Clinical Pharmacy

Lec. 7 **Dr. Laith G. Shareef**

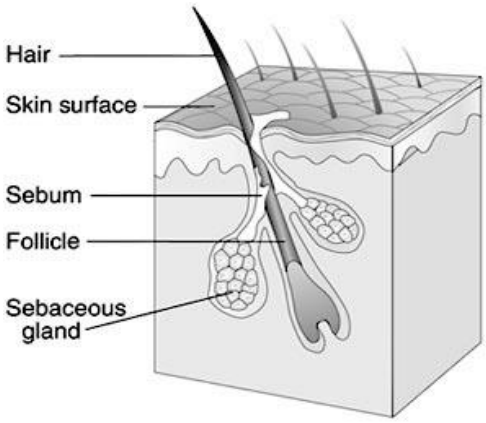
Skin conditions Part 2

Acne

Background:

1-Acne vulgaris is a common condition in young people. It is not usually serious and **resolves in most patients by the age of 25.** However, it can have **a significant psychological impact** as it affects young people at a stage in their lives when they are especially sensitive about their appearance [(1)].

2-The pilosebaceous units in the dermis of the skin consist of a hair follicle and associated sebaceous glands. These glands secrete sebum– a mixture of fats and waxes –to protect the skin and hair by retarding water loss and forming a barrier against external agents [(2)].



3-Peak incidence of acne is 14–17 years in females and 16–19 years in males. The condition normally resolves in the majority of patients within 10 years of onset [(1)].

Etiology:

Acne is the result of a combination of several factors. The main processes involved are as follows:

1-**The hormonal changes** that occur during puberty, especially the production of **androgens**, are thought to be involved in the causation of acne. Increased keratin and sebum production during adolescence lead to blockages of the follicles and the formation of **microcomedones** [(3)].

2-A microcomedone can develop into a non-inflammatory lesion (comedone) (**comedone:** a mass of sebum and keratin), which may be open (**blackhead**) [(3)] (as the keratinous material darkens in contact with the air [(1)]) or closed (**whitehead**), or into an inflammatory lesion [**papule** (raised reddened area on the skin), **pustule** (raised reddened area filled with pus) or **nodule**)] [(3)].

3-Excess sebum encourages the growth of bacteria, particularly ***Propionibacterium acnes***, which are involved in the development of inflammatory lesions. Acne can thus be non-inflammatory or inflammatory in nature [(3)].

Patient assessment with acne

A-Age [(3)]:

1-Acne is extremely ***rare in young children and babies*** and any such cases should be referred to the Dr. since an ***androgen secreting tumour may be responsible***.

2-For patients in whom **acne begins later than the teenage years**, **other causes** should be considered, including drug therapy and occupational factors (oils and greases used at work).

B-Severity:

Only mild acne can be managed by the pharmacist using OTC products, moderate and severe acne should be **referred** [4].

1-Mild acne: Patients suffering from mild acne characteristically have predominately open and closed comedones with few inflammatory (papulopustular) lesions mainly confined to the face [4]. Mild acne is therefore characterized by the presence of a few to several papules and pustules, but no nodules [5].

2-Moderate acne: A patient with moderate acne has many inflammatory lesions **that are not confined to the face**. lesion are often painful and there is **a possibility of mild scaring** [4].

3-Severe acne: A patient with severe acne has all the characteristics of moderate acne plus the development of **cysts**. Lesions are often widespread involving the upper back and chest. Scarring will usually result [4].

Circumstances for referral
1-**Moderate** or **severe** acne [4].
2-**Failed** medications [3].
3-Acne beginning or persisting **outside the normal age range** for the condition (teenage years and early 20s) [1].
4-Suspected **drug-induced acne** [1].
5-Suspected **occupational causes** [1].
6-Suspected **rosacea** [1].

C-Affected areas

In acne, affected areas may include the face, neck, center of the chest, upper back and shoulders, i.e. all areas with large numbers of sebaceous glands.

Rosacea is a skin condition that is sometimes confused with acne [3]. It is a common chronic inflammatory disorder of the **facial pilosebaceous** units, coupled with an increased reactivity of capillaries leading to flushing and telangiectasia [6] (rosacea has characteristic features of reddening (**flushing**), papules and pustules) [3]. It is normally seen in patients over 40 years of age and is more common in women than in men. comedones are not present [4]. Patients with suspected ***rosacea*** required referral [1].

D-Occupation:

Acne is commonly associated with **long-term contact with oils** [3] and required referral [1].

E-Medication

1-Acne of long duration where several products had been correctly used **without success required** referral [3].

2-A number of medicines can produce acne-like lesions. Steroids (oral or topical) are commonly implicated. Other medicines associated include lithium, oral contraceptives , phenytoin, azathioprine and rifampicin [4] and required referral [3].

Treatment timescale:

A patient with mild acne, which has not responded to treatment **within 8 weeks**, should be referred to the doctor [3].

Management:

Nondrug therapy:

Washing the skin with a mild soap and rinsed off with water before applying *benzoyl peroxide* can help by reducing the amount of sebum on the skin [3]. There is no evidence to link diet with acne [3].

