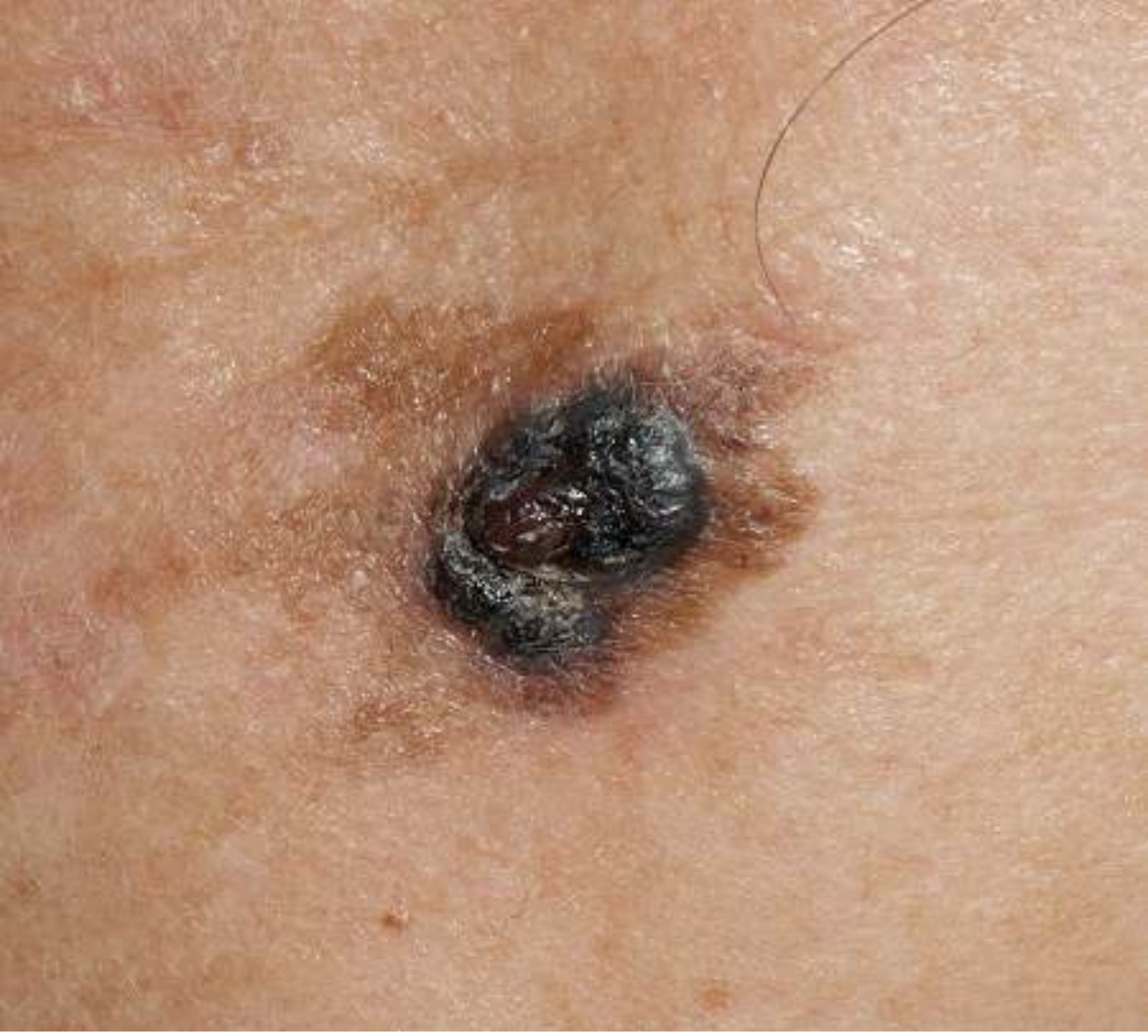

DERMATOLOGY

A CLERKSHIP GUIDE

SCHULICH SCHOOL OF MEDICINE AND DENTISTRY

PREFACE

This book was designed as a concise and comprehensive review of the most commonly seen skin diseases by medical students throughout clerkship. The diseases presented here are not supposed to be an exhaustive list, but rather a starting point for all medical students to build from. Students can expect to come across many of these skin diseases throughout their clerkship training and beyond, no matter what specialty they elect to pursue.

When making your way throughout the text, we encourage you to (1) read the background information for each disease; (2) look at each image carefully and describe the skin lesions you see using the morphology terminology you learn in chapter 1; (3) compare your description to the diagnostic terminology; and (4) understand basic management strategies.

We hope you find this book as a useful learning tool.

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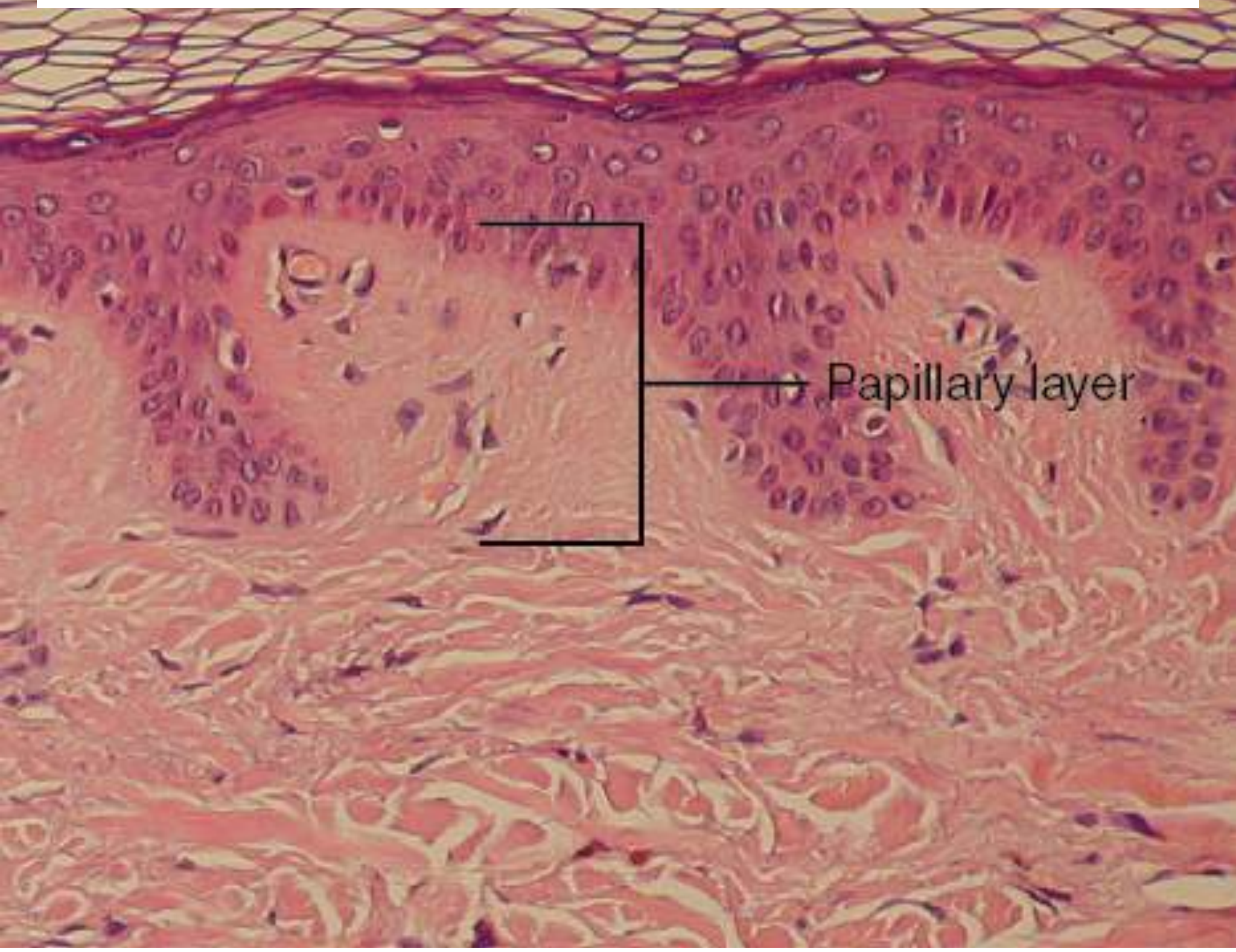
CHAPTER 1

