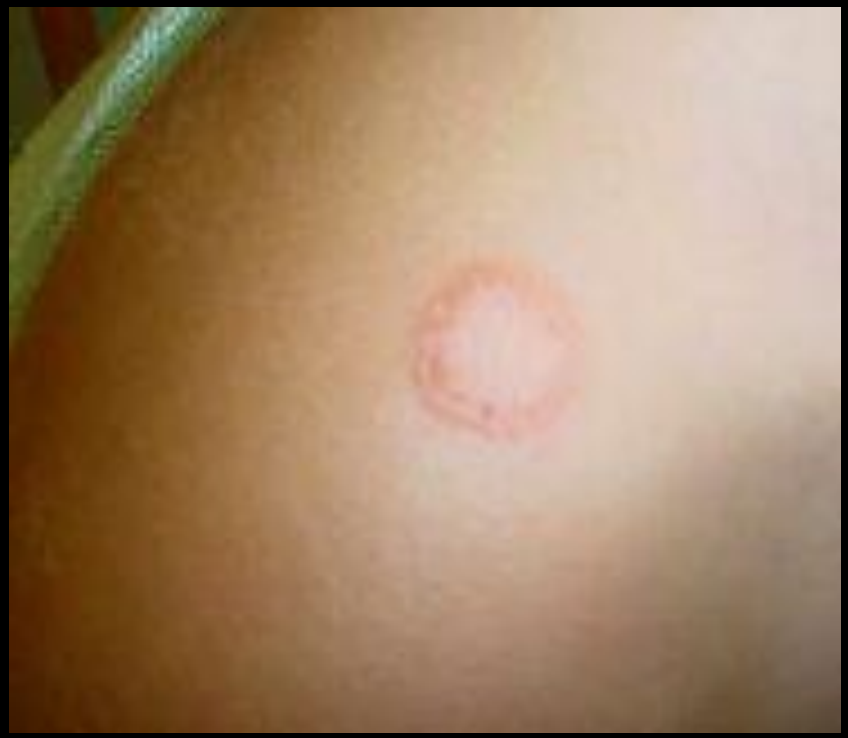


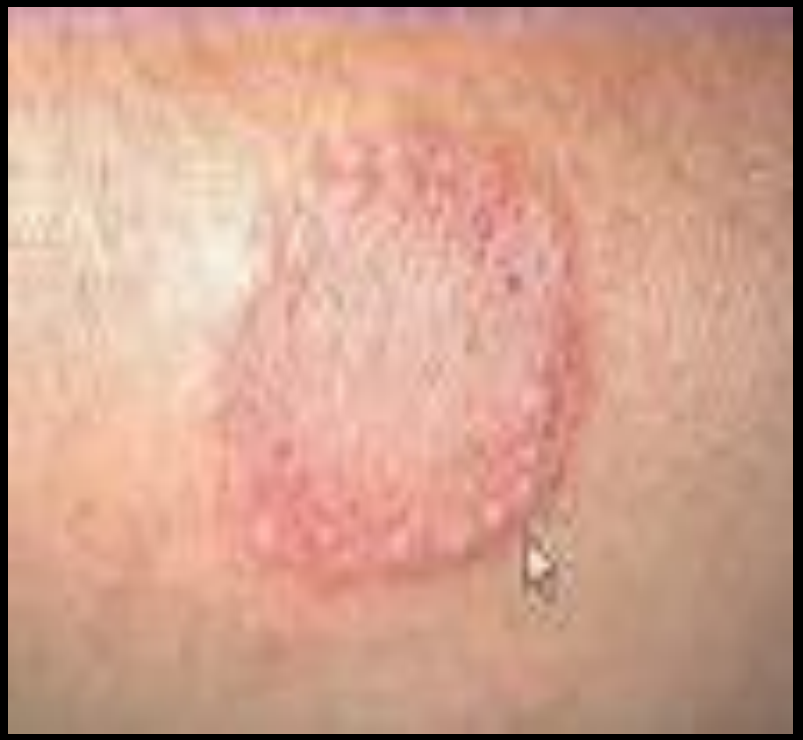
T. corporis





T. corporis





Treatment (OTC)

-Topical antifungal for **4 weeks** as previous

- oral antifungal may be added like:

-Itraconazole (100 mg twice daily) Itapex®

-Fluconazole (150 mg once weekly for 4 weeks) Diflucan®

Grisofulvin (500 mg daily)

Grisofulvin is effective agianst fungal infection except T.versicolor and candidal infection

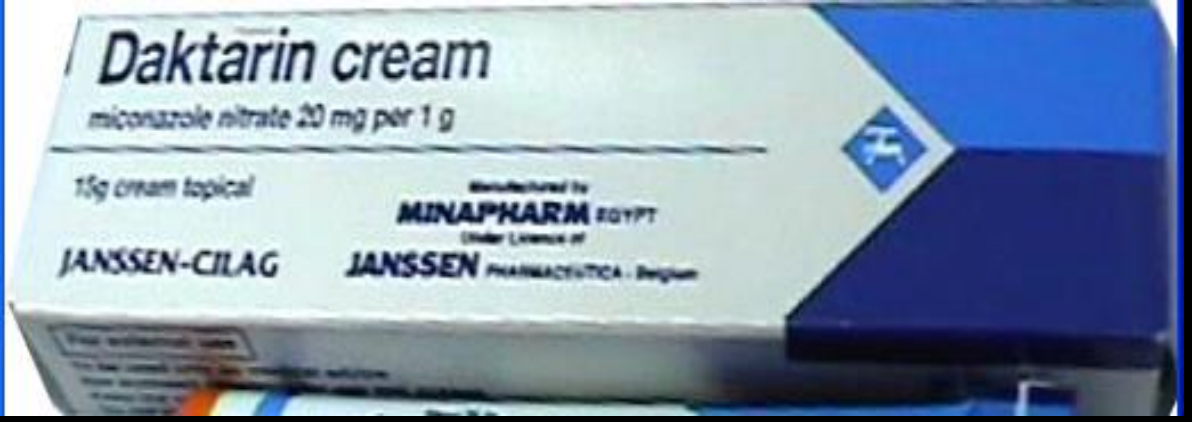
Prevention: avoid animal contact mainly

dry the skin after showering

Tolnaftate

Butenafine

Terbinafine

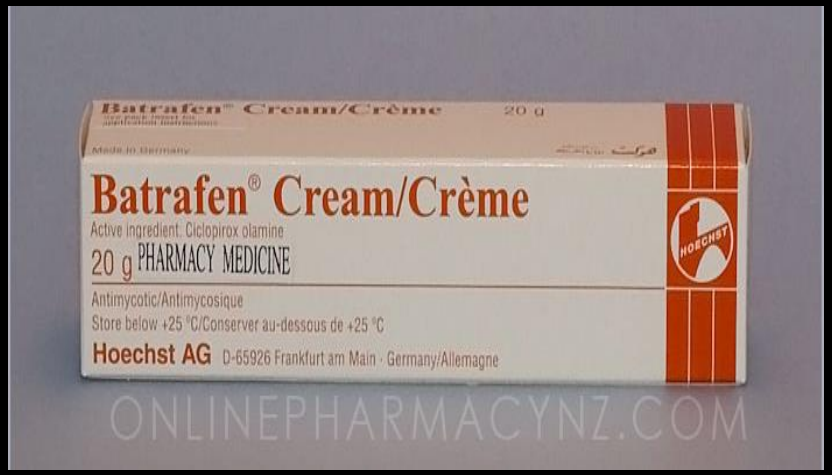


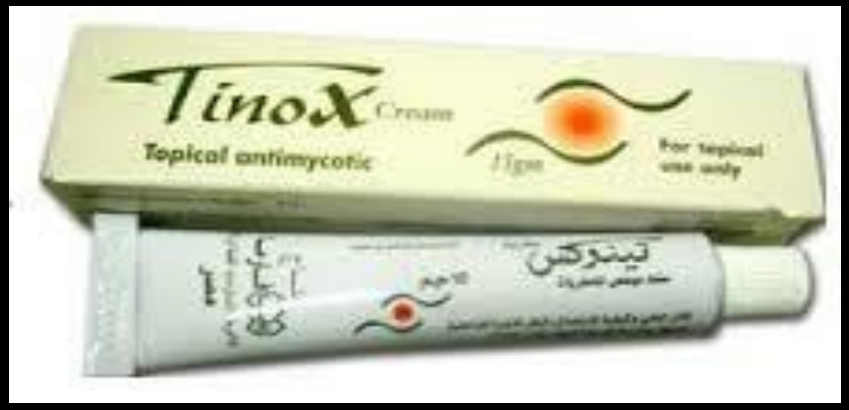
miconazole

Tioconazole

Clotrimazole

Topical antifungal drugs





Systemic Antifungal

Systemic Antifungal

Differential diagnosis

In some cases, T. corporis are may show similar presentation like eczema, psoriasis, Pityriasis rosea, and leprosy.

To differentiate make the following test: take specimen by slide scratch and add KOH and examine for hyphea under microscope . also scratching to scales will not cause bleeding in T. corporis (auspitz sign in psoriasis)

Pityriasis rosea

a skin **rash** (hundred of lesions) caused by a virus. The word means "fine pink scale". The specific virus is unknown (may be reactivation of herpes)

Diagnosis depend on age, location, presentation

It commonly occurs in young adults (especially aged 15-30) **not contagious**

upper respiratory tract infection may precede all other symptoms in as many as 70% of patients.

starts as large spot (2-10 cm) on the trunk called a 'herald' patch (initially mistaken for a fungal infection) then in 1 or 2 weeks, the spots then spread over the body to cover the trunk and upper arms (a 'T-shirt' distribution) and the upper legs.

Pityriasis rosea

The spots become oval patches (about the size of a coin) of copper-coloured skin with scaly margins

Patients is not ill, although there is **some discomfort from itching**

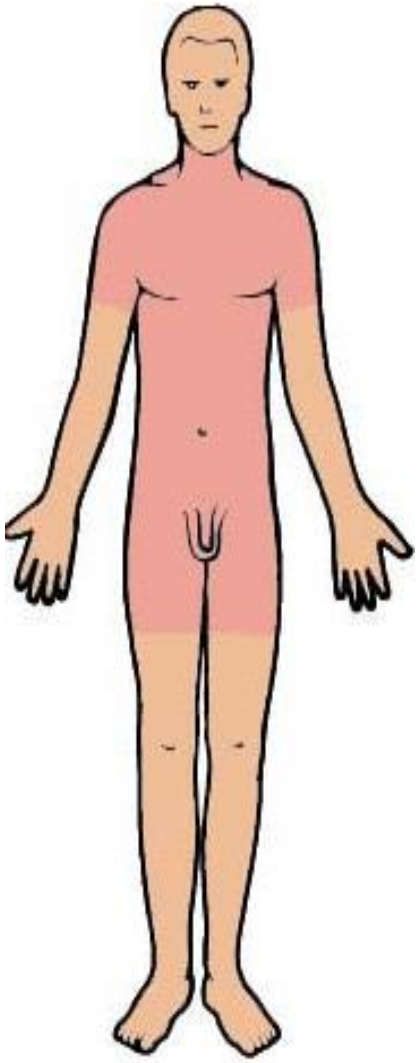
rash may be accompanied by **low-grade fever, headache and fatigue (reactivation concept)**.