Drug therapy:

A-Benzyl peroxide (2.5%, 5%, and 10% gels, lotion, cream …): which is the first line OTC treatment of acne [3]. (**further reading 1**)

Administration guidelines for Benzyl peroxide

1-At first, **benzoyl peroxide** is very likely to produce **reddening** and **soreness** of the **skin**, and patients should be warned of this (see 'Practical points' below). Treatment should start with a 2.5 or 5.0% product, moving gradually to the 10.0% strength if needed [3].

2-**Gels can be helpful for people with oily skin** and **creams for those with dry skin** [3].

3-*Benzoyl peroxide* **prevents new lesions forming** rather than shrinking existing ones. Therefore it needs to be **applied to the whole of the affected area, not just to individual comedones**, and is best applied to skin following washing [3].

5-During the **first few days** of use, the **skin is likely to redden** and may feel **slightly sore**. Stinging, drying and peeling are likely. Warning should be given that such an irritant effect is likely to occur; otherwise treatment may be abandoned inappropriately [3].

6-One approach to minimize reddening and skin soreness is to **begin with the lowest strength preparation** and to apply the cream, lotion or gel **sparingly and infrequently during the first week of treatment** (**further reading 2**) [3].

7-Sensitisation: Occasionally, **sensitisation** to *benzoyl peroxide* may occur. The skin becomes reddened, inflamed and sore, and treatment should be discontinued [3].

8-Bleaching: Warning should be given that **benzoyl peroxide can bleach clothing and bedding [3].** (**further reading 3**)

9-Antibacterials: Skin washes and soaps containing antiseptic agents such as chlorhexidine are available. Such products may be useful in acne by degreasing the skin and reducing the skin flora. **There is limited evidence of effectiveness** [3].

B-Adapalene (Deferin® 0.1 gel)

1-**Retinoids are highly effective in the treatment of acne**, retinoids stimulate epithelial cell turnover and aid in unclogging blocked pores [6]. Thus, the retinoid family are highly **active peelers**. Available topical retinoids include tretinoin, **adapalene**, and tazarotene [7].

Adapalene is considered the drug of first choice because it has similar efficacy and a lower incidence of adverse effects [6]. Differin Gel 0.1% is the first in a class of retinoids to be made available **OTC for the treatment of acne vulgaris in patients 12 years of age** and older [8].

3-Adapalene is photoirritants, and sun avoidance and sunscreen use are imperative [7].
4-**further reading 4**

C-Nicotinamide (Freederm, Nicam)

1-Nicotinamide should be applied **to the affected area twice daily** after the skin has been washed using enough gel to cover the affected area [4].

2-Like benzoyl peroxide, **drying of the skin is the main side effect**. If this occurs, the **dose should be reduced to once daily** [4].

Practical points

Diet

There is **no evidence to link diet with acne**, despite a common belief that chocolate and fatty foods cause acne or make it worse [3].

Continuous treatment

Acne is slowly responding condition to treatment and a period of **up to 6 months may be required for maximum benefit**. Patients should therefore be encouraged to persevere with treatment [3]. (**further reading 5)**

Skin hygiene

Acne is not caused by poor hygiene or failure to wash the skin sufficiently often. Regular washing of the skin with soap and warm water or with an antibacterial soap or skin wash can be helpful as it degreases the skin and reduces the number of bacteria present [3].

Topical hydrocortisone and acne

The use of *topical hydrocortisone* is contraindicated in acne because steroids can potentiate the effects of androgenic hormones on the sebaceous glands, hence making acne worse [3].

Make-up

Heavy, greasy make-up can only exacerbate acne. If make-up is to be worn, water-based rather than oily foundations are best, and they should be removed thoroughly at the end of the day [3].

References:

1-Nathan A. fasttrack. Managing Symptoms in the Pharmacy. Pharmaceutical Press. 2008.
2- Nathan A. Non-prescription medicines. 4th edition. London: Pharmaceutical Press. 2010.
3-Alison Blenkinsopp, Paul Paxton and John Blenkinsopp. Symptoms in the pharmacy . A guide to the managements of common illness. 7th edition. 2014.
4-Paul Rutter. Community Pharmacy. Symptoms, Diagnosis and Treatment. 5th edition. 2021..
5-Ilse Truter. Acne vulgaris. SA Pharmaceutical Journal. 2009; 12-19.
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7-Joseph T. DiPiro, Robert L. Pharmacotherapy: A Pathophysiologic Approach,10th edition. 2017.

8-FDA. FDA approves Differin Gel 0.1% for over-the-counter use to treat acne. Available at. https://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm510362.htm . Accessed at 6/6/2018.

Scabies

1-Scabies can be defined as a **pruritic skin condition** caused by the mite *Sarcoptes scabiei* [1]. The infestation occurs at all age and it is a common public health problem in poor communities [2].

2-The mite is transmitted by **direct physical contact** (e.g., holding hands, hugging or sexual contact) [1]. (**further reading 6)**

3-During the asymptomatic period the mite can be passed onto others unknowingly. The eggs hatch and mature in 14 days after which the cycle can begin again [1].