INTRODUCTION TO DERMATOLOGY

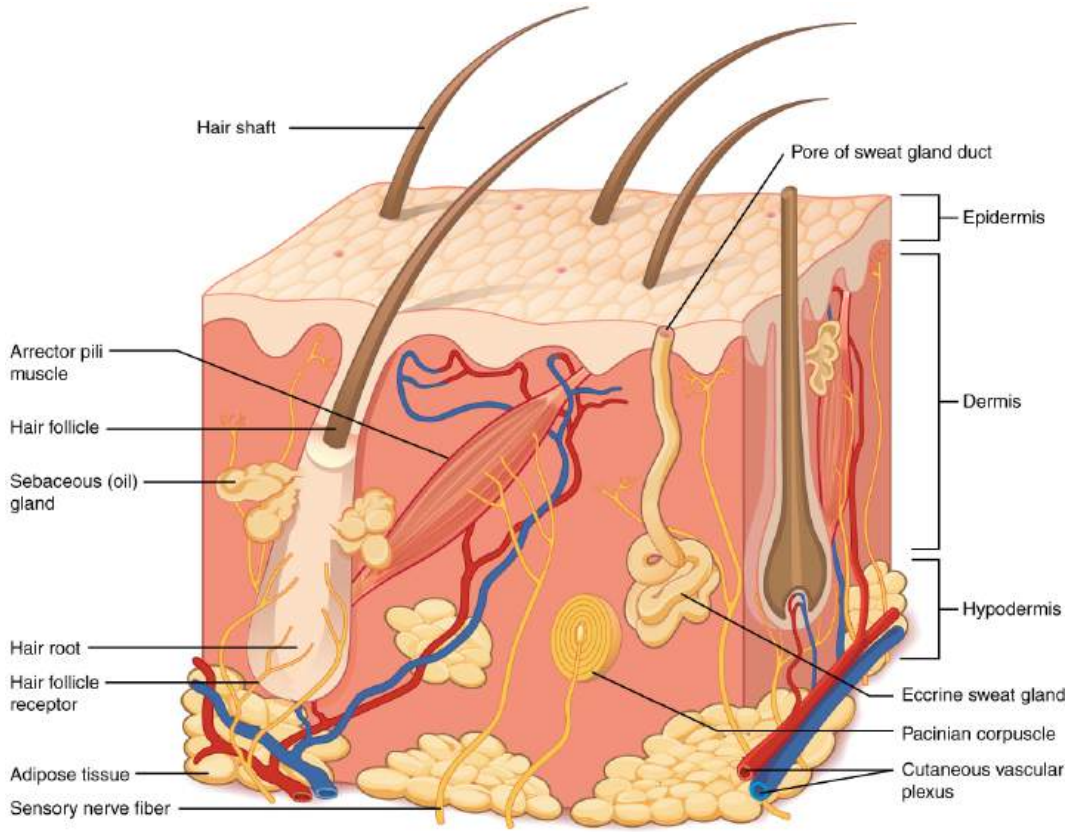


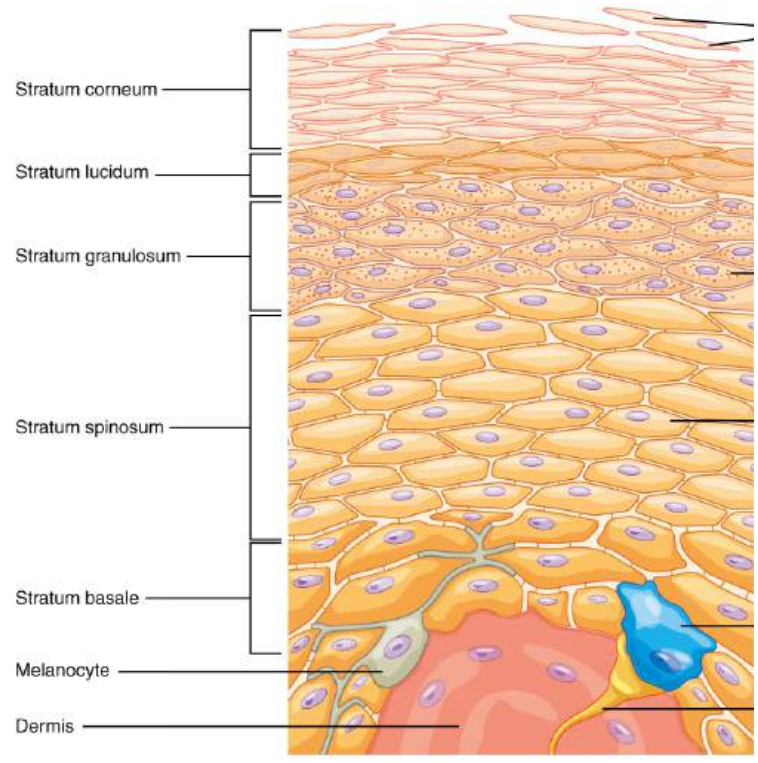
CHAPTER TOPICS

- Anatomy of the skin
- Morphology: describing skin lesions

This chapter will cover two core objectives that will aid you in diagnosing skin disease; anatomy of the skin and morphology. Understanding the anatomy of the skin can greatly help in understanding why certain skin diseases present the way they do. Similarly, being able to adequately describe the visual presentation of someone's skin condition in conjunction with a thorough history will allow you to develop a working diagnosis.

ANATOMY OF THE SKIN





- The **skin** can be divided anatomically into three main layers:
  - **Epidermis:**
    - Stratified squamous epithelium that can be further divided into four layers from superficial to deep; stratum corneum, stratum granulosum, stratum spinosum, and stratum basale. A fifth layer, the stratum lucidum (found between the stratum corneum and granulosum) is found only on palms and soles where the skin is structurally thicker.
    - The epidermis is almost entirely made up of keratinocytes. These cells originate in the deepest layer of the epidermis (stratum basale) and migrate superficially, until they eventually reach the stratum corneum and shed.
    - Function: (1) waterproof layer protecting against bacteria, viruses and other foreign entities from entering the body; (2) Langerhans cells: primary immune cells within the epidermis, protect against infection; and (3) sun protection, specifically the pigment melanin (produced by melanocystes found within the stratum basale) has an ability to filter out UV light.
  - **Dermis:**
    - Found deep to the epidermis and is made of a thick layer of fibrous and elastic tissue. Contains two main cell types: fibroblasts (producers of collagen and elastin) and mast cells (important in type I hypersensitivity reactions).
    - Contains accessory structures: sebaceous (oil) glands, sweat glands, nerve endings, hair follicles, erector pili muscle and blood vessels.
    - Function: multifactorial secondary to the accessory structures, but primarily acts to provide structure, strength and flexibility.
  - **Subcutaneous tissue (hypodermis):**
    - Found deep to the dermis. Comprised of adipose tissue, larger vessels, and nerves.
    - Function: connect the skin to the underlying fascial layer and helps insulate the body.

MORPHOLOGY: DESCRIBING SKIN LESIONS

1. **Macule:** circumscribed change in skin colour that is no more than 1 cm in size and completely flat. If you can feel it, then it is not a macule.

2. **Patch:** Identical features as a macule except it is called a patch if the lesion is >1 cm in size.

3. **Papule:** Elevated, solid lesion, and <1 cm in diameter. Papules are palpable and localized to the skin surface as lesions form from proliferation of the epidermis or superficial dermis.

4. **Plaque:** Identical features as a papule expect it is called a plaque if the palpable lesion is >1cm in size.

5. **Nodule:** Solid, round or ellipsoid lesion that is larger than a papule. Caused by proliferation of cells that extend into the mid-deep dermis.

6. **Vesicle and Bulla:** Fluid filled papules, identified as small blisters. Vesicle if blister is <1cm and a bulla if >1 cm.

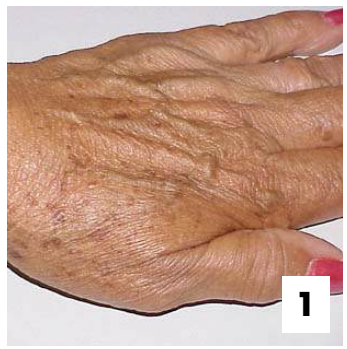
7. **Pustule:** Similar to vesicles except they differ in that pustules contain a purulent exudate (white, yellow, or green) versus the clear fluid seen with vesicles.

8. **Cyst:** A cavity containing liquid, solid or semi-solid material that can present superficially or deep. Key difference from vesicles and pustules is that cysts are firm on palpation due to their fibrous capsule.

9. **Crust:** Develops when serum, blood, or purulent exudate dries on the skin surface. Appear yellow to green depending on the causative fluid.

10. **Scale:** Formed from flaking of the stratum corneum and can differ greatly in size and thickness.

11. **Erosions and Ulcers:** Both are used to describe defects within the skin surface with erosions used specifically when the defect is confined to the epidermis and ulcers which extend into the dermis or deeper. Erosions often heal without scarring whereas ulcers will not.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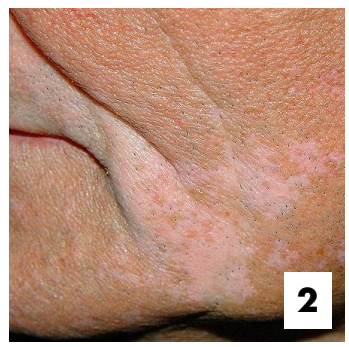
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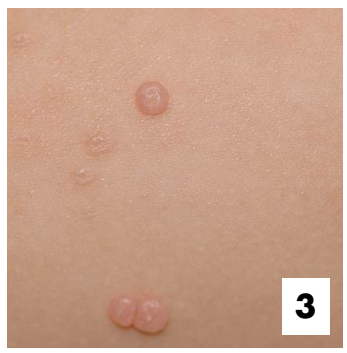
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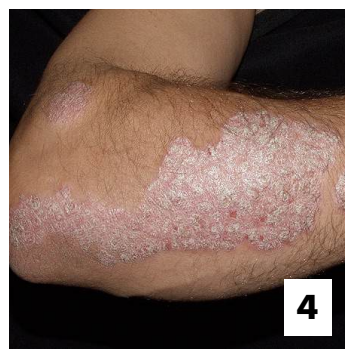
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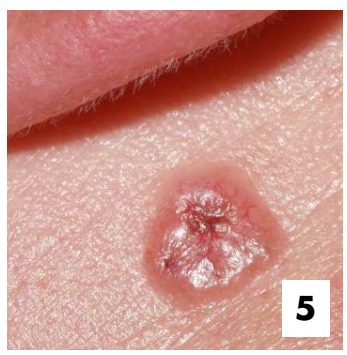
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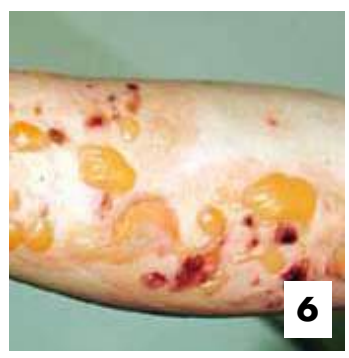
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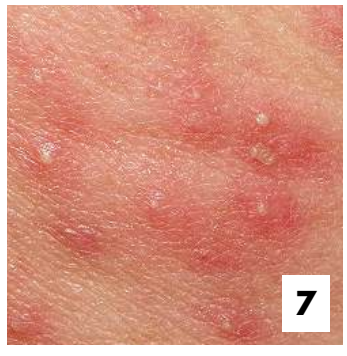
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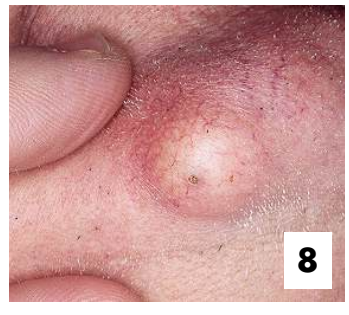
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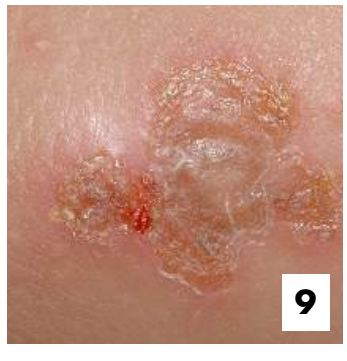
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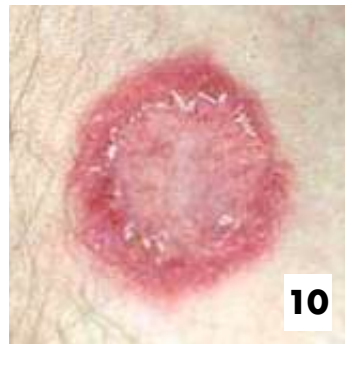
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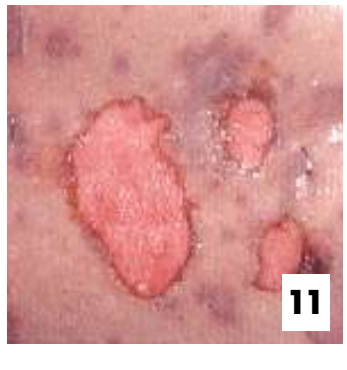
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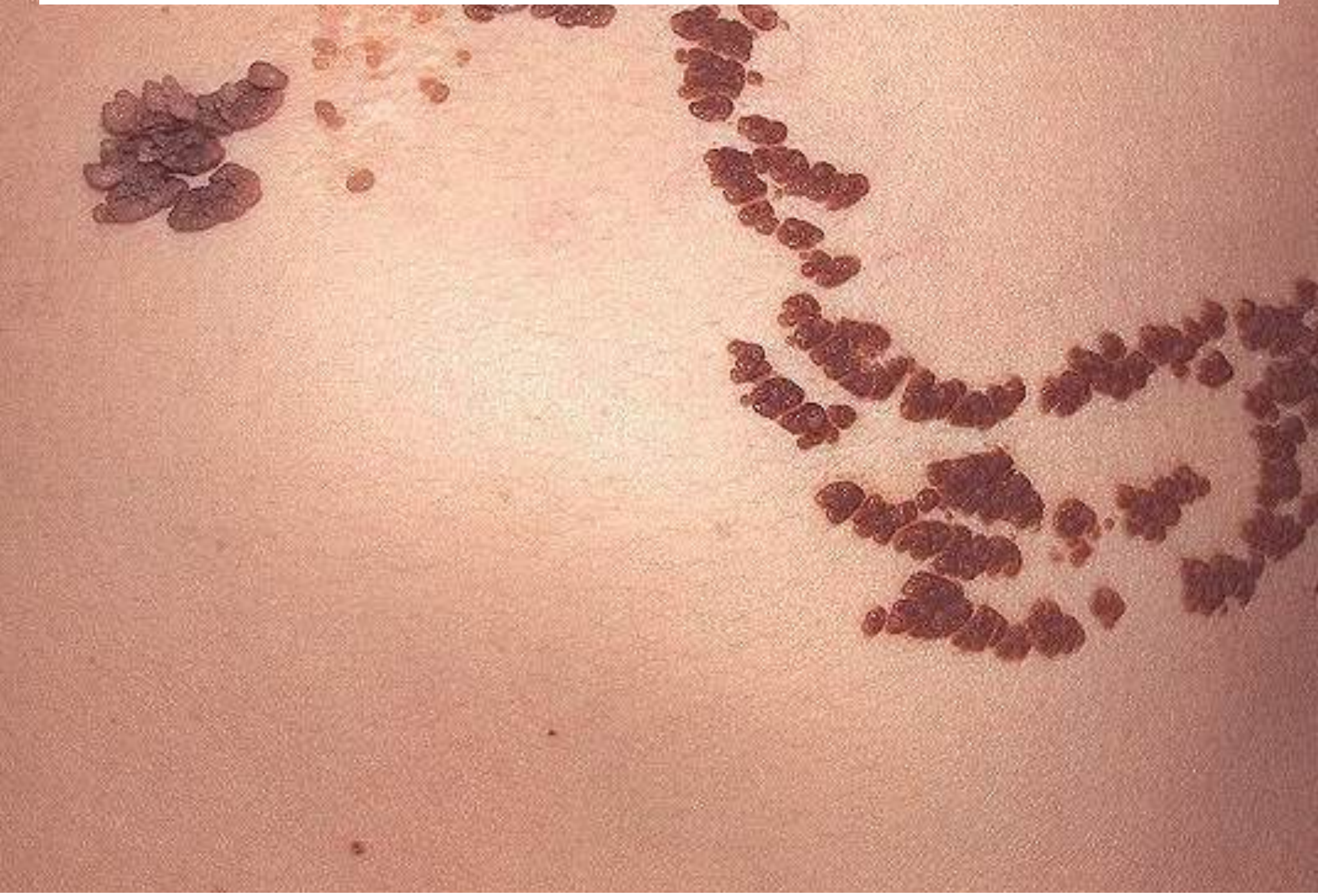
CHAPTER 2