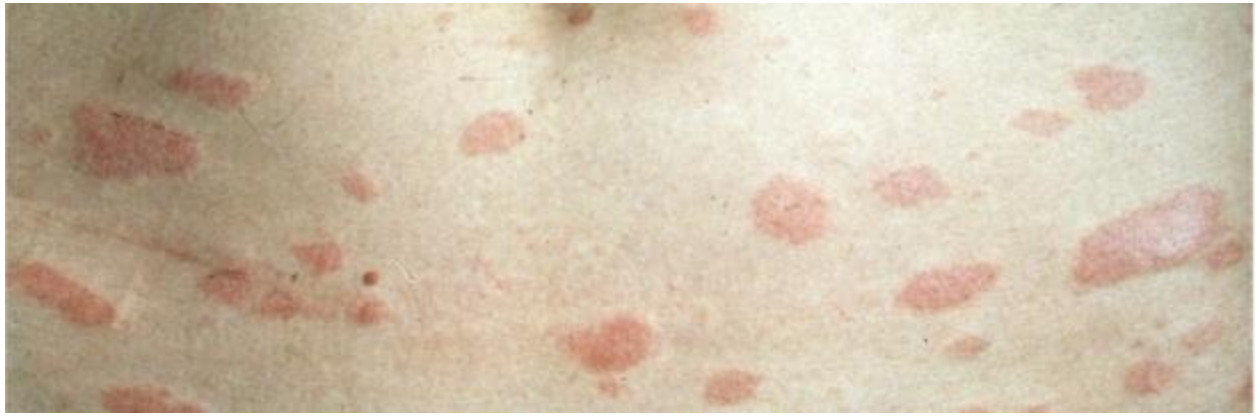
No scarring will result from the skin rash.

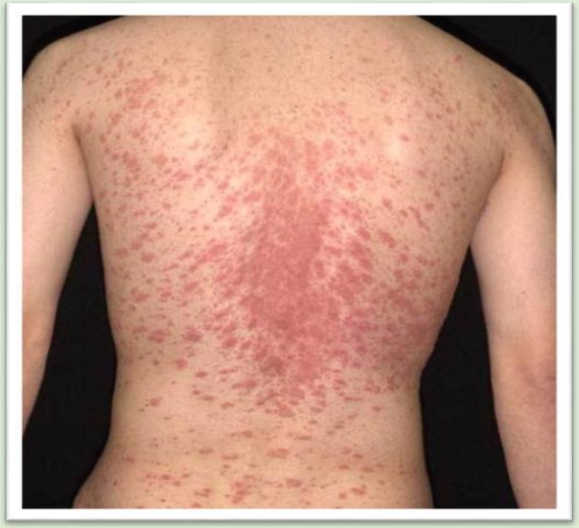
Resolve in 4-10 weeks.

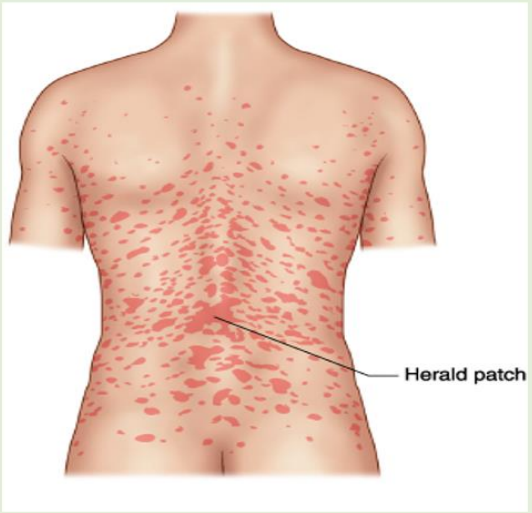
Second attacks are rarely seen (2%).

Pityriasis rosea



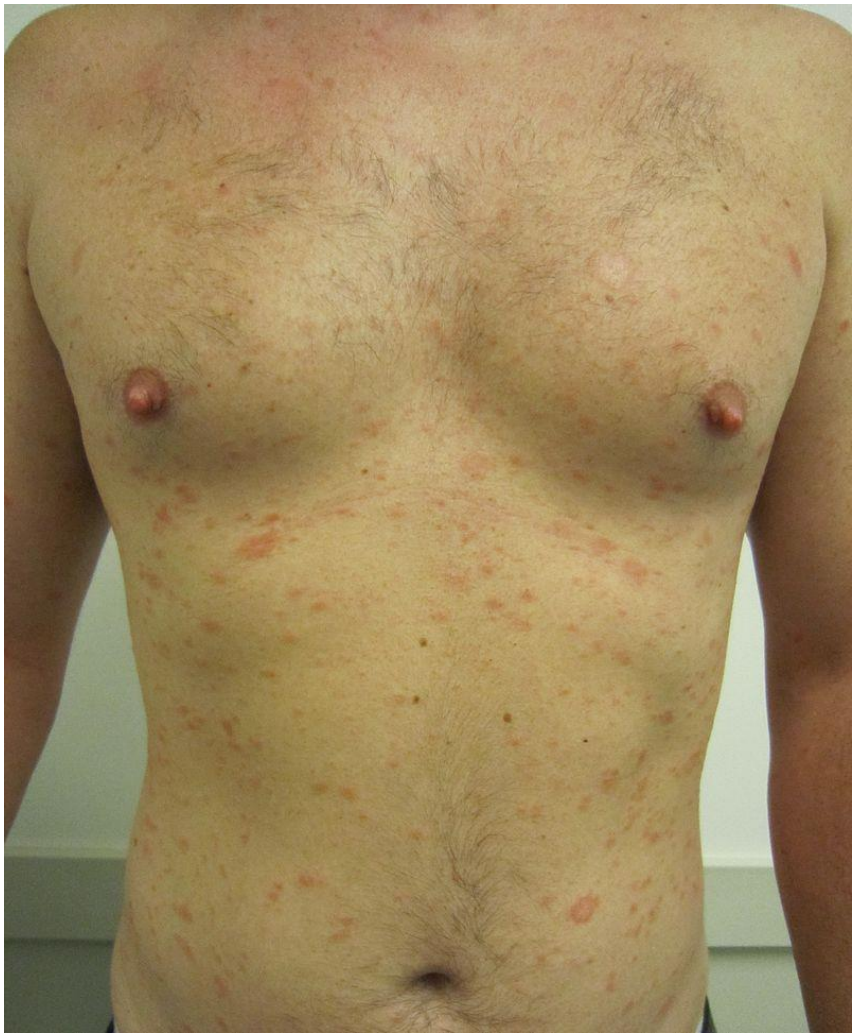




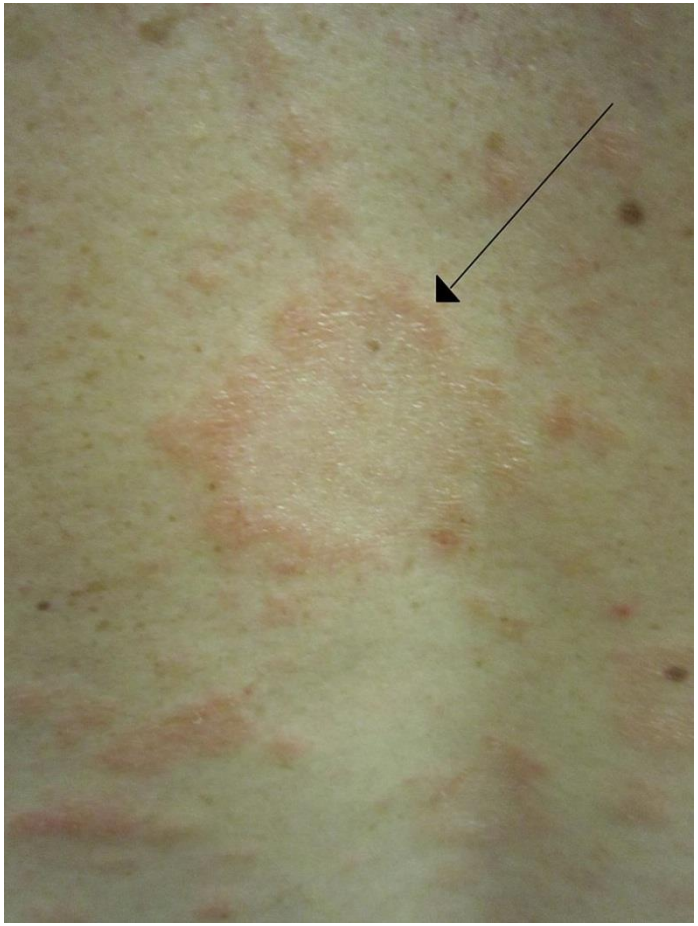


Pityriasis Rosea

Pityriasis rosea
on front trunk



Herald patch



Pityriasis rosea

Treatment:

-no special treatment for pityriasis rosea.

-expose the skin to **moderate amounts of sunlight**, as this tends to lessen the rash, but you must avoid sunburn. similarly, ultraviolet light therapy 3 times a week is helpful

-use some soothing lotions or creams. These include calamine lotion

-Oral antihistamines or topical steroids may be used to decrease itching

-The antiviral Acyclovir can reduce length of duration and severity

Tinea versicolour(not OTC)

-Also called Pityriasis versicolour (reversed to normal skin color) Due to production of dicarboxylic acid which change skin color

-Require oil in addition to temperature and humidity for growth, so oily cosmetic increase infection risk

-Only from human contact not animal

-No sharp margin (usually discovered by family member)

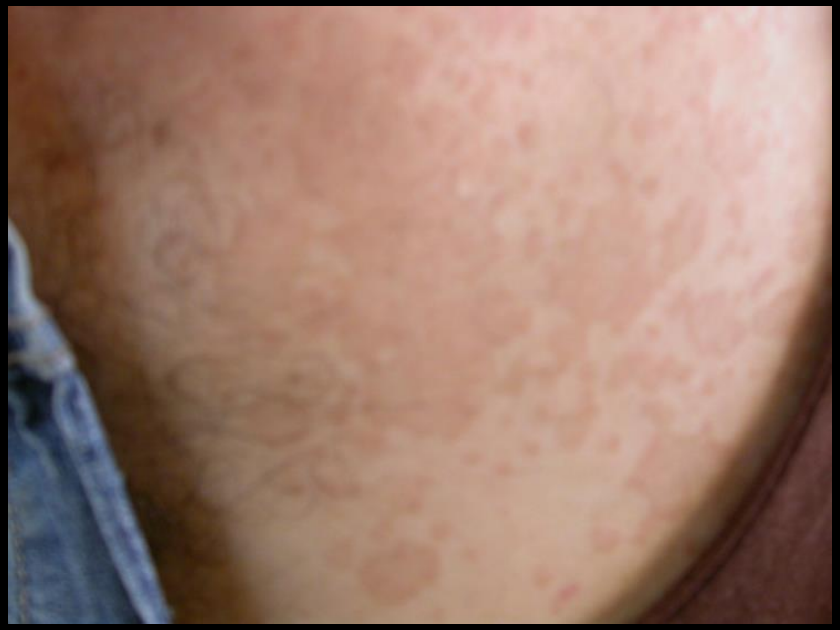
diagnosis (presentation and location)