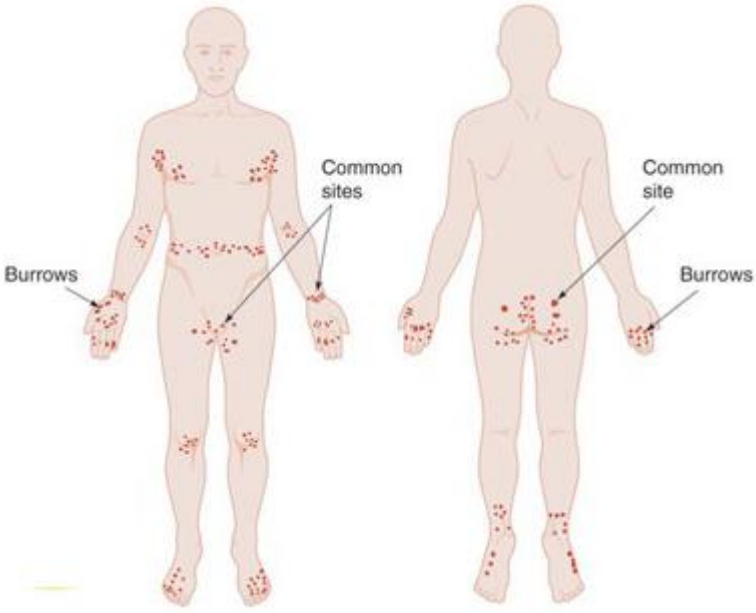


Figure 4-2: common sites for scabies

Patient Assessment with Scabies

A-Symptoms:

1- Severe pruritus, especially at night, is the hallmark symptom of scabies [1] (can lead to loss of sleep) [3].

2-location of rash: scabies classically affect the **finger's webs, the** sides of the fingers and wrists [1]. In adults, scabies rarely affects scalp and face, **but infants aged 2 years or under and in the elderly**, **involvement of the head is more common** [3].

Besides the classic location of the lesions [1], **external genitalia** of both sexes and women's breasts can be affected [4]. (figure 4-2)

In **dermatitis herpetiformis** , **hand involvement is rare** [1]. (**further reading 7)**

3-Burrow can sometimes be seen as **small thread-like grey lines** [3] (blue-grey [1]). The lines are raised, wavy about 0.5-1 cm long [3].
For pharmacists who see a limited numbers cases, **it is probably best to concentrate on other clinical signs rather than the burrows** [1].

B-History:

The itch of scabies can take several (6-8 weeks) to develop in someone who has not been infested previously. The scabies mite is transmitted by close personal contact, so the patient **can be asked whether anyone else they know is affected by the same symptoms** (e.g. other family member) [3].

In addition history is required to exclude **possible allergic contact dermatitis** [1].

C-Signs of infection:

Scratching can lead to skin excoriation, so that **secondary bacterial** infection such as impetigo can occurs. The presence of a **weeping yellow discharge or yellow crusts** would be indications for referral to the doctor for treatment [3].

D-Age:

It may be best to refer **infants** and young children to the doctors if scabies is suspected [3].

E-Medication:

It is important for the pharmacist to establish whether any treatment has been tried already and, if so, its identity. The patient should be asked **about how any treatment has been used**, since incorrect use can result in treatment failure [3].

2-**The itch of scabies may continue for several days or even weeks after successful treatment,** so the fact that itching has not subsided does not necessarily mean that treatment has been unsuccessful [3]. **(further reading 8)**

Management

1-Two treatments are recommended, **7 days apart** [3].

2- UK guidelines state that treatment should be applied to **the whole body including the scalp, neck, face and ears** [1]. **(further reading 9)**

3-**Application of lotion:** The lotion can be poured into a bowl and then applied on cool, dry skin using a clean, broad paintbrush, cotton wool [3] or a small sponge [4].

A-Permethrin cream (5% cream):

1-Permethrin appears to be the most effective scabicide [6] and is the drug of choice [1].

2-Apply 5% preparation over whole body including face, neck, scalp and ears then wash off after 8–12 hours [5]. **(further reading 10)**

B-Benzyl benzoate (25% in an emulsion basis):

1-Benzyl benzoate (OTC for patients >12 years [1]) has been used to treat scabies for many years [1]. It has now been superseded by more effective products [4]. It has **lower efficacy**, and causes **skin irritation** and a transient burning sensation in approximately **25% of patients** [1].
(further reading 11)

C-Crotamiton (Eurax®):

Crotamiton has antipruritic and weak scabicidal activity. It is recommended for **controlling residual itching after treatment with a more effective scabicide**. It required application only **two or three times a day** [4].

D-Malathion Aqueous solutions (0.5%):

The aqueous lotion should be used in scabies [3]. **(further reading 12)**

Practical Points

1-Patient should be told **that the itch will continue and may become worse in the first few days after treatment**. Crotamiton cream or lotion can be used to relief the symptoms and oral antihistamines may be considered in severe itching [3]

2-Good practical advice is to apply the treatment **immediately before bedtime** (leaving time for it to dry) [3].

3-Because the hands are likely to be affected by scabies, it is important **not to wash the hands after application of the** treatment **and to reapply the treatment if hands are washed within the treatment period** [3].

4-The treatment should be applied to cool, dry skin [3].

5-**All the family members should be treated**, preferably on the same day because they may be infested but symptomless [3].

6-The scabies mite can live only for around 1 day after leaving its host and transmission is almost always caused by close personal contact. It is possible that reinfestation could occur from bedclothes or clothing and this can be prevented by washing them at a minimum temperature of 50˚C after treatment [3].