BENIGN SKIN LESIONS



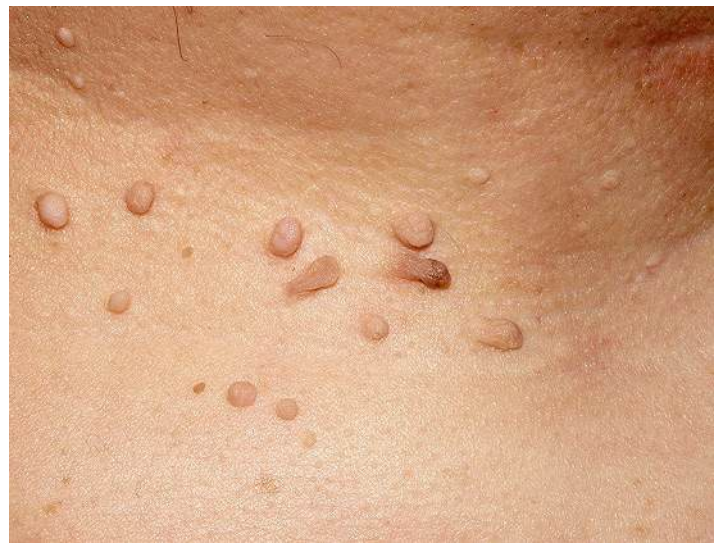
CHAPTER TOPICS

- Skin tags
- Seborrheic keratosis
- Lentigo
- Folliculitis
- Hypertrophic scars and keloids
- Epidermal nevus

This chapter covers skin lesions that are very common within the general public. These skin lesions are all benign and often do not require any intervention. Treatment is most often for cosmetic reasons. Many of the presented skin conditions in this chapter are concerning to patients as they may resemble less common, but more serious disorders. As such, it is important for you to recognize each of these and be able to educate your patients about their benign nature.

SKIN TAGS

- Found in 25% of people, most commonly appearing between the ages of 45 to 70.
- Occur more often and in greater number in obese and pregnant patients.
- Common sites include the eyelids, neck, axillae and groin.
- Most often asymptomatic but may become painful due to irritation or infection.



Diagnosis

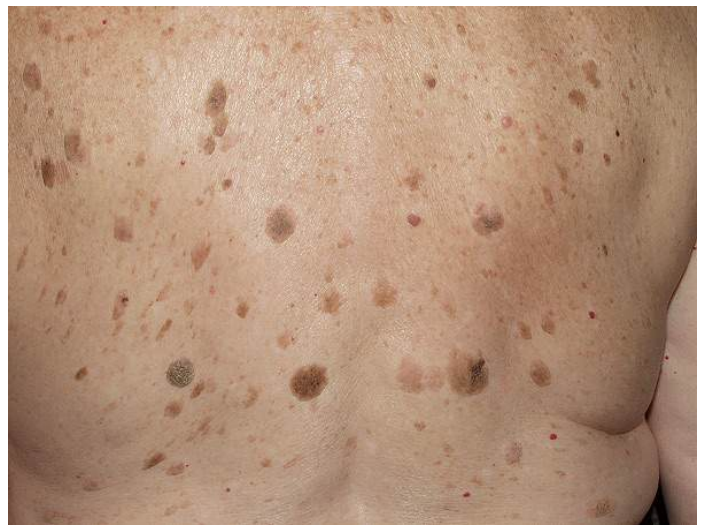
- Skin-coloured to brown, often fleshy papules attached by a short, narrow-to-broad stalk.
- As the stalk enlarges due to growth of its central blood vessel, the lesion can increase to 1 cm in size .

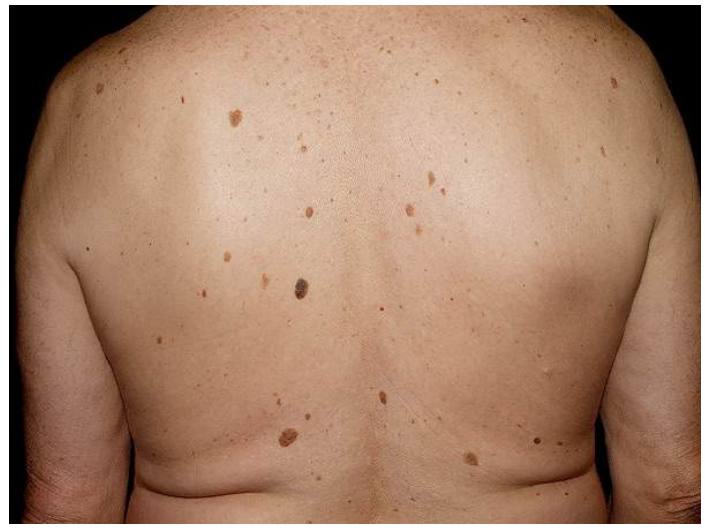
Management

- Common techniques include snipping, electrodessication, cryotherapy and shave excision.
- All removal techniques are elective procedures.
- Can undergo necrosis and fall off on their own if they outgrow their blood supply or they become twisted.

SEBORRHEIC KERATOSIS (SK)

- The most common benign skin neoplasm, commonly presenting in middle aged and older adults.
- Often worrisome as they are a changing pigmented lesion, occasionally with characteristics similar to melanoma (Ch. 4).