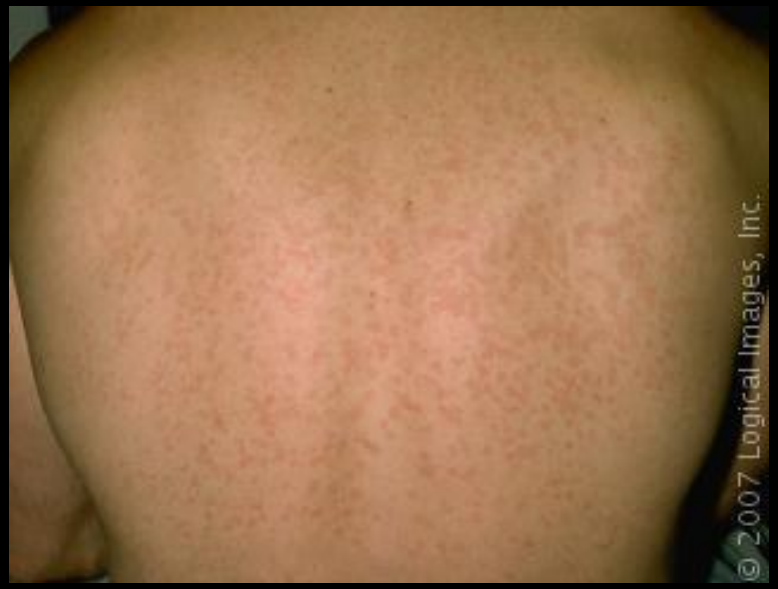
Occur as small **scaly** patches of hypo pigmented or hyper pigmented color of skin on chest, abdomen, the back and the neck with no sharp margin

mild itching specially after long sun exposure as in swimming for long time

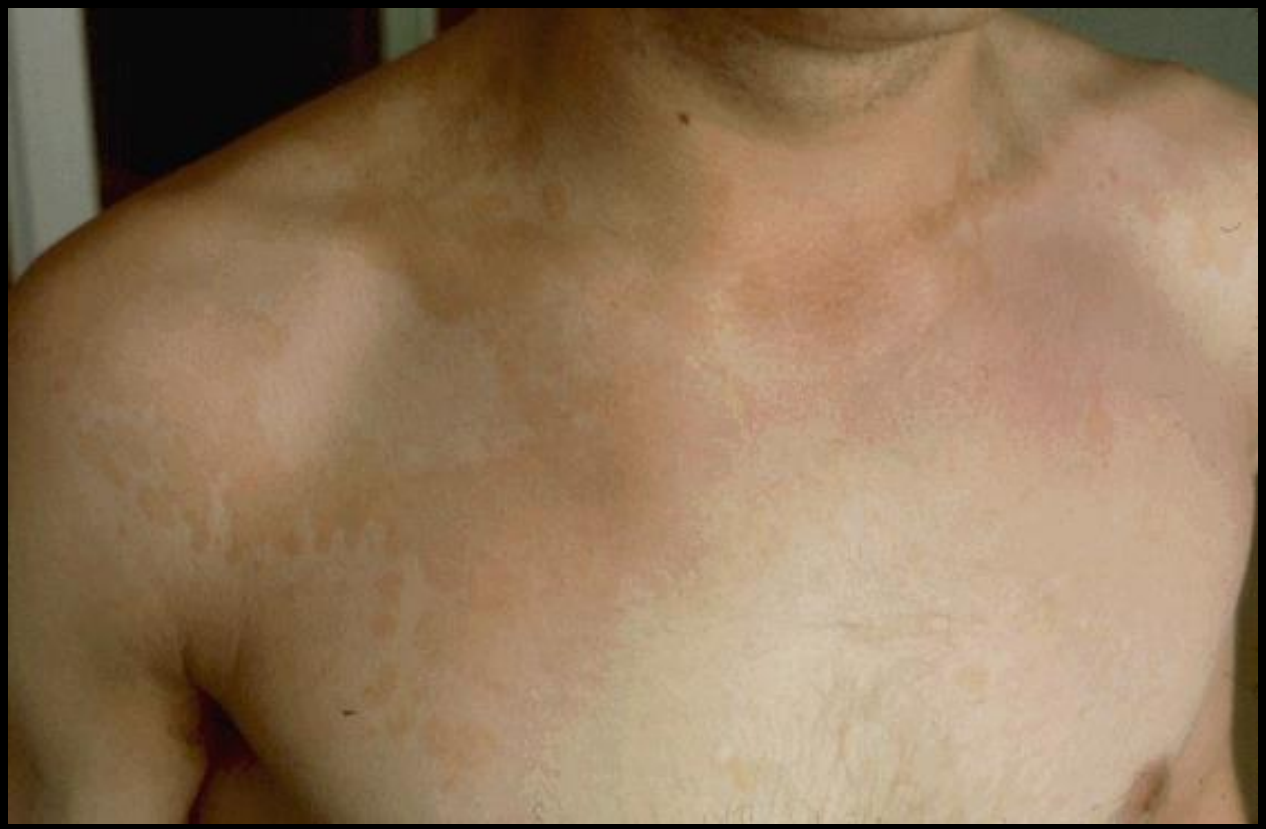
Easily differentiated from **Vitilligo** which is hypopigmented only, different locations patterns, sharp eryhtematous margin, no itching, no scale , poor prognosis