Product recommendations:

First choice for eradication of infection [4]. –1-Permethrin cream

2-For the treatment of residual pruritus , A systemic antihistamine , with additional application of calamine lotion or crotamiton cream or lotion , if desired [4].

References:

1-Paul Rutter. Community Pharmacy. Symptoms, Diagnosis and Treatment. 5th edition. 2021.

2-Graham Johnston and Mike Sladden. Scabies: diagnosis and treatment. BMJ 2005;331:619-622 (17 September).

3-Alison Blenkinsopp, Paul Paxton and John Blenkinsopp. Symptoms in the pharmacy . A guide to the managements of common illness. 8th edition. 2018.

4-Nathan A. Non-prescription medicines. 4th edition. London: Pharmaceutical Press. 2010.

5-BNF-80.

Further reading

1-Benzoyl peroxide has both antibacterial and anticomedogenic actions and is the first-line OTC treatment for inflammatory and noninflammatory acne.

Anticomedogenic action is low and has the greatest effect at higher strengths. It has a keratolytic action, helping the skin to peel. Regular application can result in improvement of mild acne [3].

2-(**Application once daily or on alternate days could be tried for a week and then frequency of use increased to twice daily**. After 2 or 3 weeks, a higher strength preparation may be introduced. If irritant effects do not improve after 1 week or are severe, use of the product should be discontinued) [3].

3-If it is applied at night, white sheets and pillowcases are best used and patients can be advised to wear an old T-shirt or shirt to minimize damage to good clothes. Contact between *benzoyl peroxide* and the eyes, mouth and other mucous membranes should be avoided) [3].
4-The drug should be applied once daily in a thin layer on the affected areas of skin. However, if there is no improvement in 3 months of daily use, patients should stop using the product and consult a physician [8].

5-It is generally agreed that keratolytics such as *benzoyl peroxide* require a minimum of 6–8 weeks' treatment for benefit to be shown. Patients should therefore be encouraged to persevere with treatment, whether with OTC or prescription products, and told not to feel discouraged if results are not immediate. The patient also needs to understand that acne is a chronic condition and continuous treatment is needed to keep the problem under control [3].
6-Mating occurs on the skin surface after which the female mite burrows into the stratum corneum to lay eggs. The faecal pellets she leaves in the burrow cause a local hypersensitivity reaction that trigger an allergic reaction invoking intense itching (This normally takes 15 to 20 days in a primary infestation but can take up to 6 weeks to develop. In subsequent infestations this hypersensitivity reaction develops much more quickly) [1].

7-Dermatitis herpetiformis is a chronic condition characterized by intense itchy clusters of papules and vesicles. It commonly involves the elbows, knees, and sacral region (symmetrical distribution) **but hand involvement is rare** [1]).

8-(Treatment failure may have occurred if **itching has not ceased after 3 weeks** or if **new area of itching continue to appear 7-10 days after treatment**. In this situation patient should be referred to the doctor) [4]. (Treatment failure should not be diagnosed before **six weeks** have elapsed) [2].

9-Particular attention should be paid to the webs of fingers, toes and soles of the feet, and under the ends of the fingernails and toenails [3]. Mittens or socks may be necessary for the hands of thumb or toe sucking infants and children [2].

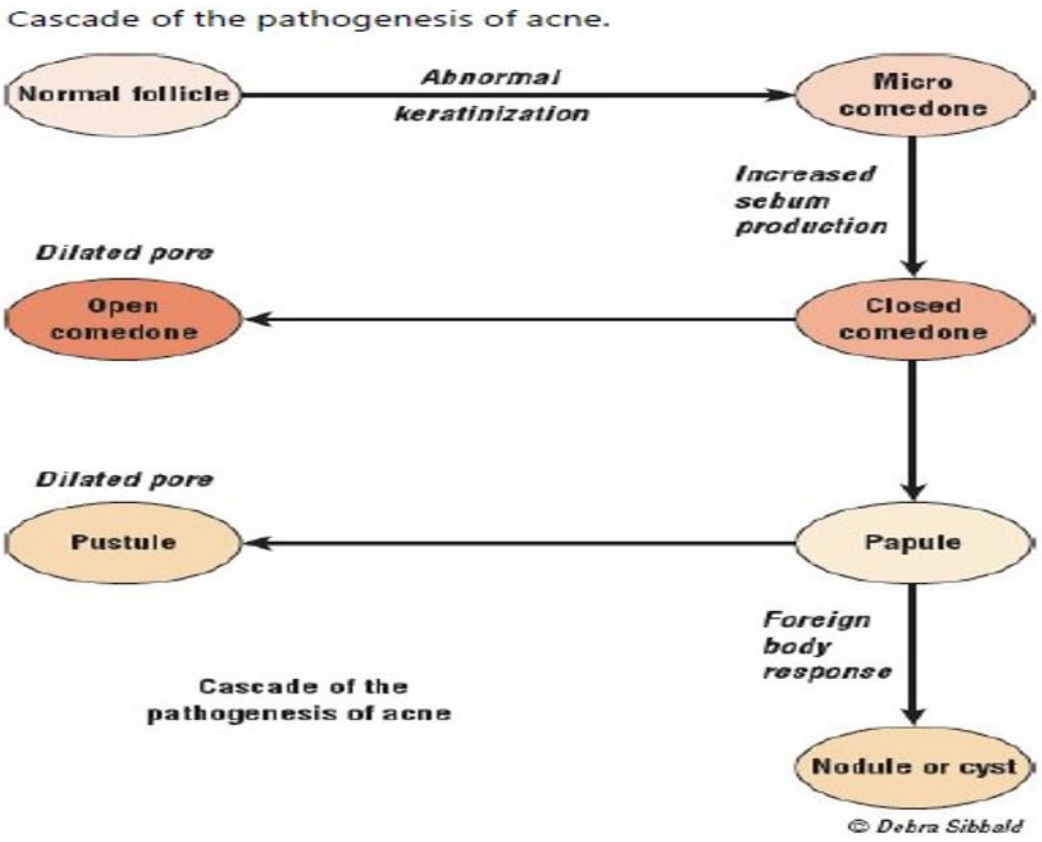
10-A-If the hands are washed with soap and water within 8 h of application, cream should be reapplied to the hands [3].