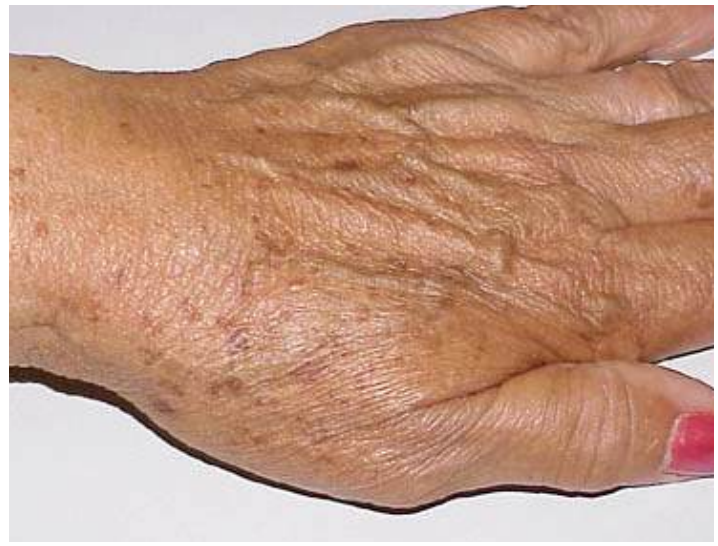
Diagnosis

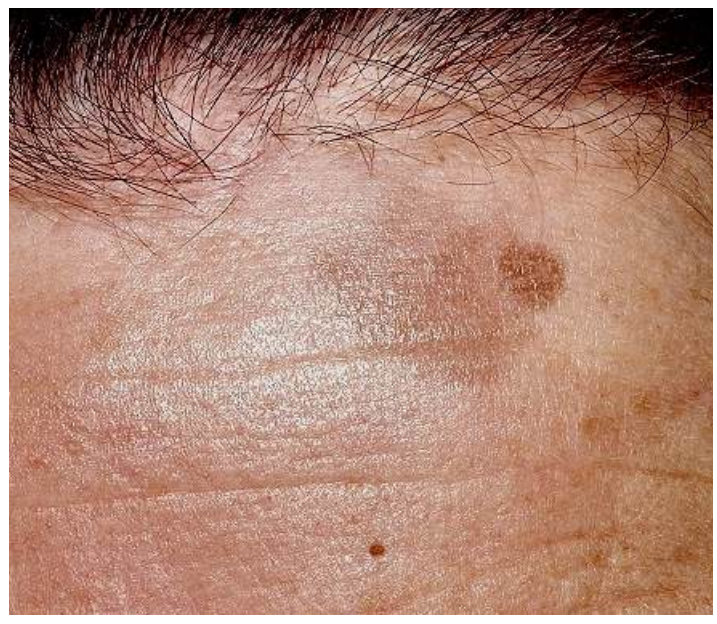
- Present in many forms, however the key to identifying an SK is their stuck-on appearance and waxy surface.
- Classic lesions are oval in shape, with well-circumscribed borders, and range in colour from white to brown .
- Size can vary from mm to cm and lesions will often thicken and take on a wart like surface with time (hyperkeratotic).
- Biopsy when you are unable to differentiate from other more concerning skin lesions.

Management

- Intervention is not required.
- Patients may elect to remove SKs due to irritation from clothing/ jewelry or for cosmetic reasons.
- Cryotherapy is the preferred technique (Warning: can lead to a scar or hypopigmented lesion).

LENTIGO





- Commonly called liver spots although they have no relationship to the liver.
- Present on sun exposed areas including the scalp, face, arms, shoulders and dorsal hands.
- Increase in numbers with advancing age.
- Most often acquired, however they may present as part of systemic diseases (most commonly Peutz-Jeghers and LEOPARD syndrome).
- Any lentigo with a highly irregular border, thickening or hyperpigmentation should be biopsied to rule out lentigo maligna melanoma.

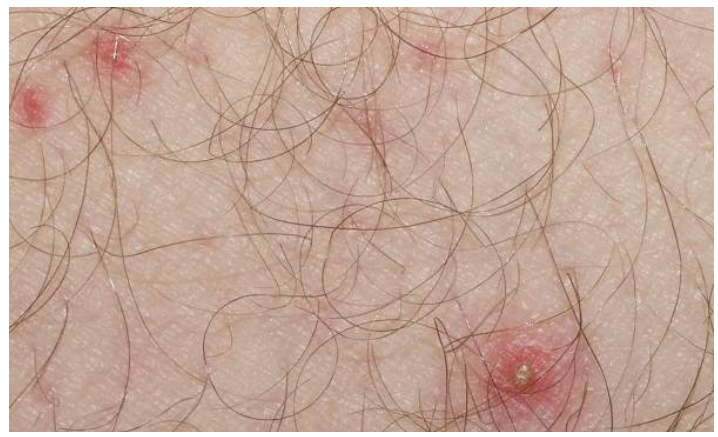
Diagnosis

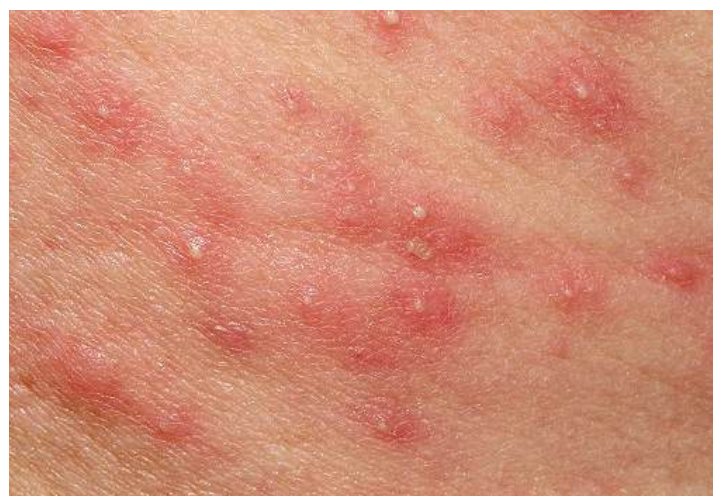
- Light to dark brown macules with well-defined borders.
- Hyperpigmented lesions ranging from mm to cm in size.

Management

- Treatment is not required.
- For cosmetic reasons, bleaching (hydroquinone) or cryotherapy may be used.
- Regular use of sun protection will help prevent the development of new lesions and minimize darkening of existing ones.

FOLLICULITIS





- Common disorder of the hair follicle and seen at any age.
- Most commonly caused by microbes (Staphylococcus aureus), however may be due to fungus, mites and noninfectious causes including chemical irritation or physical injury (hair removal, chronic friction, tight pulling of hair).
- Ingrown hairs are known as pseudofolliculitis.

Diagnosis

- 1 to 3 mm pustules or inflamed papules located on hair bearing areas.
- Infectious causes can coalesce into larger more painful carbuncles.

Management

- Mild bacterial folliculitis is best managed with topical disinfectant skin washes such as benzoyl peroxide wash.
- Avoiding irritants and proper hair removal techniques are recommended.

HYPERTROPHIC SCARS AND KELOIDS

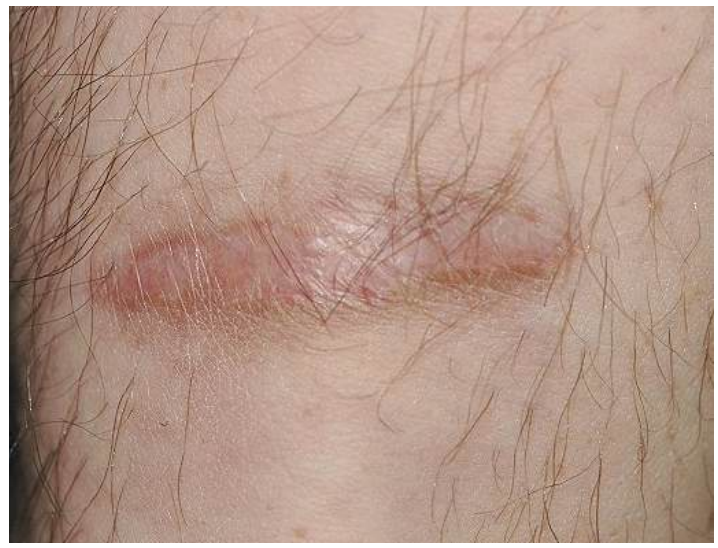
- Although commonly used interchangeably, minor differences exists between these two entities.
- Both refer to the formation of a fibrous mass at a site of injury
- While hypertrophic scars are confined to the borders of an injury (fig. 1), keloids will extend beyond the wound (fig. 2) forming a mass that is greater in size than the initial injury.

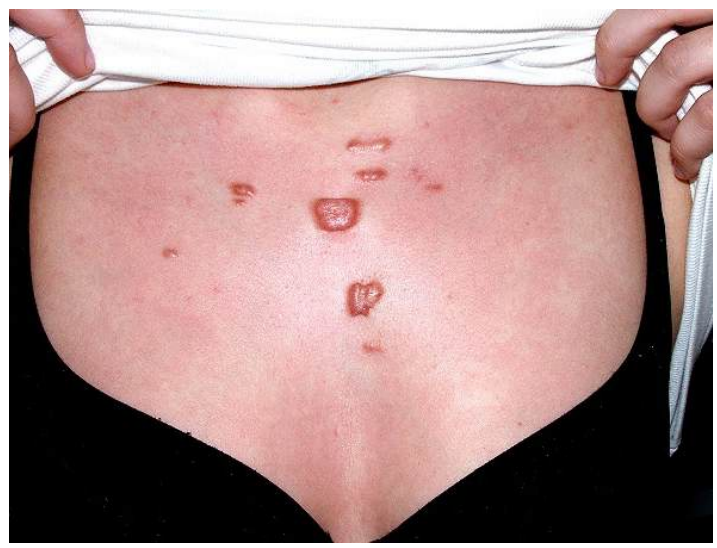
Diagnosis

- Fibroblasts and collagen localized within the dermis forming a fibrous mass at the skin surface.

Management

- Although lesions may slowly improve with time, this may take many years. Intralesional triamcinolone injections or laser therapy may help speed up recovery, however treatment is challenging and often requires many sessions.





EPIDERMAL NEVUS

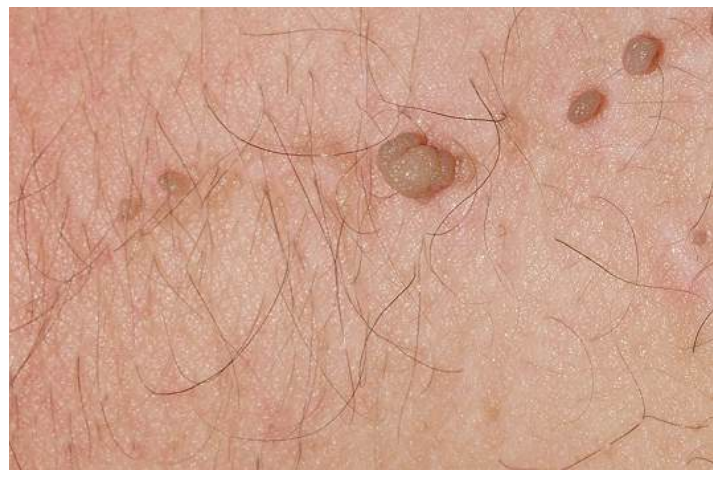
- Lesions caused by epidermal overgrowths that are present at birth or develop early in childhood.
- Most commonly are sporadic and considered an isolated finding, however may be associated with developmental abnormalities.
- Believed to be a form of mosaicism due to postzygotic mutations in embryonic cells that eventually form part of the epidermis.

Diagnosis

- Vary greatly in appearance depending on the type of epidermal cell involved. Are most often linear in distribution.
- In general, they are well-circumscribed growths that may appear round, oval or elongated; flat or elevated; skin coloured or dark brown; and soft or wart like surfaces.

Management

- Cryotherapy, laser or surgical removal (partial thickness or full thickness excision).
- Treatment is challenging and often not recommended. Patients may elect to treat for cosmetic reasons.