T. versicolour

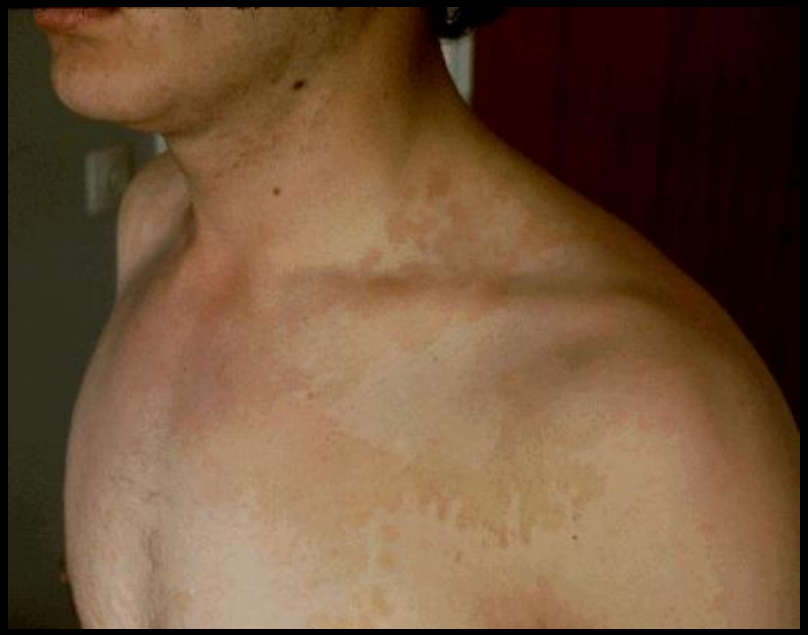


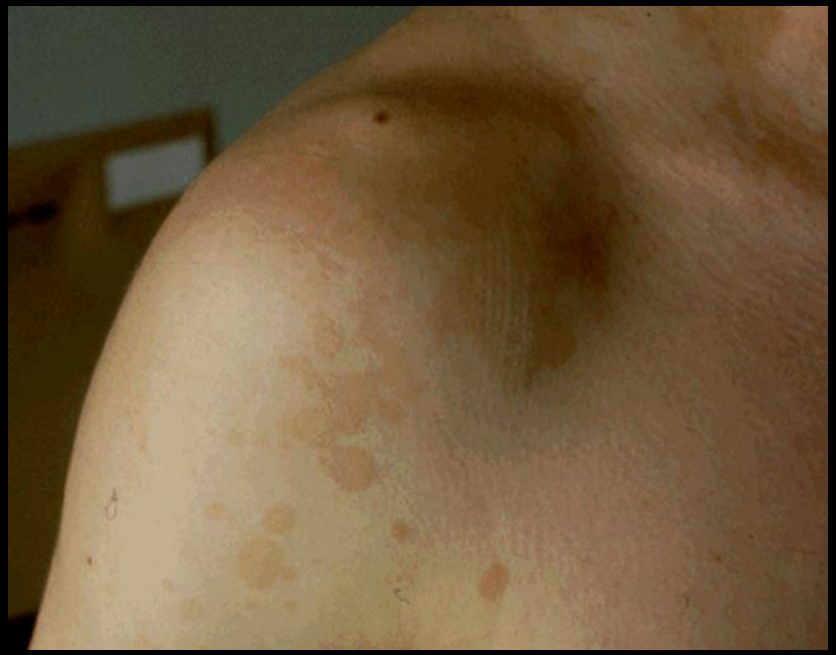


T. versicolour

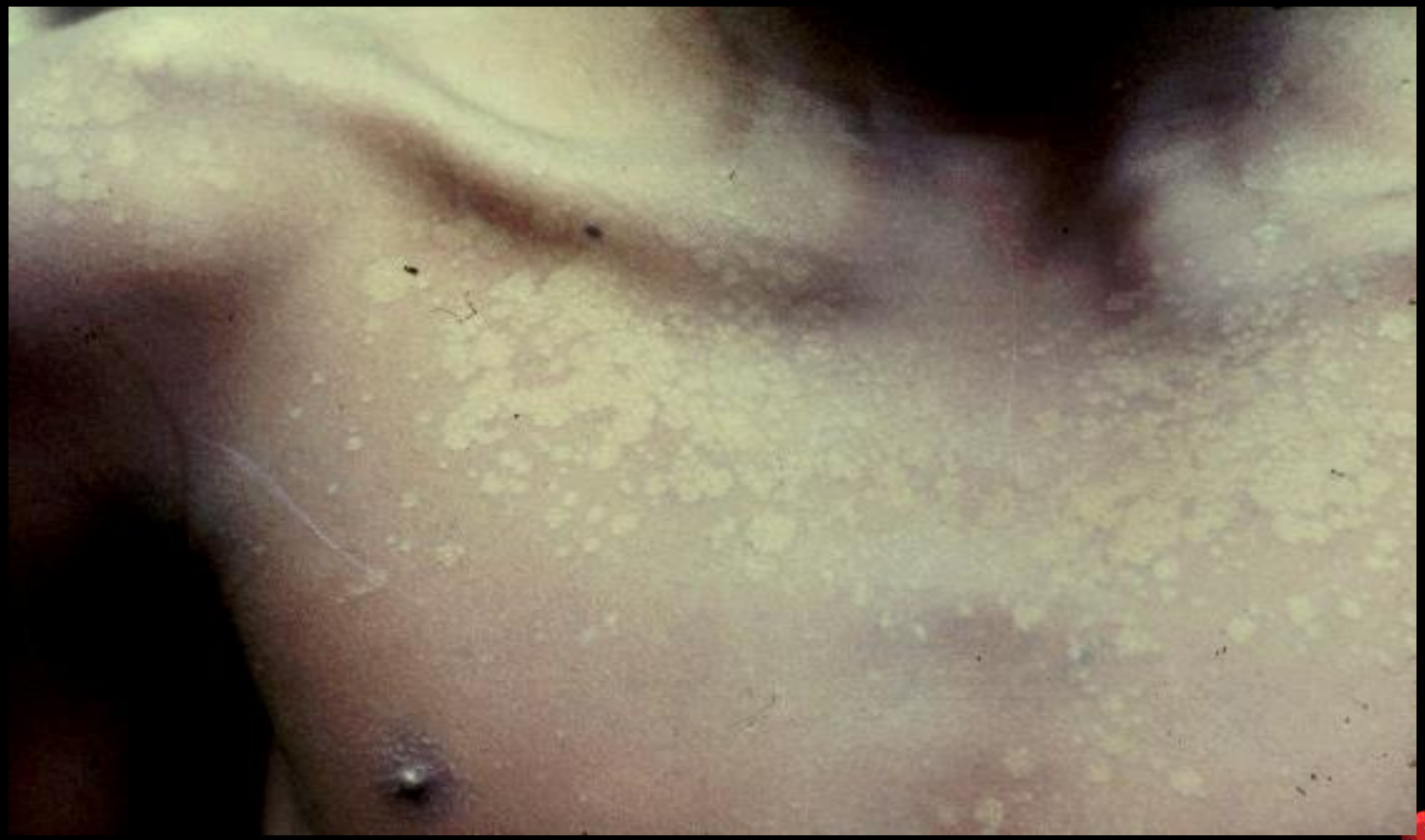


T. versicolour

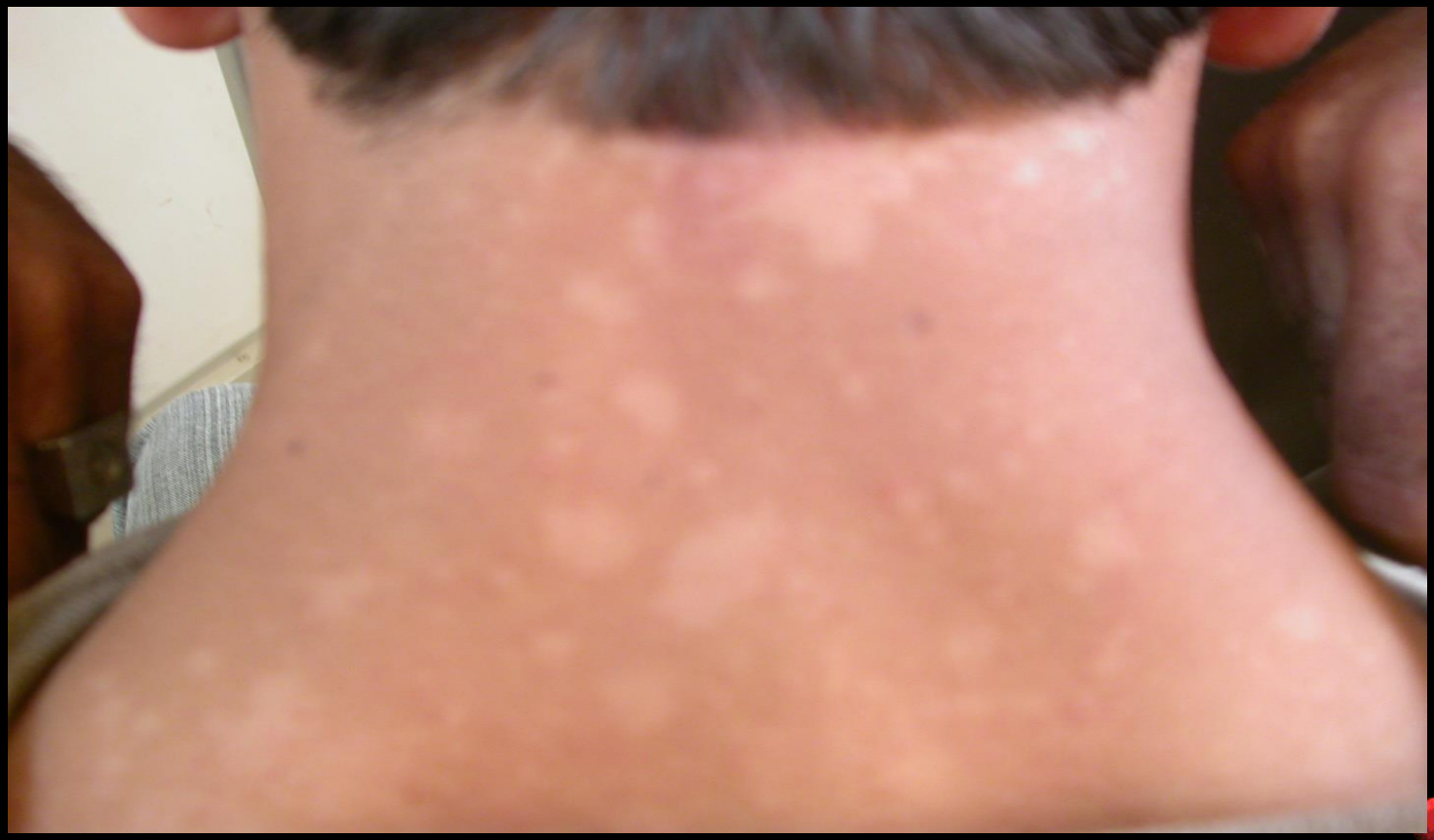




T. versicolour



T. versicolour



Treatment (not OTC)

- Mainly systemic antifungal for 4-8 weeks according to severity (no grisofulvin):

Itraconazole 200 mg daily

fluconazole 150 mg once weekly

- Topical antifungals are added : where lotion or shampoos are preferred due to large surface area

Ex: ketoconazole shampoo (nizoral shampoo) ®

Selinium sulfide (selsun blue) ® has antifungal properties

Topical shampoos are used every 2-3 times per week for 4-8 weeks

Prevention

Avoid oily cosmetics

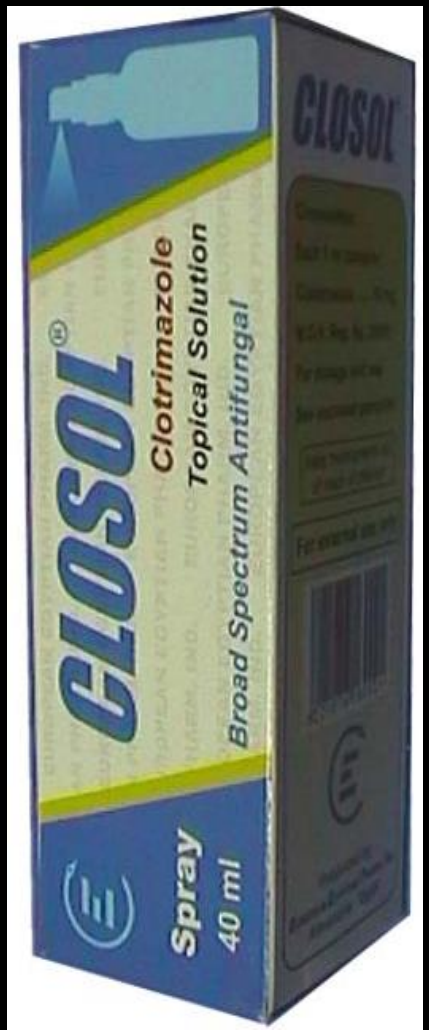
-Avoid wet clothes

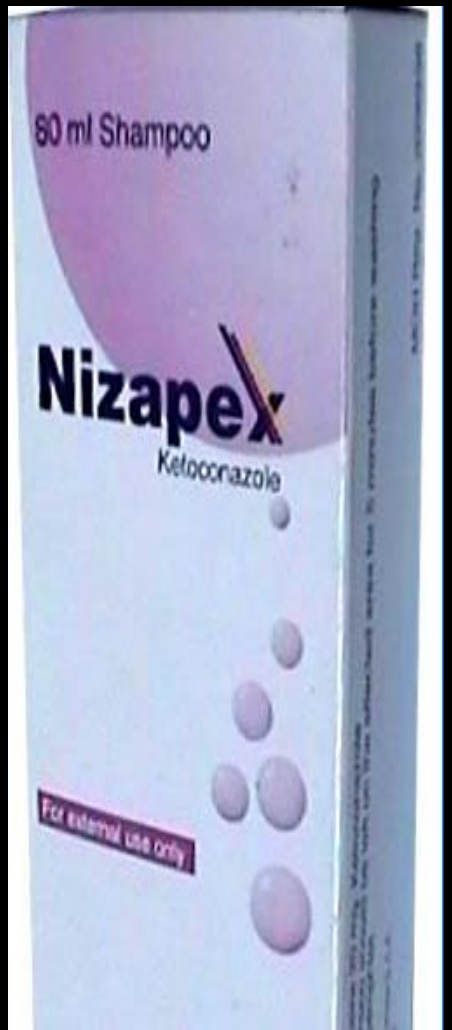
-Avoid occlusive clothes

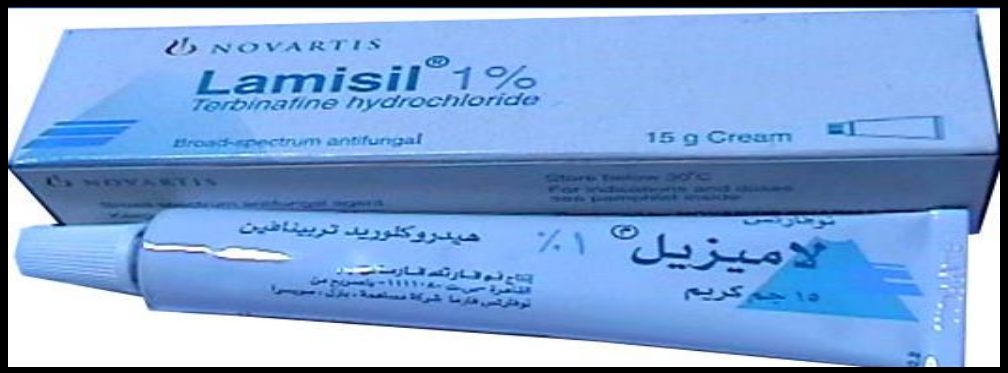
-wear cottony clothes

- well skin drying after showering

T. Versicolour treatment







Topical Antifungal

Systemic Antifungal

3- Tinea pedis

Also called athletes' foot as common between athletic people, represent about 70 % of Tinea cases

Infection is common in people using general bathing facility (camps, schools, mosques)

Recurrence is common so, prevention is important in this case

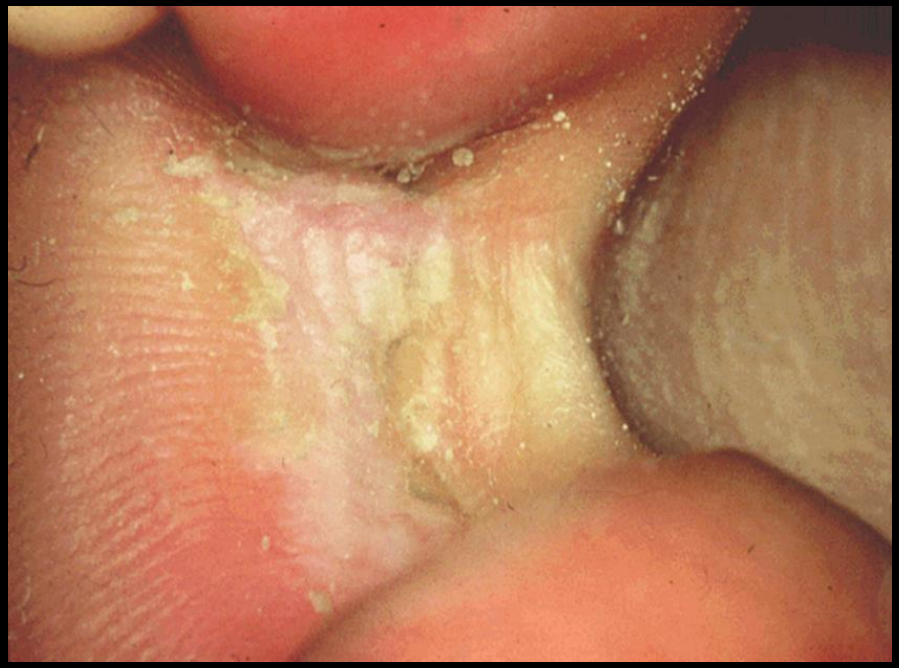
Diagnosis depends on location and presentation

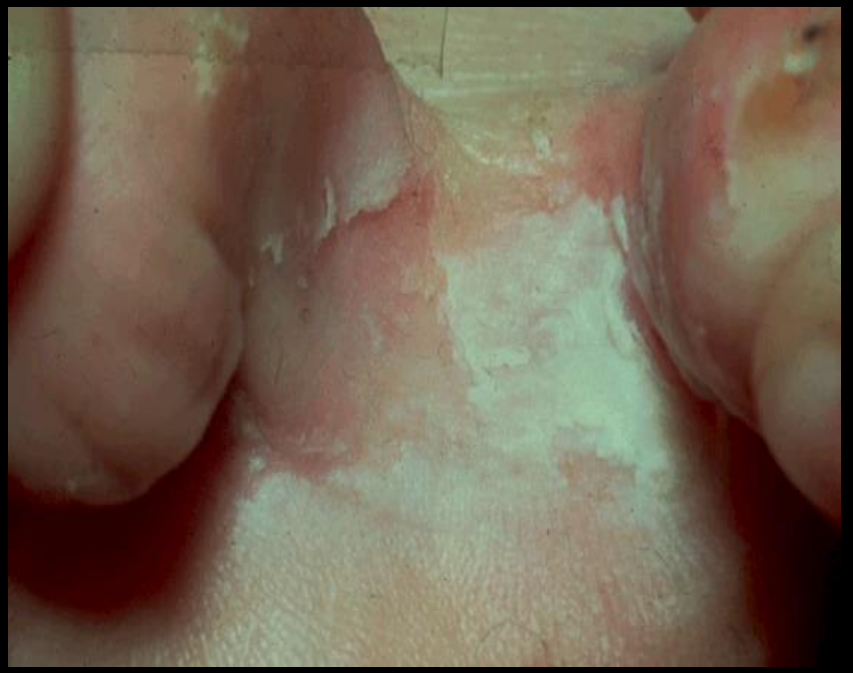
Presentation

- More common form appear as lesion between 4,5 toes because it maintain high water and temperature. The lesion is fissured, macerated, whitened with **foel odour** and intense itching.