B-Medical supervision is required for its use in children under 2 years and in elderly patients (aged 70 years and over). Permethrin can itself cause itching and reddening of the skin [3].
C-For single application in adult 30-60 grams (one to two 30 grams tubes) is needed [3]. For children under 12 years of age the manufacturers suggest the following: 1/4 tube for those 2 months to 5 years of age and 1/2 tube for those between 6 and 12 years of age [1].

11-A-This is usually mild but can occasionally be severe in sensitive individuals. In the event of a severe skin reaction the preparation should be washed off using soap and warm water. It is also irritating to the eyes, which should be protected if it is applied to the scalp [1]. In addition, benzyl benzoate has an unpleasant smell [4].

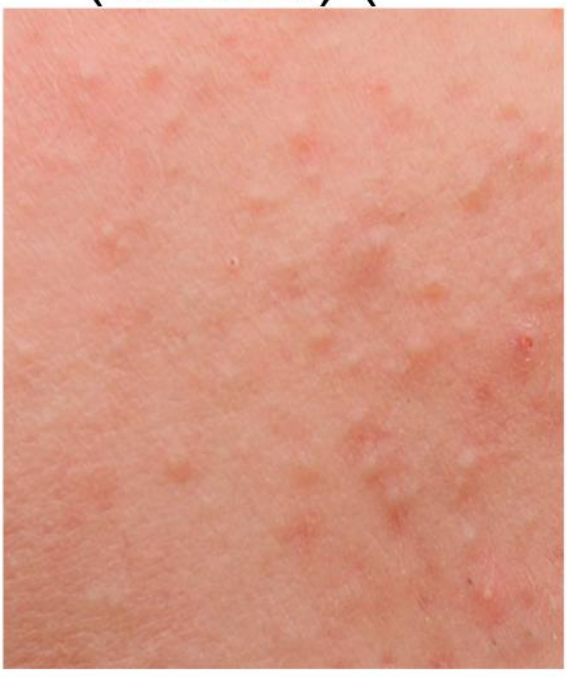
B-Apply over the whole body; repeat without bathing on the following day and wash off 24 hours later; a third application may be required in some cases [5].

12-The lotion is applied to the whole body. The lotion should be left on for 24 h, without bathing, after which it is washed off. If the hands are washed with soap and water during the 24 h, malathion should be reapplied to the hands. Skin irritation may sometimes occur [3].