CHAPTER 3

SUPERFICIAL BENIGN SKIN CHANGES

CHAPTER TOPICS

- Acne
- Rosacea
- Vitiligo
- Alopecia

As in chapter 2, the skin lesions presented here are very common and are benign in nature. Treatment is most often for cosmetic reasons.

ACNE

- A common inflammatory disorder of the pilosebaceous unit.
- Presents shortly after puberty, persisting into adulthood in up to 50% of people.
- Acne is associated with physical and psychological difficulties, thus it is important to discuss acne related fears and anxiety with patients.
- Regularly isolated to the face, but the neck and back may also be affected.
- A chronic inflammatory condition that can be associated with genetics, hormones, stress and medications.

Diagnosis

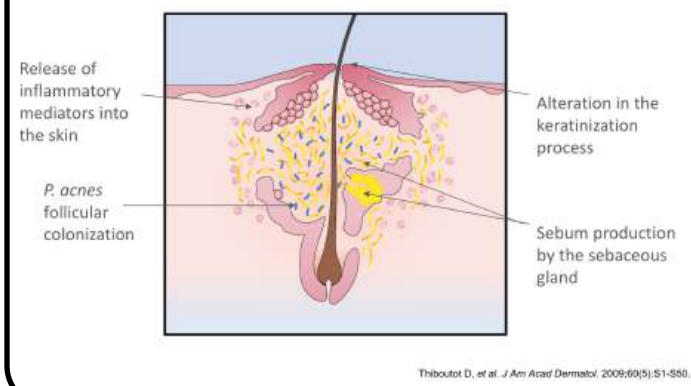
- Acne lesions are divided into four main types: comedones, inflammatory papules, pustules and nodules.
  - Comedonal acne: often the first lesions that appear in adolescence and present on the face. Can be divided into open comedones (black heads) and closed comedones (white heads) (fig. 1). The two differ in appearance whereby open comedones contain a central dark keratin plug compared to closed comedones that do not contain a keratin plug and covered by skin at their surface.
  - Papular/pustular acne: a more severe form of acne where patients present with 2- to 5- mm inflamed papules and/or pustules (fig. 2).
  - Nodular acne: Red, inflamed and fluctuating nodules with cyst like properties (fig. 3). Patients should be managed appropriately in order to avoid or minimize long-term scaring. Recurring rupture and reformation of a lesion will often result in disfiguring scars (fig. 4).

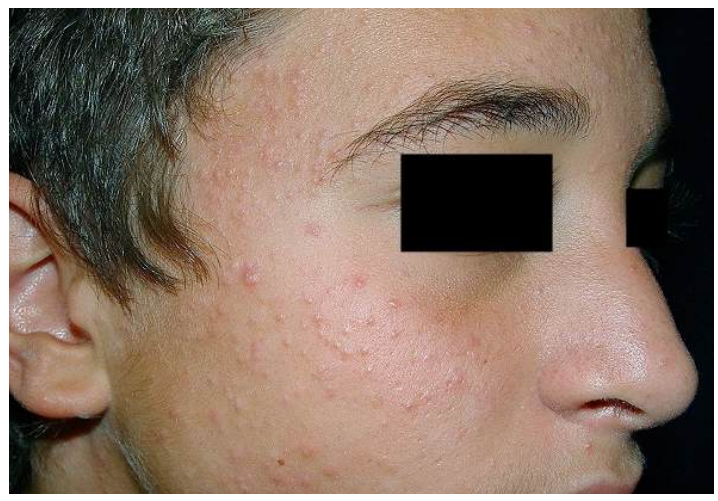
Management

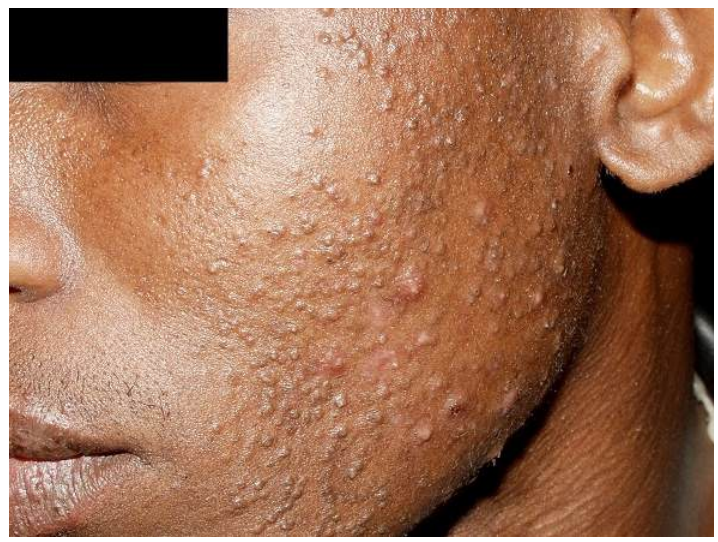
- Good skin hygiene is the most important step in treating acne: this includes gently washing twice daily while avoiding vigorous washing and scrubbing as it can cause further inflammation, worsening ones acne.
- Mild cases are best managed with topical medications including retinoids (tretinoin), antimicrobials (benzoyl peroxide), antibiotics (clindamycin), salicylic acid or a combination.
- Isotretinoin (Accutane) may be used for more severe forms. Known to cause birth defects, thus all female patients require birth control if sexually active. These patients require regular blood work to monitor blood cells, lipids and liver function.
- Treatment takes time, thus patients should be counseled to have realistic expectations. Acne should not be popped, squeezed or picked in order to avoid scar formation.

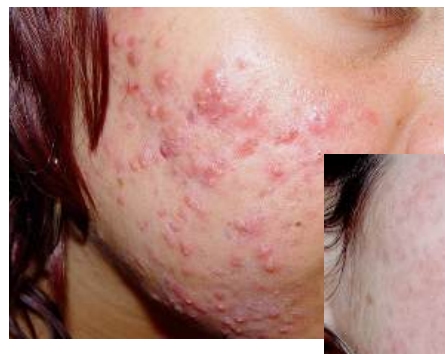
PATHOGENESIS OF ACNE

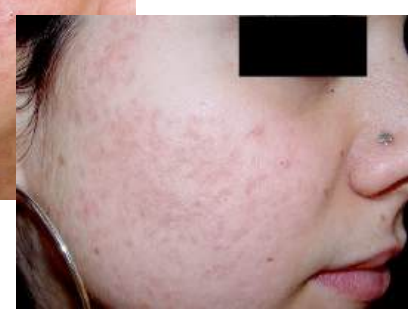
1. Increased sebum production often secondary to increased hormone production (puberty, menstrual periods, stress)
2. Increased keratinization causing follicular plugging
3. Follicle colonized by *P. acnes*
4. Inflammatory response





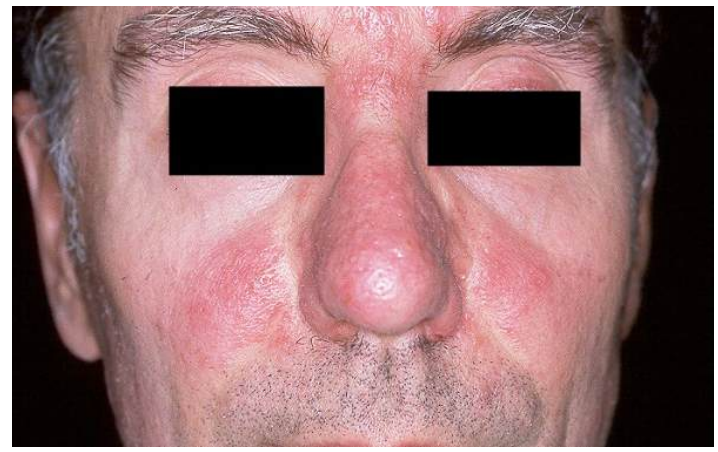


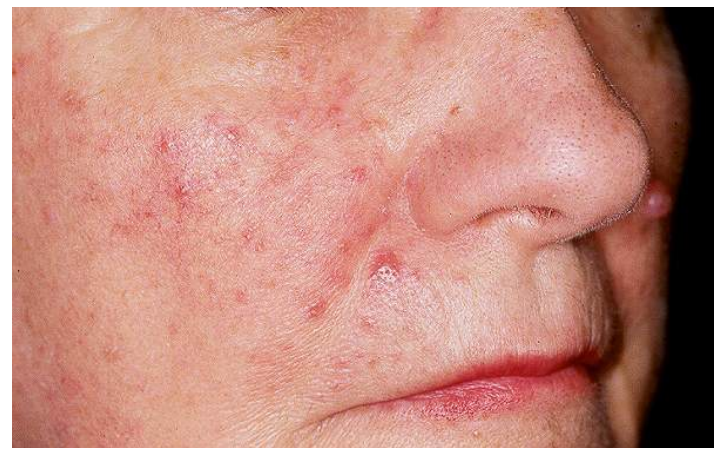


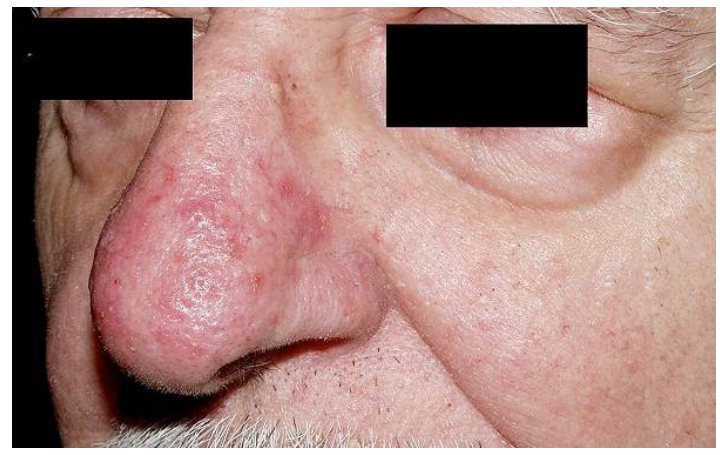


ROSACEA

- A skin condition of the central face occurring after the age of 30 most commonly in people of Celtic origin.
- 2-3 times more common in women than men, but will often present much more severely in men.
- Although the exact pathology of rosacea is not known, there is believed to be a genetic component, as up to 1/3 of patients will have a family history of rosacea.
- Common triggers include sun exposure, exercise, hot and cold temperatures, alcohol and certain foods.