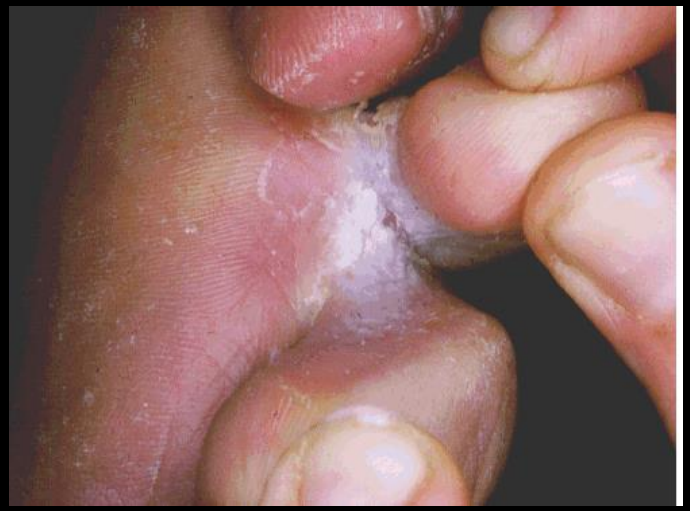
- Less common form appears as fine scale cover the total area of the toes, and part of the sole of foot with foel odour with **intense itching**

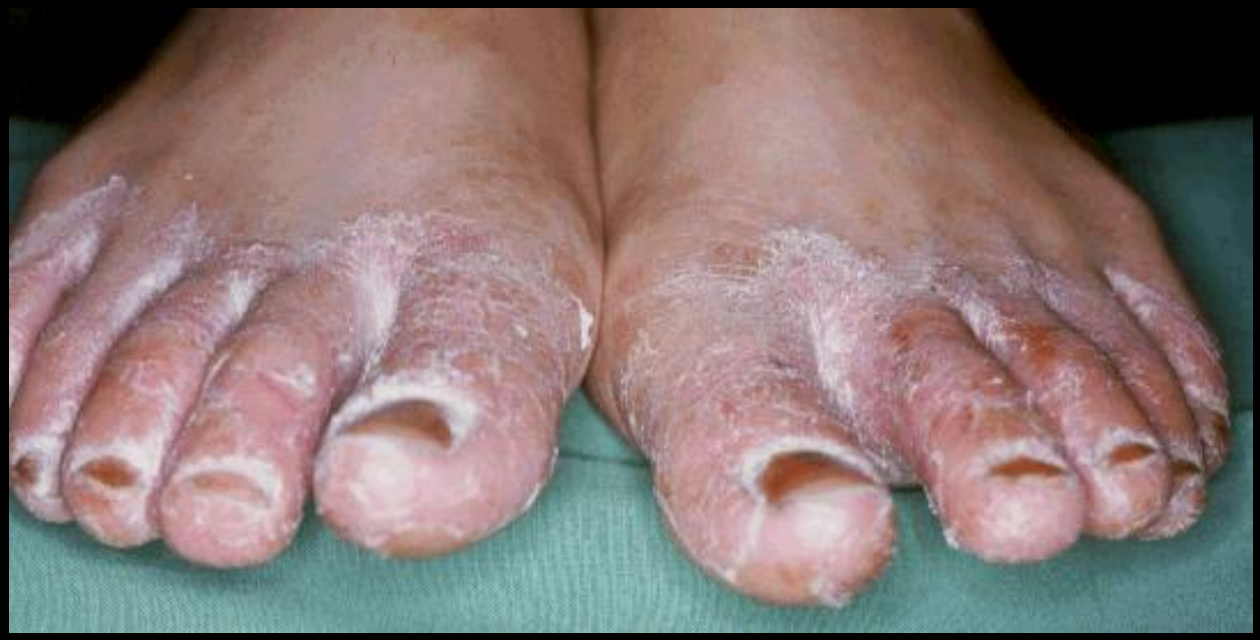
T. pedis





Tinea. pedis





Treatment (OTC)

Topical antifungal for 2-4 weeks as mentioned previously

May add oral antifungal in sever cases

Prevention:

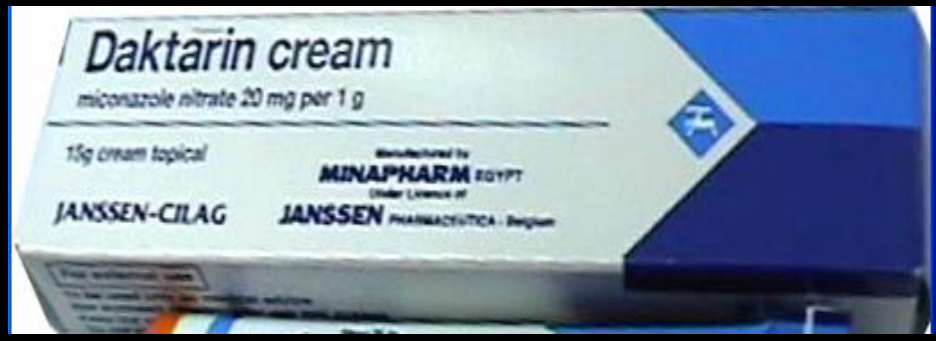
-never share foot wears with others

-waer cotton socks and change socks daily

-clean and dry foot after washing

- **use tolnaftate powder or antiperspirant (Al Cl3) as a prophylaxis after each washing**

- Wear sandals when ever possible to allow foot dryness



Topical antifungal

Tinea unguium (onychomycosis)

It affects **the nail plates of finger or toes** which become thickened, discolored (yellow, greenish opaque loss shiny appearance) friable with the **nail raised up and Subungual hyperkeratosis**

Represent **10% of old age** due to low immunity and low nail growth.

not painful initially but pain may occur during daily activities

Tinea unguium (onychomycosis)

Topical only are most appropriately used when the nail plate has been removed

Removing the nail does not affect treatment course

Toe nail are more resistant to treatment and require more longer duration.

Leaving without treatment may lead to **permanent destruction** of nail

Tinea unguium (onychomycosis)

Risk factors:

Aging

perspiring heavily, being in a humid or moist environment

psoriasis

wearing socks and shoes that hinder ventilation

going barefoot in damp public places such as swimming pools, gyms and shower rooms

having athlete's foot (tinea pedis)

nail injury,frequent nail trauma

damaged nail, or other infection

having **diabetes**, circulation problems

Treatment (not OTC)

initiating oral therapy for months. **Systemic antifungal** therapy should be used until replacement with new healthy nail:

- Terbinafine (**first drug choice** for 6-12 weeks) may cause hepatotoxicity so monitor for liver function test.
- Imidazole (**itraconazole "second choice"**, fluconazole for 6 months)
- Grisofulvin (low effective in toe nail infection)

Topical antifungal has low role due to difficult penetration unless high concentration is used **tioconazole (trosyde® 28%)**

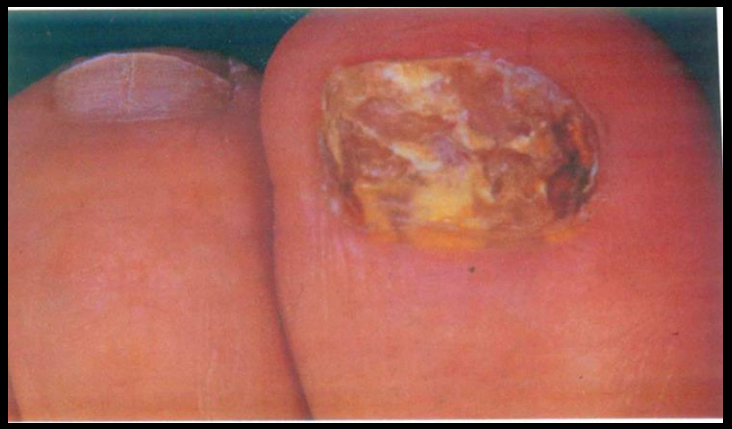
Educate patients that due to slow rate of new nail formation, it may **take months after treatment** to see clinical Improvement

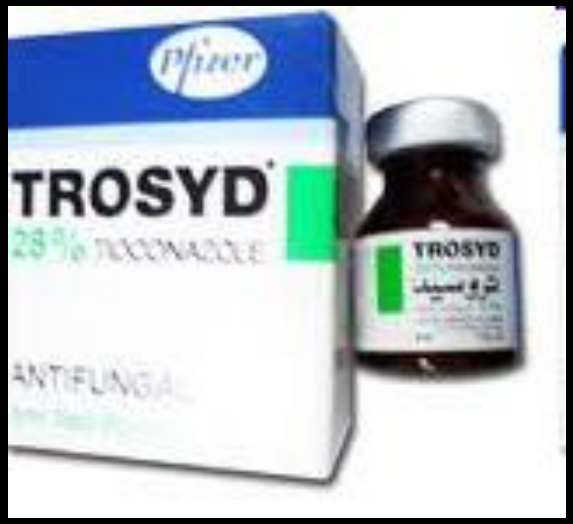
Nail lacquer

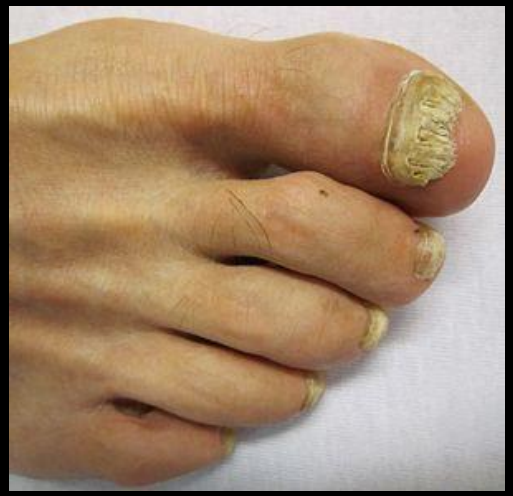
Nail lacquer represents the latest advance in topical formulation. The volatile vehicle, used to deliver the drug, evaporates and leaves an occlusive film with a high drug concentration on the nail surface.

There are only two marketed nail lacquers, amorolfine 5% and ciclopirex 8% solution (Penlac), the latter being the only one approved in the United States for the treatment of mild-to-moderate onychomycosis.

Onchomycosis

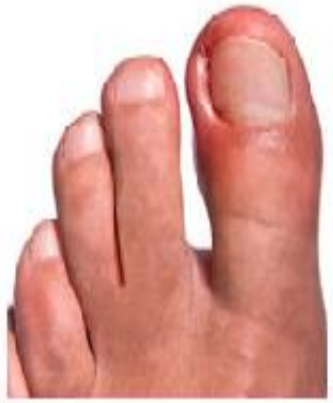






Ingrowing toenails

An *ingrowing toenail* occurs when the nail of the big toe curves under at the sides of the nail so that it grows into the skin



The two main contributing causes:

1-the wearing of tight shoes

2- the incorrect cutting of the nails. If the nails are cut on a curve and down at the sides, the nail edges grow into the skin. The edge of nail gets embedded in the skin and causes problems.

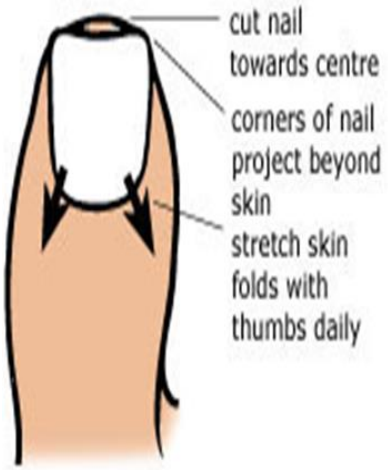
Figure 1

Ingrowing toenail

Symptoms: cause **pain**, especially if tight shoes are worn. The problem is most troublesome when the skin around the ingrowing toenail becomes **infected** making big troubles in case of **diabetes**

Ingrowing toenails

treatment and prevention:



-It is important to fashion the toenail so that the corners project beyond the skin as shown.