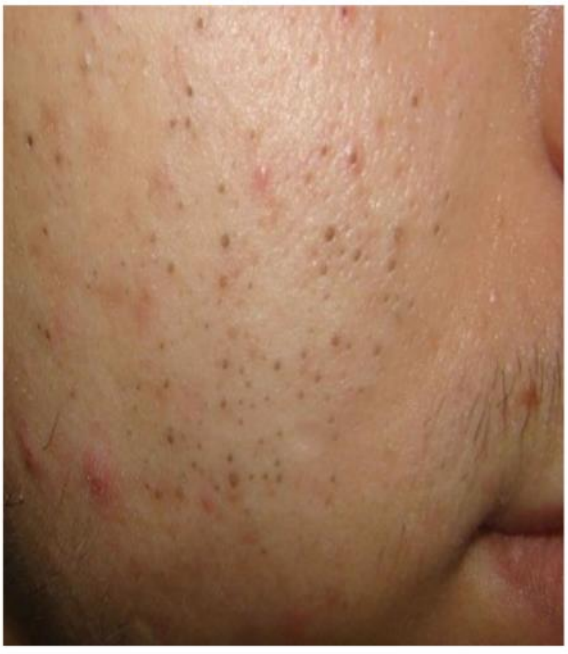


Cascade of the pathogenesis of acne

Whitehead (closed) (

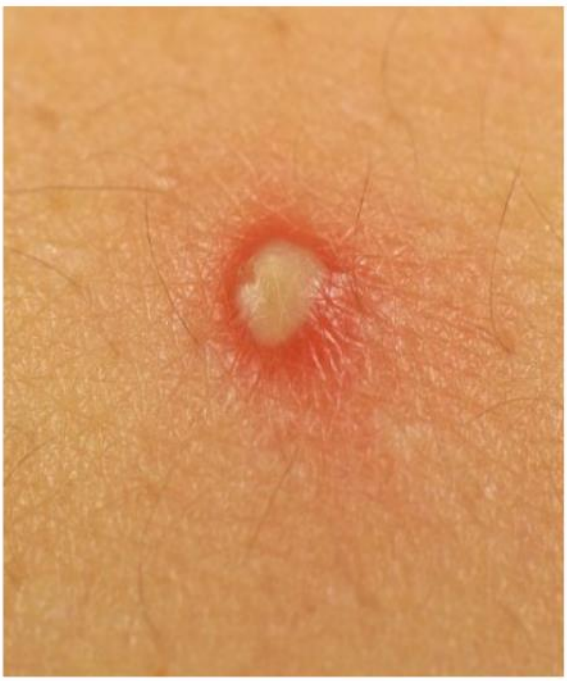


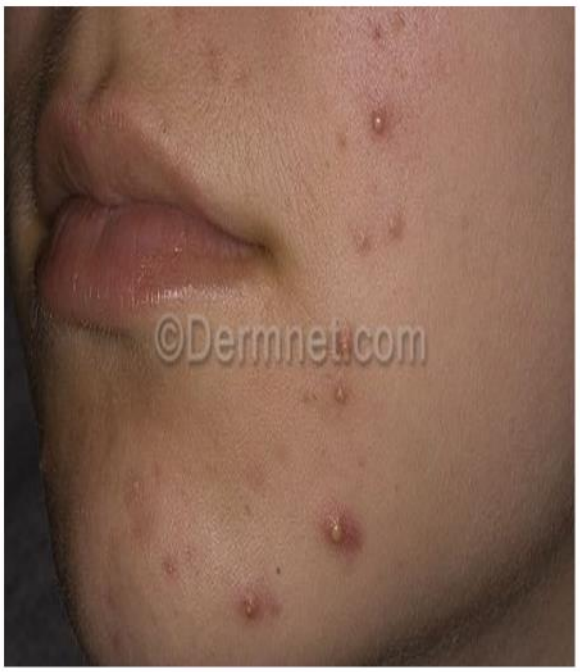
Blackhead opened)