Diagnosis

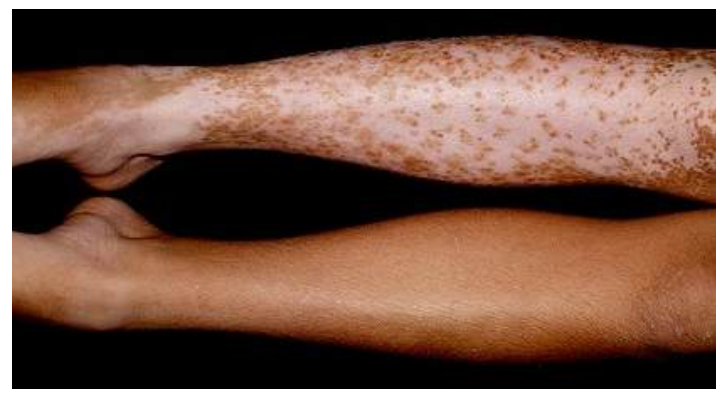
- Episodes of or persistent facial flushing most commonly on the nose and/or cheeks (fig. 1).
- Multiple variants of rosacea exists in which patients will present with one or a combination of telangiectasias (fig. 2), papules (fig. 2), pustules and nodule formation distorting nose shape (fig. 3).
- Often described by patients as gradual onset of redness or flushing and occasionally with associated pimples located on the central face.

Management

- Topical therapy (metronidazole, azelaic acid or ivermectin) intermittently or for an extended period. It is important to warn patients that treatment may cause an initial flare of the rosacea.
- Systemic therapy with tetracycline antibiotics.
- Patients should avoid triggers and practice good sun-protection.

VITILIGO

- One of the most common pigmentary disorders, affecting 0.5-1% of people worldwide.
- Often presents before the age of 20 and progressively increases in depigmentation over time.
- Considered an autoimmune disease based on its association with other autoimmune disorders (autoimmune hypothyroidism, Addison's disease and systemic lupus) and the presence of autoimmune antibodies against melanocytes.

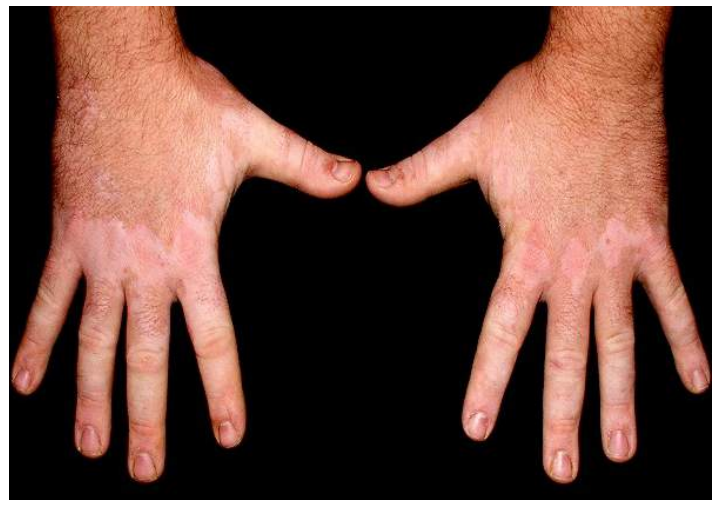


Diagnosis

- Based on clinical findings of well-demarcated white macules.
- Initial presentation may be acute, however areas of hypopigmentation will often increase in size and frequency without any associated symptoms.

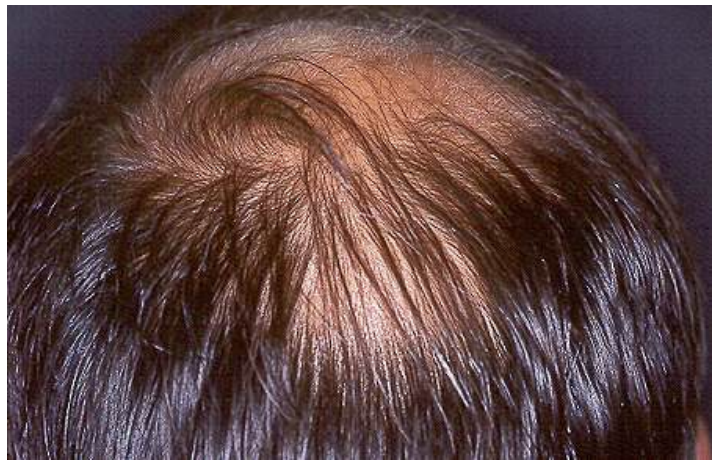
Management

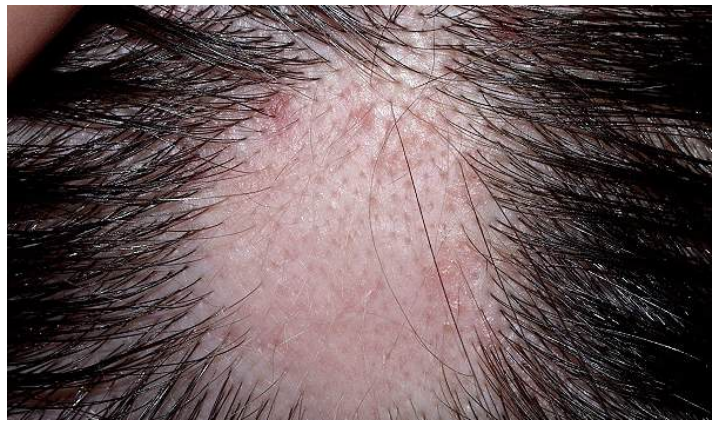
- There is limited success in treating vitiligo.
- Medium-high potency topical corticosteroids or calcineurin inhibitors for localized vitiligo or UVB phototherapy for more wide spread presentation.
- Goal of treatment is to restore melanocyte concentration within the skin.
- Patients often resort to cosmetic measures in order to adequately cover the hypopigmented patches.

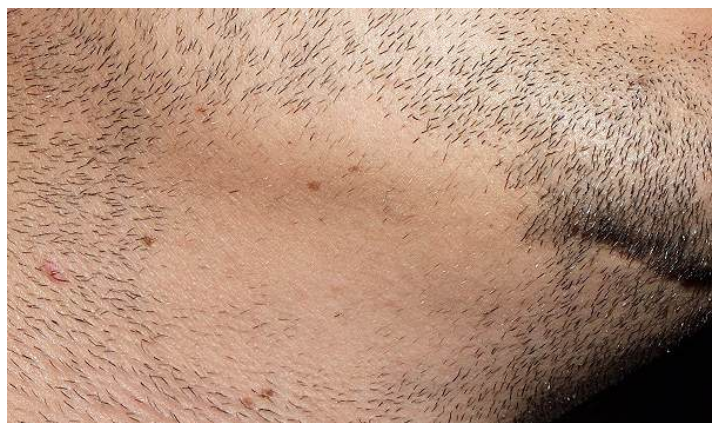


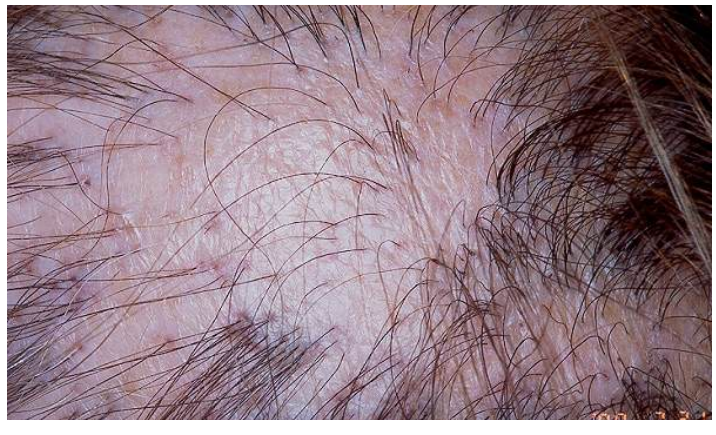
ALOPECIA

- Alopecia refers to hair loss. The hair loss is most commonly isolated on the scalp or beard, but can effect other areas of the body as well.
- Two broad categories:
  - **Non-scarring alopecia**: reversible/preventable hair loss
    - Androgenic alopecia: driven by hormones resulting in patterned hair loss. ie. male patterned balding (fig. 1).
    - Alopecia areata: autoimmune destruction of the non-stem cell portion of hair follicles. Results in smooth bald patches (fig. 2 & 3; hair follicles present).
    - Physical alopecia: trauma to hair follicle. Pattern will vary.
    - Telogen effluvium: malnutrition, stress, medications etc. causing shift of hair follicles into resting/telogen phase. Results in increased shedding and decreased density - generalized hair loss.
  - **Scarring alopecia**: inflammatory process damaging the hair follicle stem cell. Results in permanent hair loss. Requires immediate referral to a dermatologist (fig. 4; no hair follicles).









Diagnosis

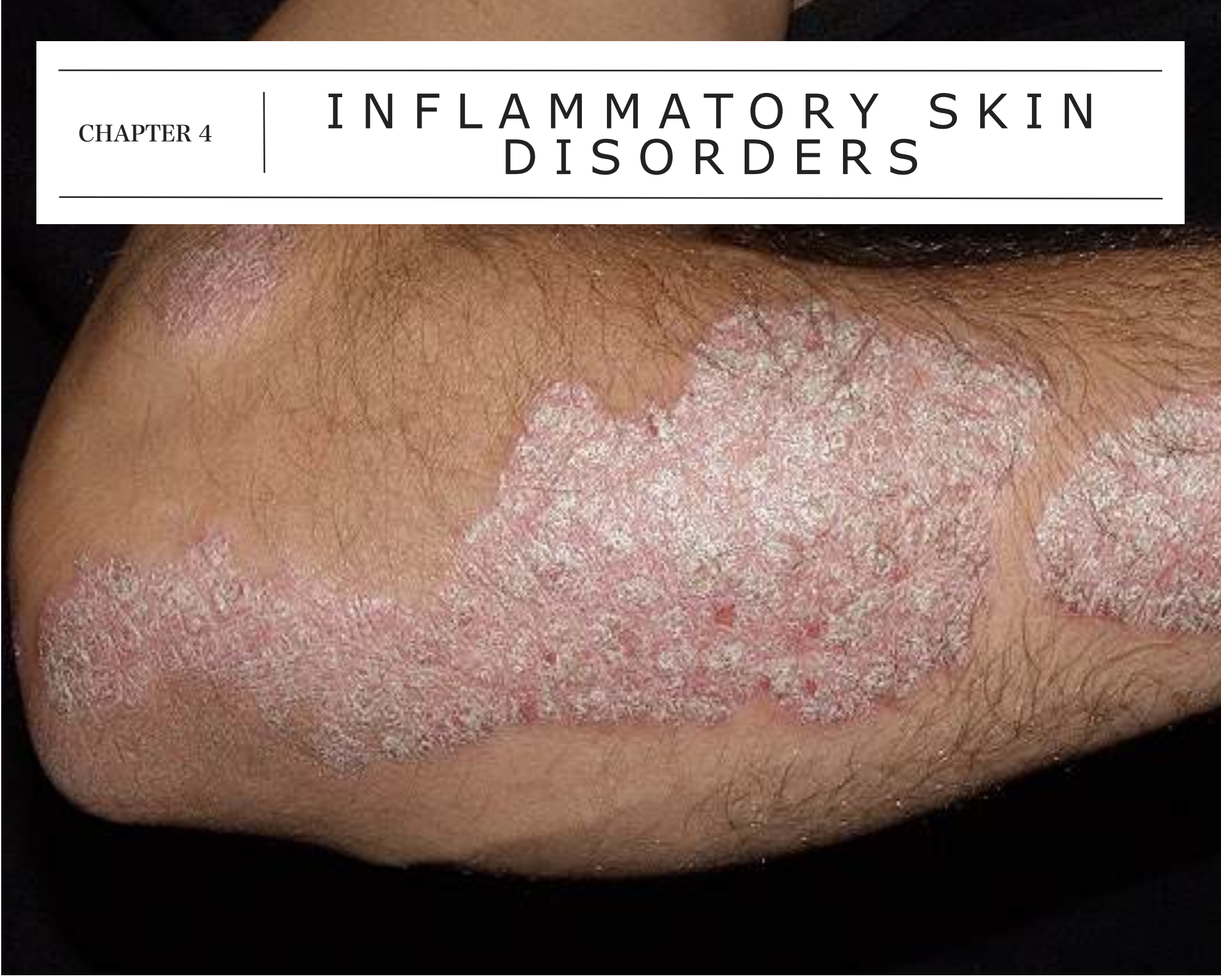
- Identifying the presence or absence of hair follicles or not within the balding area is critical for appropriate diagnosis.
- Nonscarring alopecia: hair shafts are no longer present however the hair follicles remain intact.
- Scarring alopecia: fibrosis and scarring leads to loss of hair follicles.