-wear good fitting shoes

-be careful not to leave spikes at the edges on cutting nails.

--keep the area clean and dry at all times (infection risk).

Candidal Paronychia (OTC with similar treatment)

Chronic infection (not acute) Caused by candida albican

Swollen erythematous in tissue folds of nail with separation of the nail folds from plate giving a space containing **cheesy-like material**. **Nail become hot and painful.**

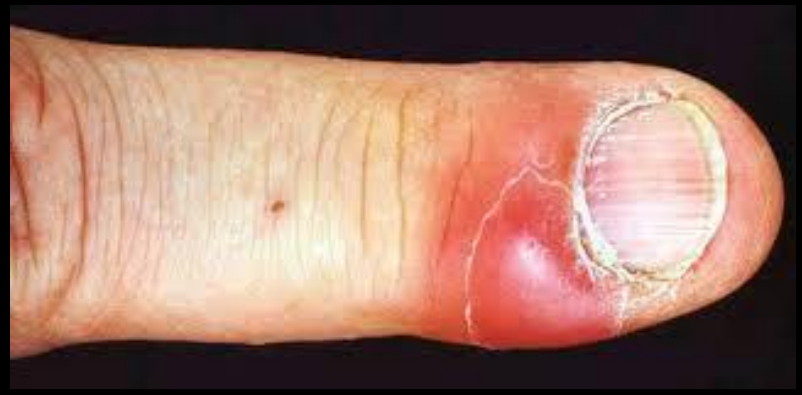
It is common in **housewives and servants specially with dish washing**.

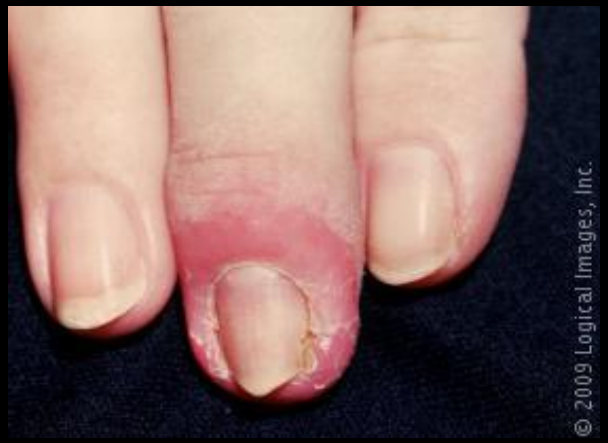
Treatment (OTC)

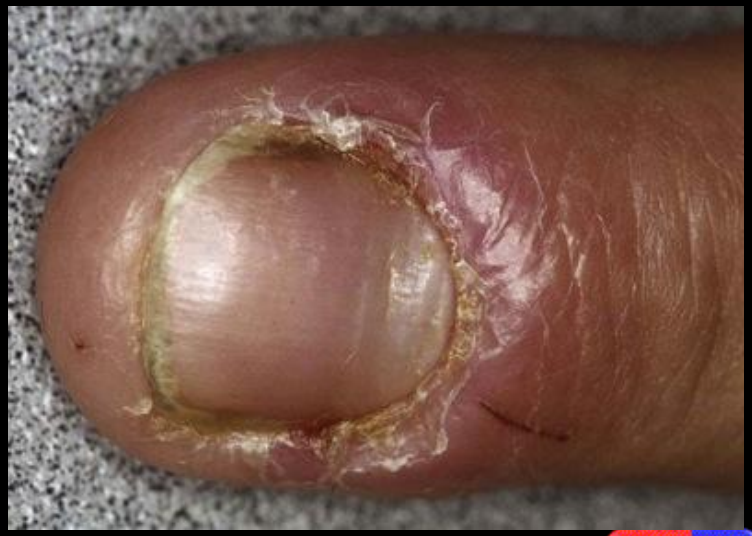
Topical antifungal by miconazole, add oral antifungal in severe cases

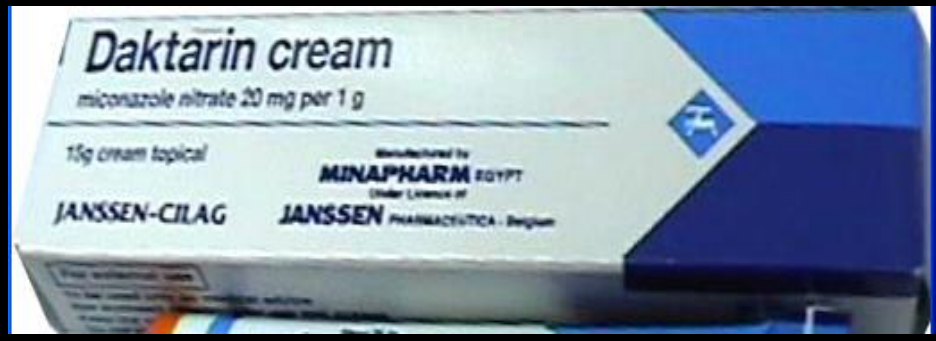
* If acute paronychia, the cause is bacterial infection (like finger bitting and treated by antibiotic topical like fusidic , if with abcess systemic clindamycin or cephalaxin may be used.

paronychia









Topical antifungal

Tinea Capitis (not OTC)

- Also called ringworm of the scalp
- Diagnosis depend on location and presentation

Presentation:

- 1- most common: circular patches of **dry scaly skin** with hair loss. The hair is cut short 2-3 mm above the surface. **Scalp is non inflamed**

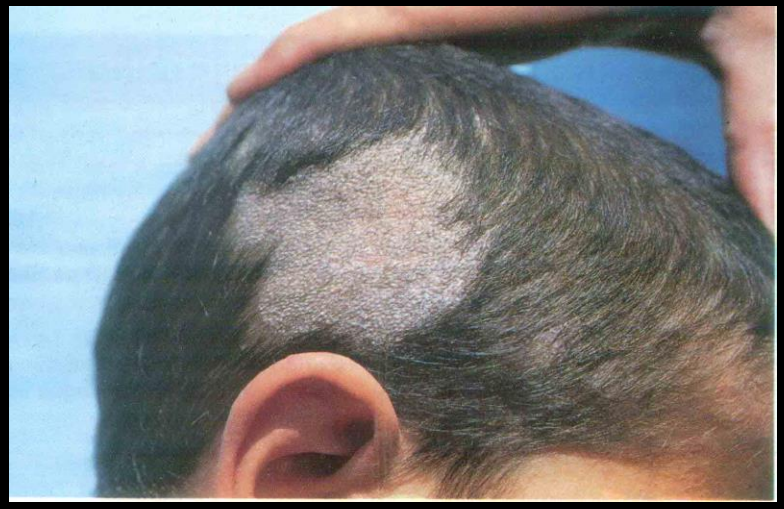
- 2- black dot ringworm: are rounded or oval **scaly** patches with hair broken at the scalp giving the characteristic black dot appearance. **Scalp is non inflamed**

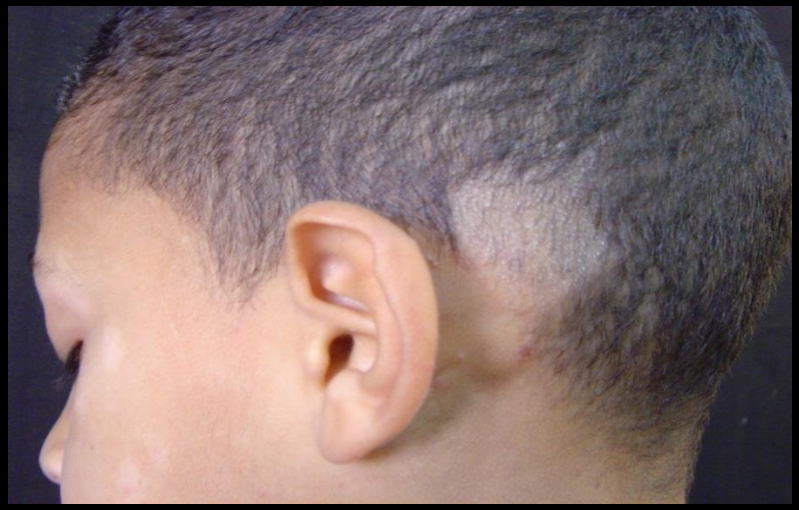
Tinea Capitis (not OTC)

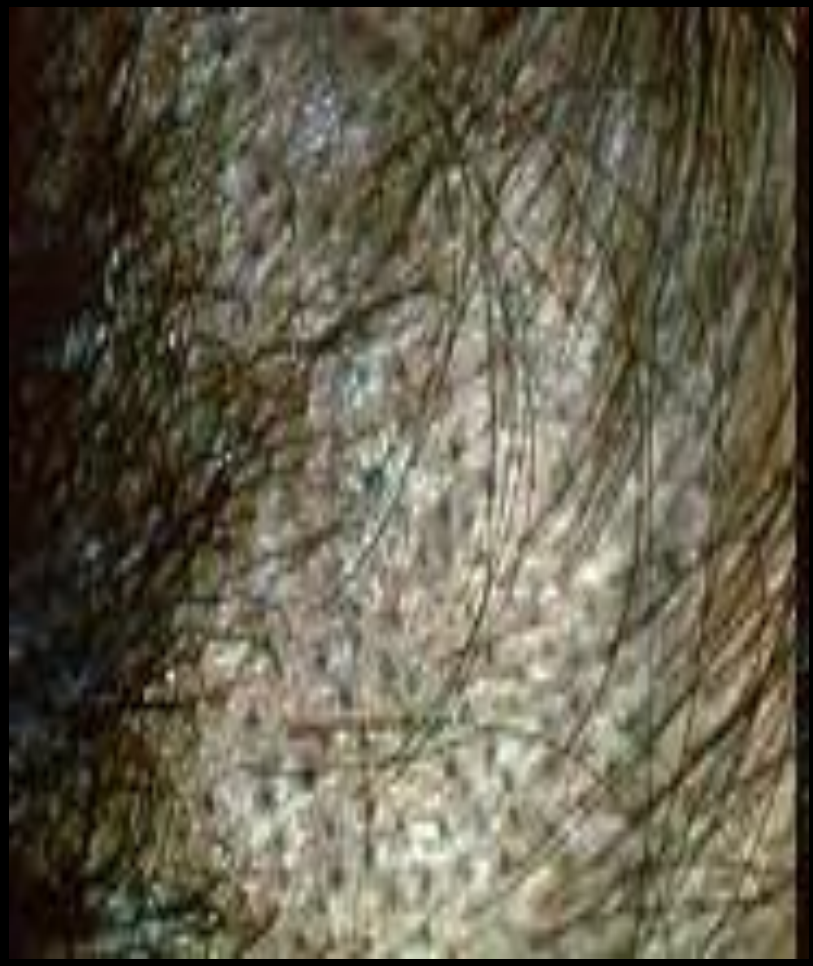
- 3- **keroin**: in which the scalp is **inflamed** producing exudates and abscess or pustules (secondary bacterial infection) progress to crust after healing leaving **scare with permanent hair loss** (hair follicle is unable to regenerate

- 4- **Favus** : **waxy appearance of scalp** due to excessive scales with cup shaped crust around several hairs which progress to involve the entire scalp with bad odor of the scalp