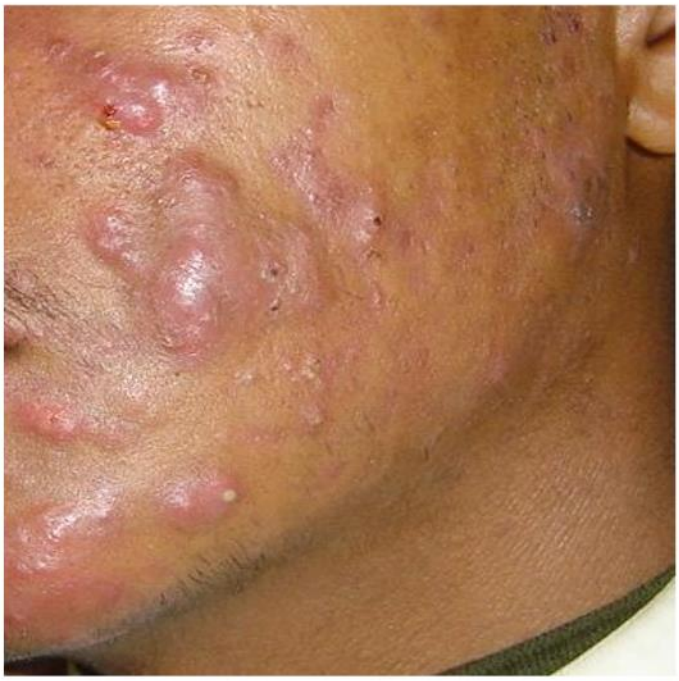
papule

pustule

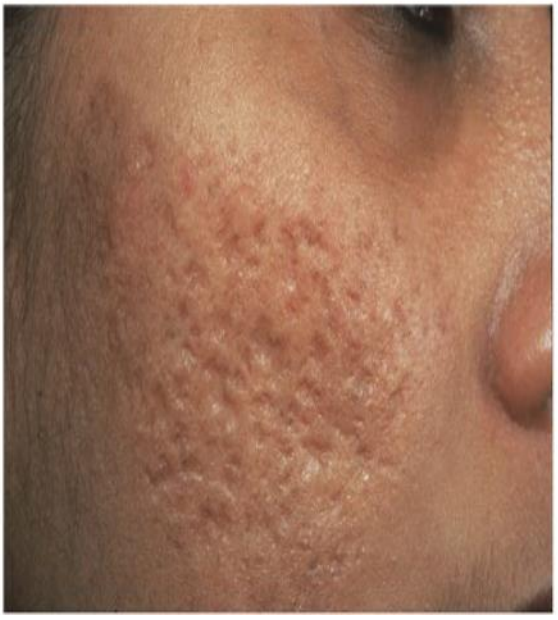


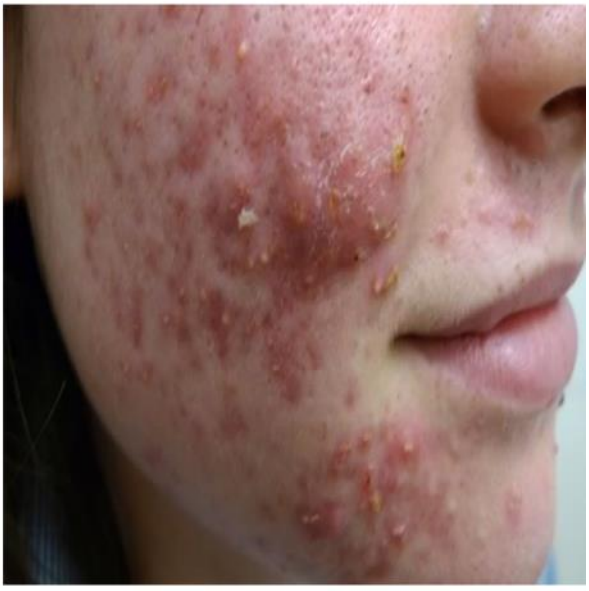


nodules

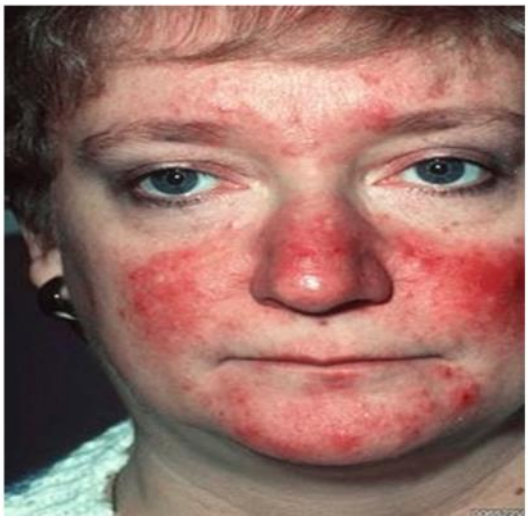


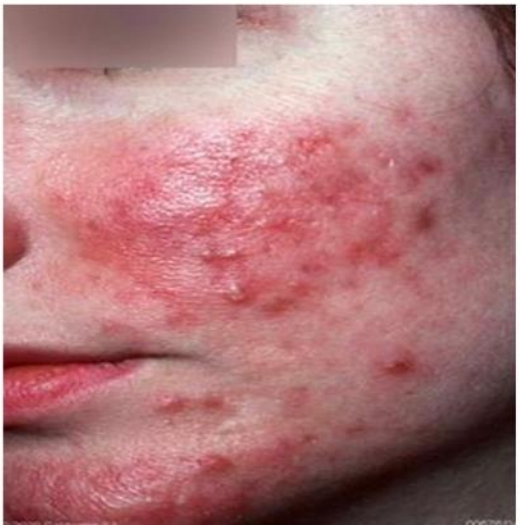
C-Severe acne: has all the characteristics of moderate acne plus the development of **cysts**. **Scarring will usually result**