Management

- Corticosteroid (clobetasol or flucinonide) injections or creams may be used in alopecia areata.
- Androgenic alopecia may respond to minoxidil (safe in men and women) or finasteride (in men).

CHAPTER 4

INFLAMMATORY SKIN DISORDERS



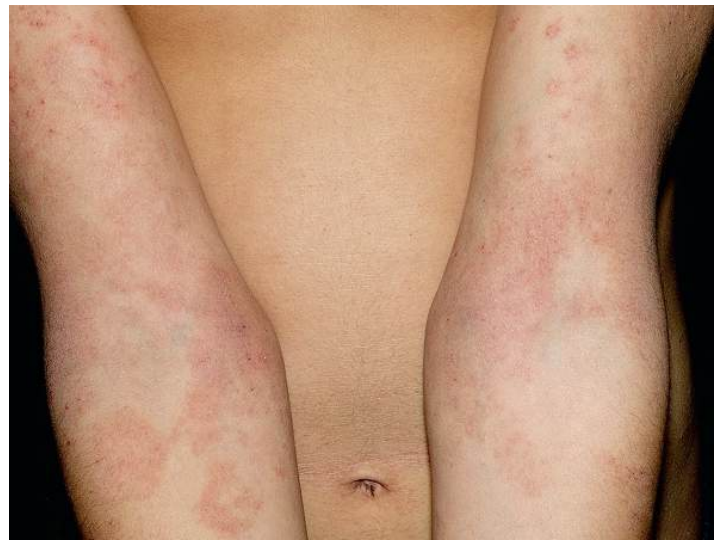
CHAPTER TOPICS

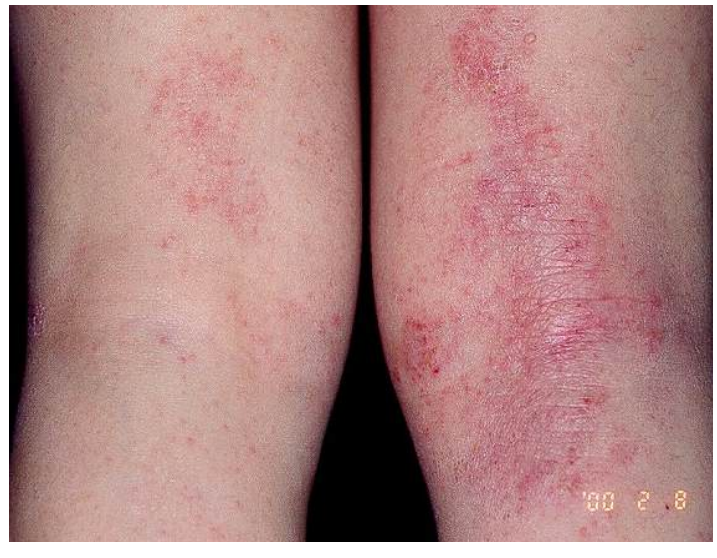
- Atopic dermatitis/ eczema
- Contact dermatitis
- Seborrheic dermatitis
- Urticaria
- Adverse cutaneous drug reaction
- Psoriasis

Inflammatory skin disorders are some of the more common skin conditions you will see throughout your clerkship training. In the majority of cases, patients will present with minor disease and can be managed by their primary care provider. For patients with more advanced skin involvement or those who show minimal response to conservative treatment, referral to dermatology may be required. While the topics covered in this chapter may not be life threatening, the majority are chronic diseases that patients must manage throughout their entire life.

ATOPIC DERMATITIS/ ECZEMA

note: the terms dermatitis and eczema may be used interchangeably. They both describe the inflammatory reaction involving the epidermis and dermis.





- The most common inflammatory skin disease.
- Close association with family history of atopic dermatitis (AD).
- All patients should be screened for the Atopic Triad: atopic dermatitis, allergic rhinitis and asthma. 35% of children with AD will go on to develop asthma.
- Believed to be due to a skin barrier dysfunction leading to an IgE mediated inflammatory process.
- 90% will present before the age of 5, 10% between 6-20 years and very rarely in adulthood.

Diagnosis

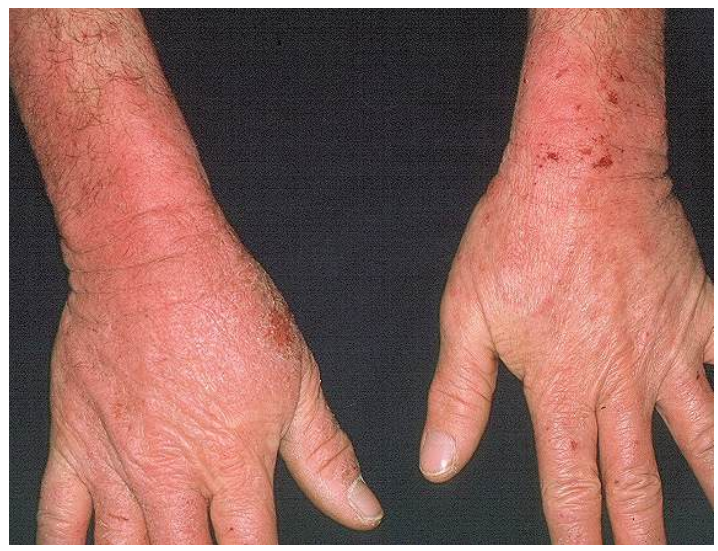
- Classically known as the itch that rashes.
- Poorly defined erythematous patches, papules and plaques. Scale may be present and skin may appear puffy.
- Chronic dryness and itching may lead to fissures, crusting, lichenification and/or infection (S. aureus).

Management

- There is no cure for atopic dermatitis.
- Patient education is an important element of therapy.
- Proper skin hygiene with gentle cleansers and daily moisturizing with fragrance free emollients is integral to treatment success.
- Topical steroids are the main pharmacotherapy.

CONTACT DERMATITIS

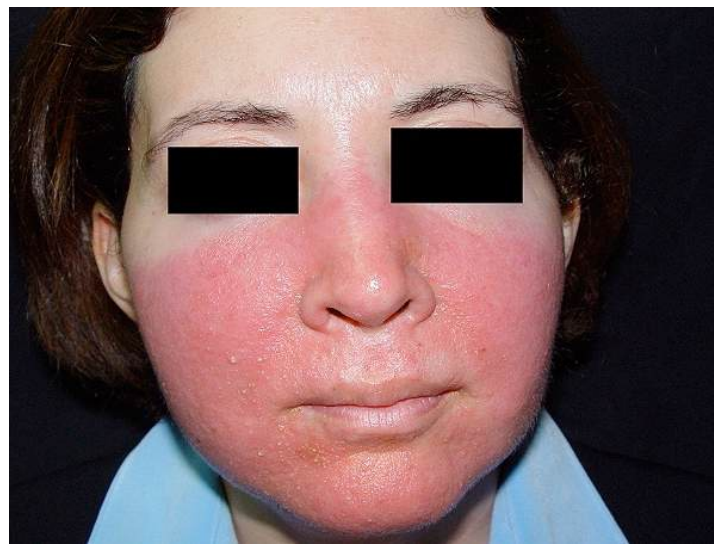
- Umbrella term for the acute or chronic inflammatory reaction that occurs when the skin comes in contact with a substance. The two broad categories of contact dermatitis we will cover are irritant contact dermatitis (ICD) and allergic contact dermatitis (ACD).



Irritant contact dermatitis

- Toxic reaction is most commonly found on the hands and occurs following chronic exposure to an irritant – a reaction can occur after a single exposure to a severe irritant.
- Consider ICD in all patients who present with an occupational related skin disorder.

- Common irritants include: water, soaps, detergents, alcohol solvents, wool, fiberglass and others.

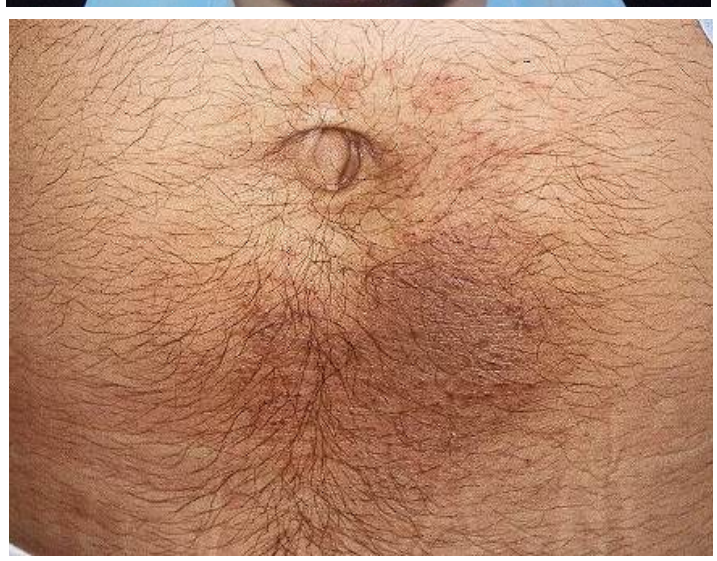


Diagnosis

- Presentation is confined to areas where the offending agent has come in contact with the skin (fig. 1).
- Presentation can vary greatly in acute (well demarcated redness, vesicles and/or blisters) versus chronic (dryness, chapping, scaling, fissures and/or ulcers) ICD.