Tinea capitis

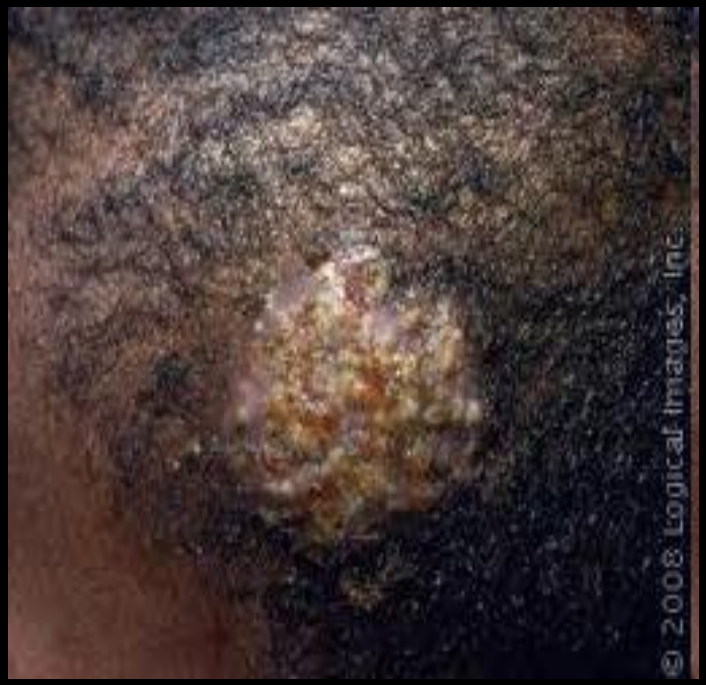


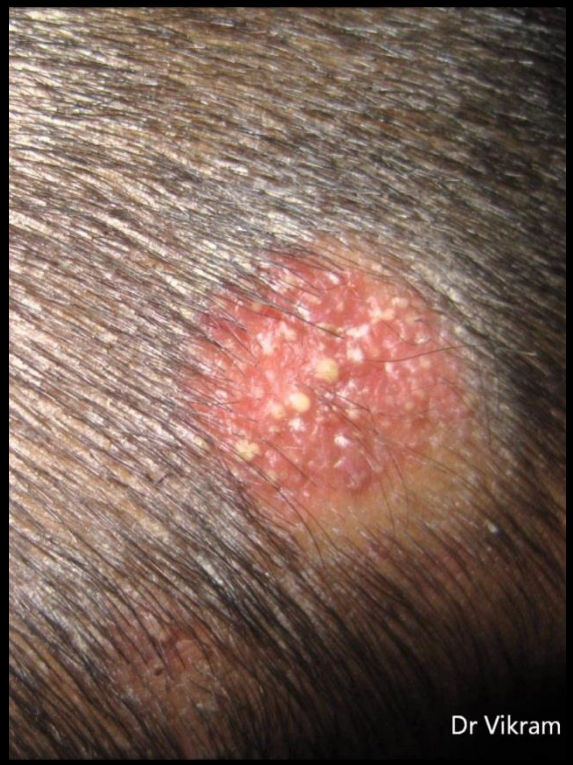




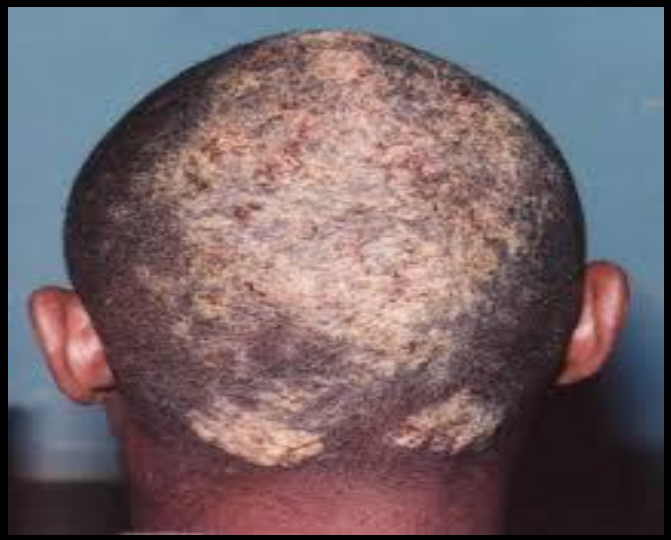
Black dot ring worm

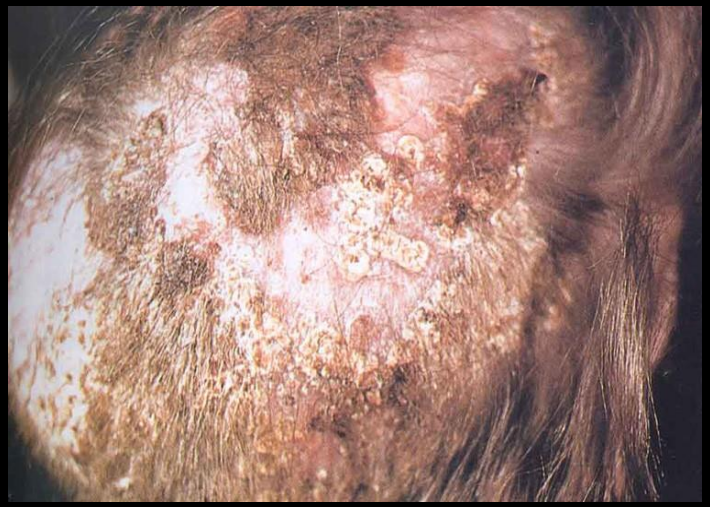
Keroin

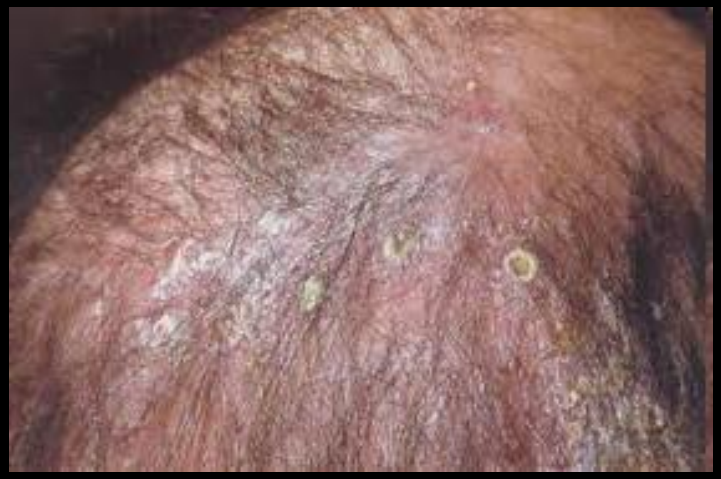




Favus







Treatment (not OTC)

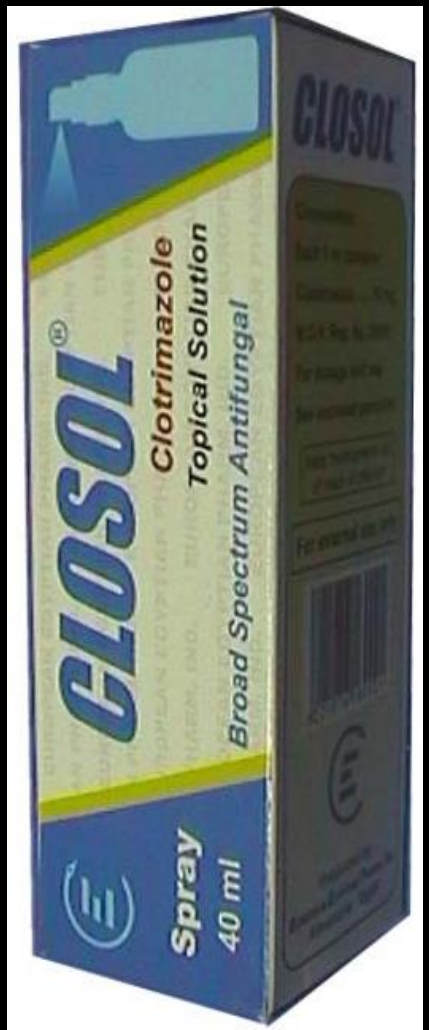
- Due to risk of permanent hair loss patients should be rapidly referred to physician

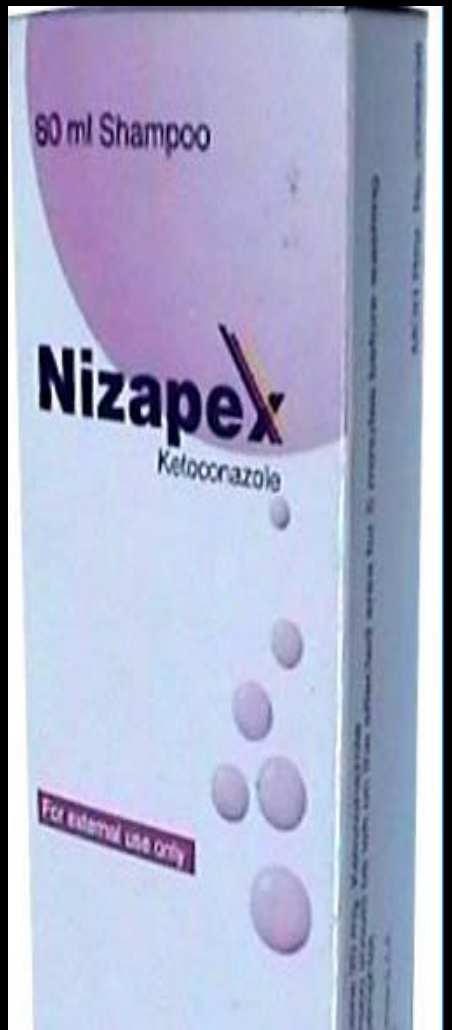
- Systemic antifungal therapy should be used:
- Grisofulvin (first choice for 8 weeks)
- Imidazole (itraconazole , fluconazole) for 8 weeks
- Terbinafine (for 4 weeks)

- Topical antifungal as shampoo should be added

Systemic Antifungal

Topical treatment





Candidal Infections

- It is caused by yeast-like fungus (Candida albicans)

Clinical forms:

Candidal paronychia, Oral candidal thrush, Candidal intertrigo, and Candidal vulvovaginitis.

Treatment of Canadidal infection

-**Nystatin topically**

-Topical or systemic imidazoles

-Gentian violet 1-2%

Most candidal infections resolve without further problems yeast infections usually clear in **1-2 weeks**.

Candidal vulvovaginitis

Vaginal yeast infection, also known as vaginal thrush. Vaginal yeast infections are due to excessive growth of *Candida*. These yeast are normally present in the vagina in small numbers

Presentation:

Vulvalar itching, vulval soreness and irritation, **pain or discomfort during sexual intercourse, pain or discomfort during urination (dysuria)** and vaginal discharge, which is **usually odourless**. This can be **thick white, like cottage cheese.** erythema (redness) of the vagina and vulva, vaginal fissuring (cracked skin), edema (swelling from a build-up of fluid.