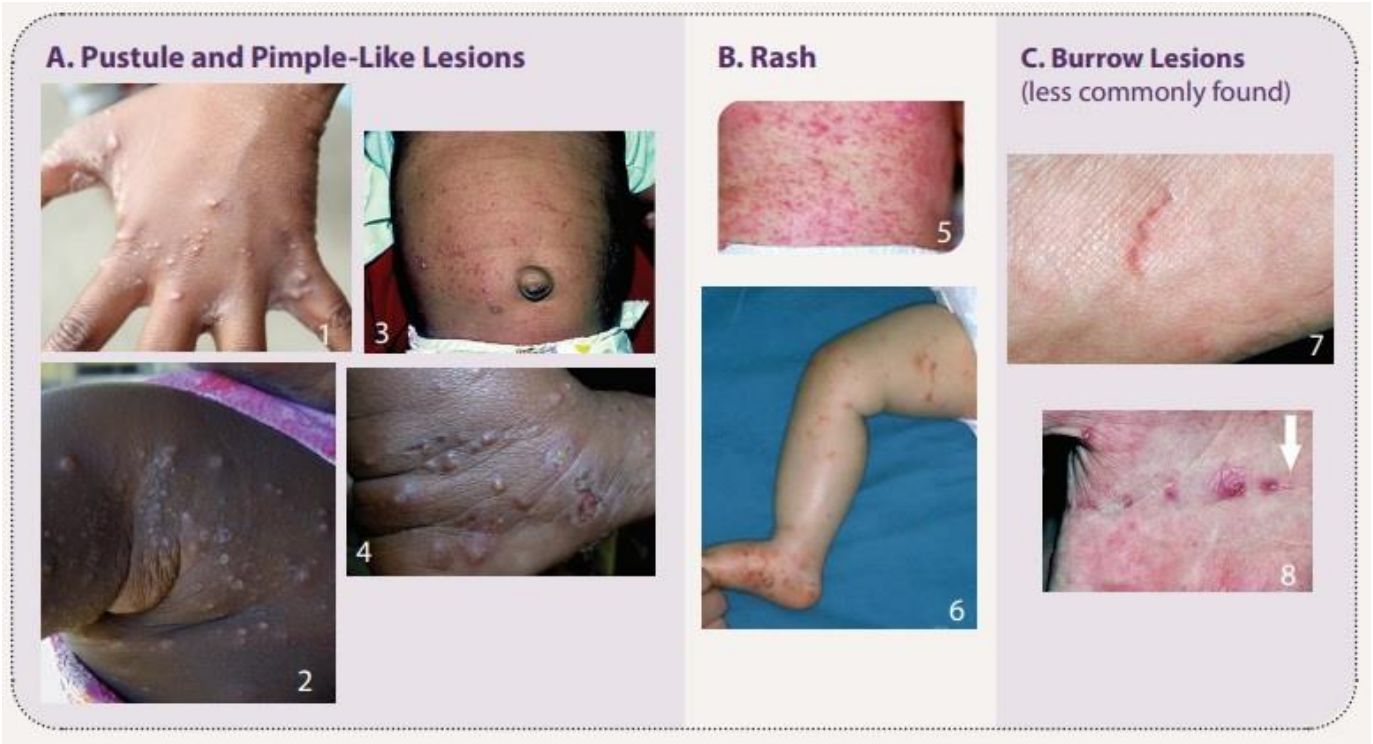


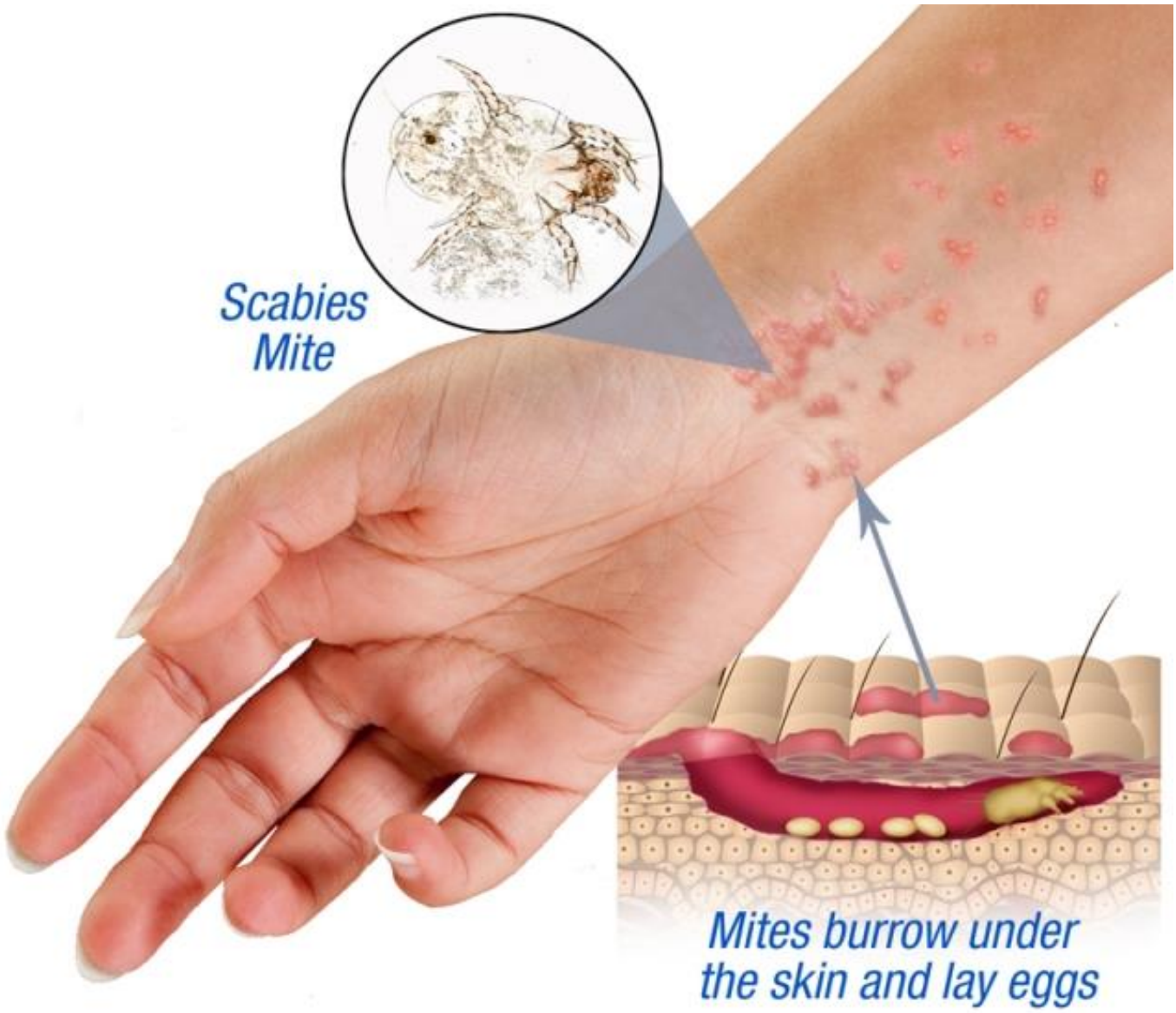
Rosaca: face only, peak incidence between 40 and 50 years [reddening (flushing), papules and pustules]---Referral





Scabies




Scabies
Mite
Mites burrow under
the skin and lay eggs

In addition history is required to exclude **possible allergic contact dermatitis**.

د. ليث خضنفر