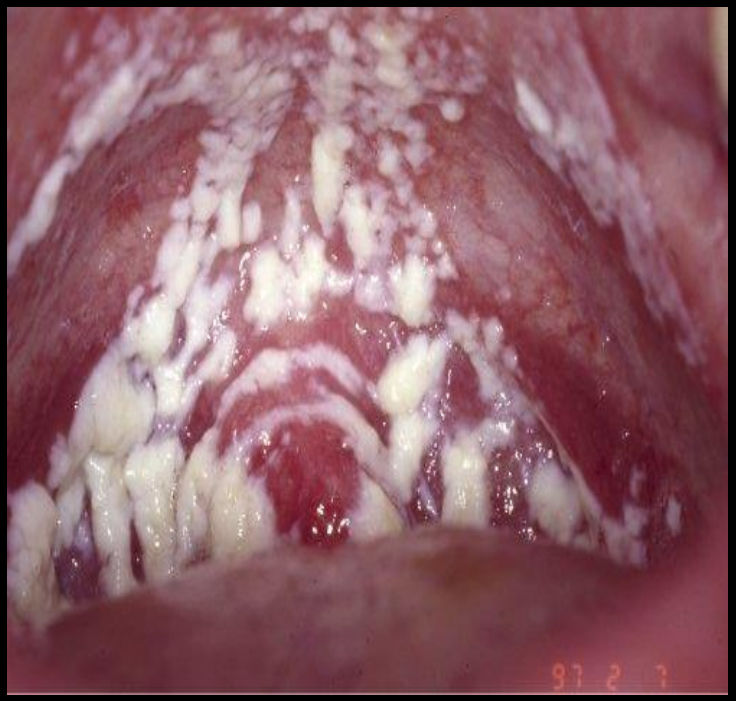
Candidal vulvovaginitis

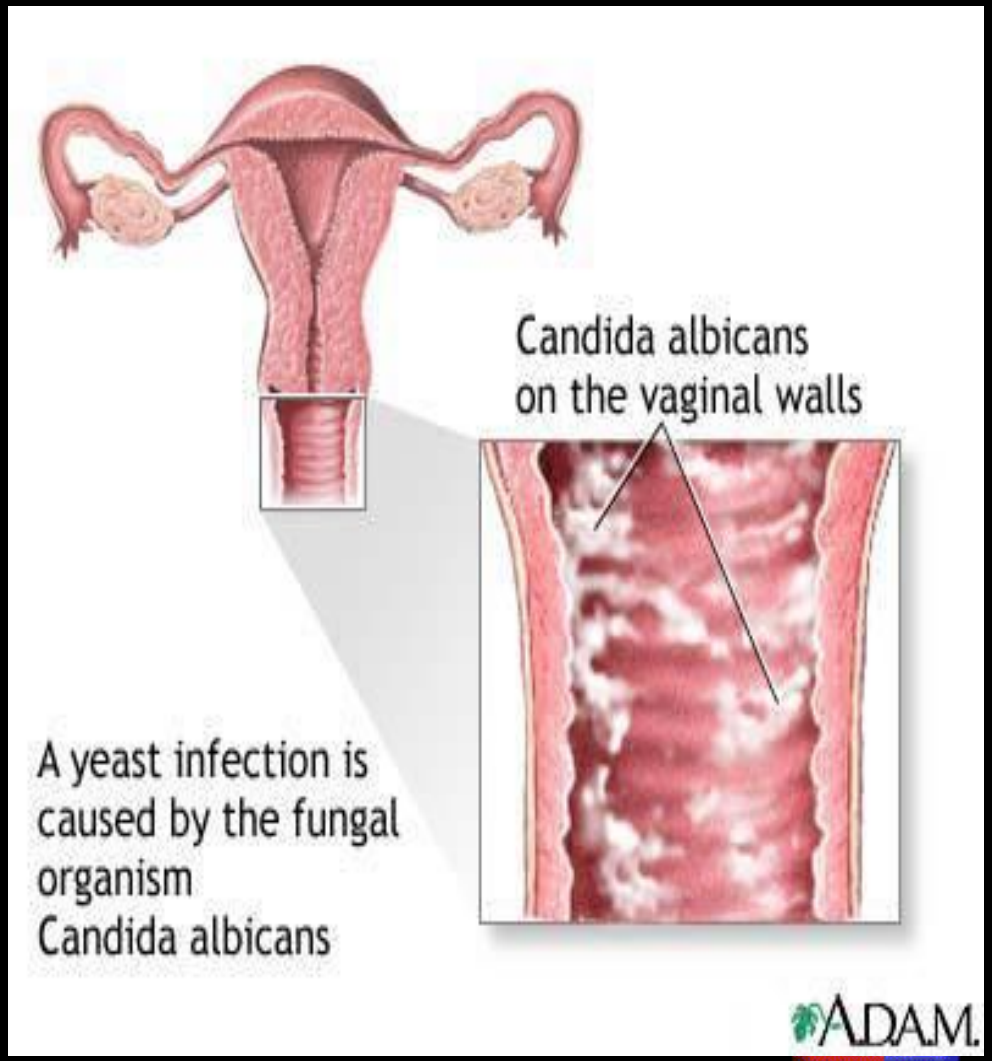
Symptoms often **worsen just before a woman's period**

Risk factors include taking antibiotics, pregnancy, and diabetes. Tight clothing.

Diagnosis is by testing a sample of vaginal discharge. The presence of yeast is typically diagnosed by **vaginal wet mount** microscopy for pseudohyphae of Candida albicans

Candidal vulvovaginitis





Treatment (OTC):

Intravaginal agents (douch, creams, vaginal tablets, suppositories):

Clotrimazole (canesten ® vaginal tab(6 Tab, 1 Tab)

Miconazole (Gynozole ® supp. or vag cream)

Ecoconazole (Gynoryl ® vag. Cream or Tab)

Tioconazole (Gynotrosyde ® vag cream or Tab)

Nystatin (nystatin ® vag tab)

Combination:

Nystatin + metronidazole (Amrizole N ® vag supp)

Nystatin + miconazole (Monicure Plus ® vag supp)

Miconazole+ nystatin +neomycin+ hydrocort. (Monicure NH ® supp

Treatment (OTC):

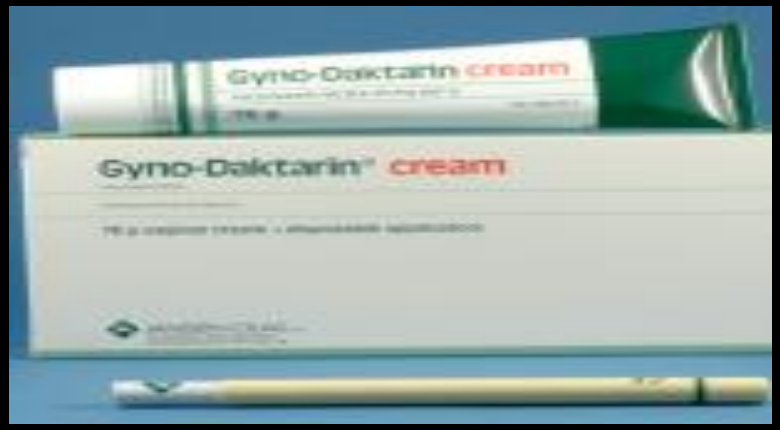
Oral Agent: fluconazole as a single dose may be added (not for pregnant)

Candidal vulvovaginitis in **pregnancy** should be treated with intravaginal clotrimazole or miconazole for at least 7 days.

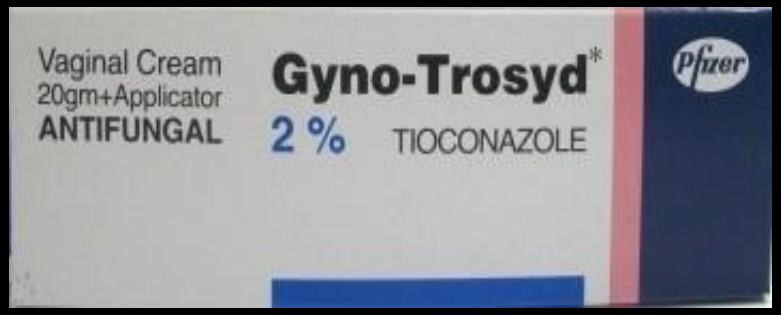
The topically applied imidazole drugs are more effective than nystatin

Prevention:

Wearing **cotton underwear and loose fitting clothing** is often recommended as a preventative measure.



Intravaginal antifungal



Intravaginal combination

How to Apply Vaginal Cream

1. Take the cap off the tube of medicine and screw on the applicator.

2. Squeeze the medicine into the applicator slowly until the plunger reaches the prescribed dose measurement. Remove the applicator from the tube of medicine. Put the cap back on the tube.

3. Lie on your back with your knees bent. Hold the applicator in one hand.

4. Put the applicator into your vagina (like a tampon) as far as you can.

5. Slowly press the plunger until it stops. Remove the applicator. Rinse the applicator.

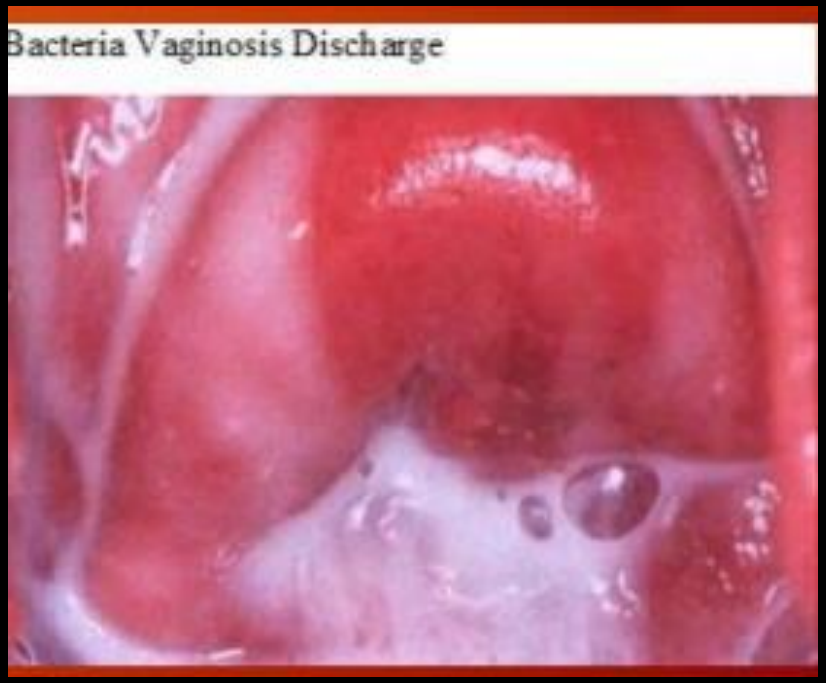
Differential diagnosis

1-Bacterial vaginitis by *Gardnerella* bacteria usually causes a discharge with **a fish-like odor**. The discharge is usually **white or gray in color**. It is associated with itching and irritation, but **not pain during intercourse. Diagnosis confirmed by wet mount test.**

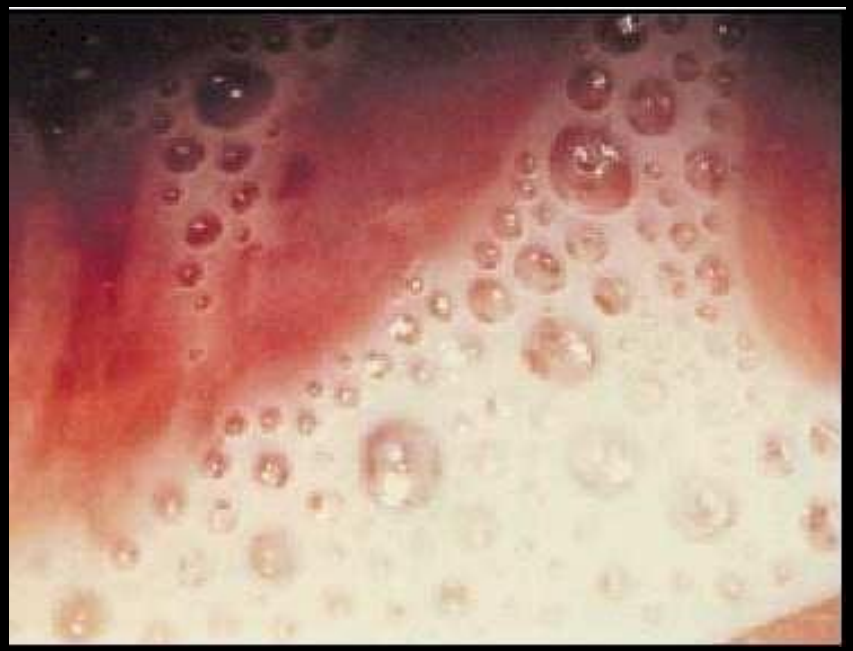
Treated by clindamycin (Vagclind® vag cream).

2- Trichomonas vaginosis by an anaerobic, flagellated protozoan the causative agent of trichomoniasis. It Can cause a **Frothy profuse** discharge with a **fish-like odor**, **pain upon urination, painful intercourse**, and inflammation of the external genitals. **Diagnosis confirmed by wet mount test.**

Treated by metronidazole (Amrizole vag. Supp)



Bacterial vaginosis



Trichomonas vaginosis