Allergic contact dermatitis

- Delayed cell mediated hypersensitivity reaction following re-exposure to a substance the person has previously been sensitized to.
- Common contact allergens: nickel (fig. 2; jewelry, clothing), balsam of peru (topical medications), fragrance mix (fragrances, cosmetics).



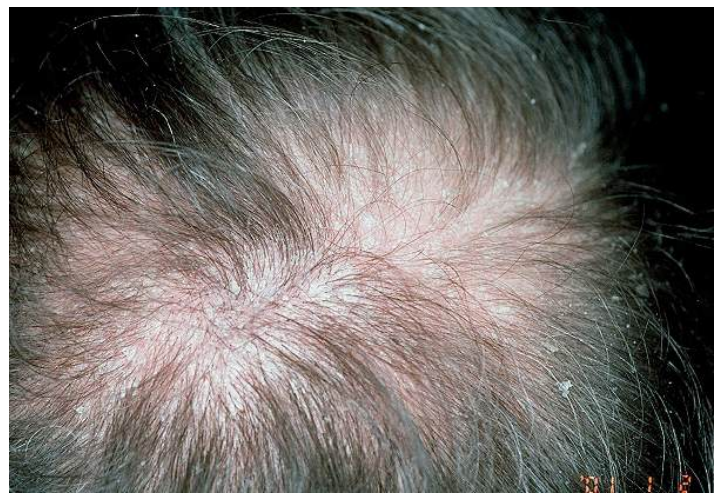
Diagnosis

- Due to the immunological nature, the reaction may spread beyond the site of contact.
- Lesions are often well demarcated, erythematous, edematous and pruritic. Bullae or erosions may appear in more severe reactions.
- Patch testing may be used to help identify the offending agent.

Management of ICD and ACD

- Removing the offending agent is the first and most important treatment.
- Corticosteroids are the main pharmacotherapy.

SEBORRHEIC DERMATITIS



- Common chronic inflammatory disease characterized by redness and scaling of the scalp and face.
- *Malassezia yeasts are* believed to be causative agents along with genetic and environmental factors.
- Persistent in adults, however undergoes periods of remission.

Diagnosis

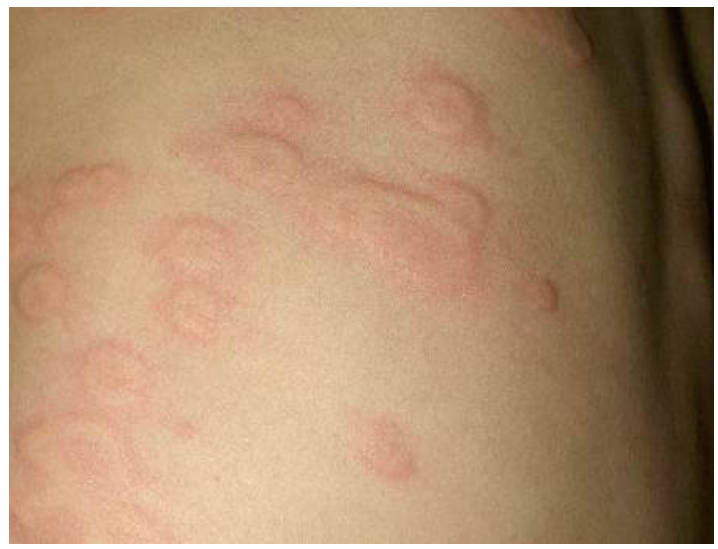
- Presents with yellow, greasy scale that is most often localized to the scalp, face and neck (regions where sebaceous glands are most active).
- Onset is gradual and patients often describe being worse in the winter months.
- Identified as dandruff when mild seborrheic dermatitis causes flaking of the scalp.

Management

- Antifungals such as ketoconazole and ciclopirox are used.
- If inflammatory, low dose corticosteroids can be mixed with anti-fungals.

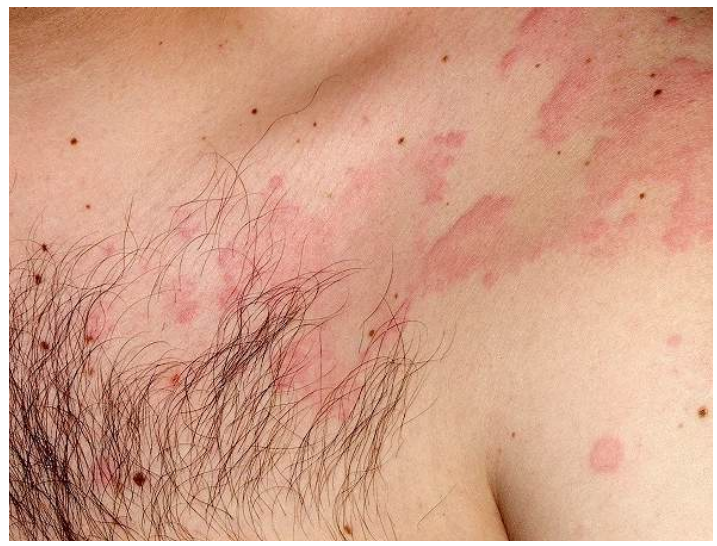
URTICARIA

- Can be classified as acute (less than 6 weeks in duration; often IgE mediated) or chronic (greater than 6 weeks in duration; etiology unknown in 80% of cases). Here we will focus on acute urticarial reactions.
- Reaction related to foods (shellfish, nuts), infections (viral), drugs (beta-lactams antibiotics, NSAIDS, aspirin) and inhalants (pollens, molds).
- Can be accompanied by angioedema (swelling of the tissue just under the skin or mucous membranes).



Diagnosis

- Wheals - superficial, well defined, erythematous or white, small (<1cm) to large (>8cm) plaques.
- Lesions are blanchable and often pruritic.

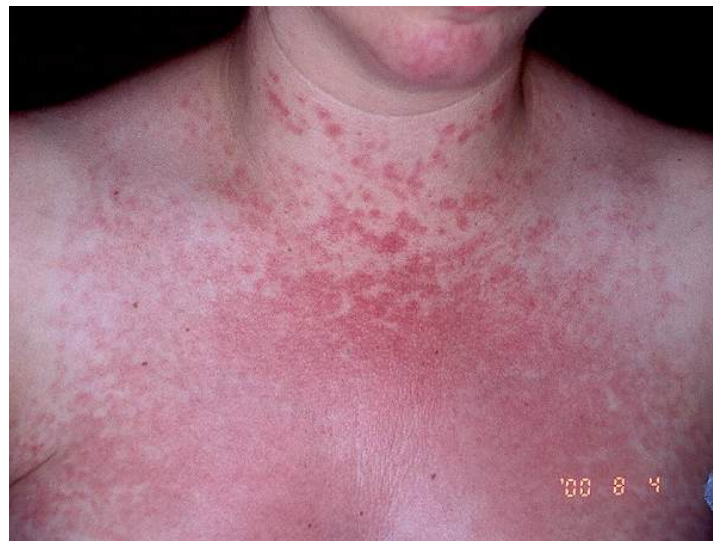


Management

- Prevention, including removal or avoidance of the offending agent.
- Antihistamines (H1 blockers).
- Dermatology or allergy consult may be necessary when the patient is not responsive to antihistamines.

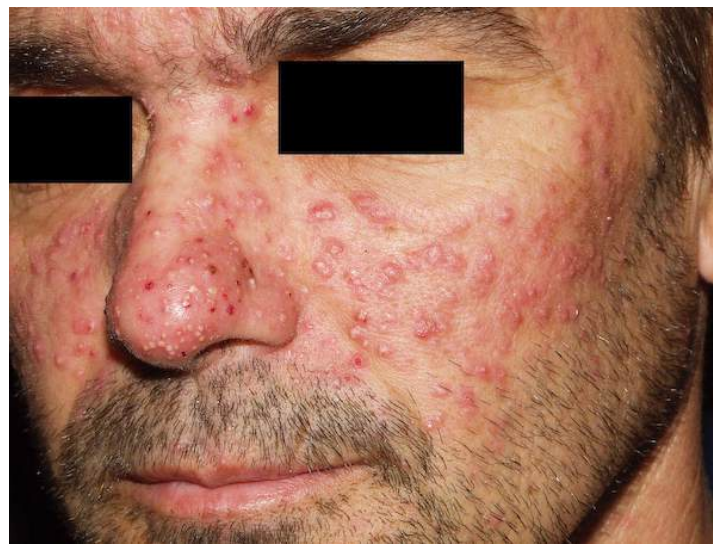
ADVERSE CUTANEOUS DRUG REACTIONS

- Adverse cutaneous drug reactions (ACDRs) are common, often seen in hospitalized patients.
- Common offending drugs include: antibiotics, anticonvulsants, and NSAIDs.
- Common clinical types of ACDRs include: exanthematous, pustular, urticarial/angioedema, and fixed drug eruption.



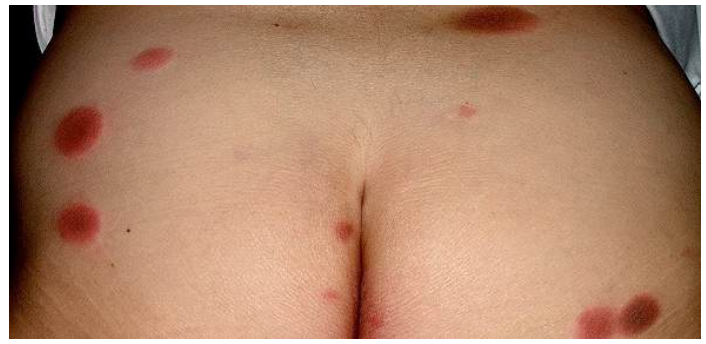
Diagnosis

- ACDR should be considered in all patients who present with a generalized rash and have had a recent change in medications.
  - Exanthematous: generalized, symmetrical, brightly red macules and papules (fig. 1).
  - Pustular: multiple pustules either discrete or clustered surrounded by a fiery-red erythema (fig. 2).
  - Urticarial/angioedema: wheals, edema and pruritic.
  - Fixed drug eruption: sharply demarcated erythematous macule, patch or plaque, which are round or oval in shape (fig. 3).



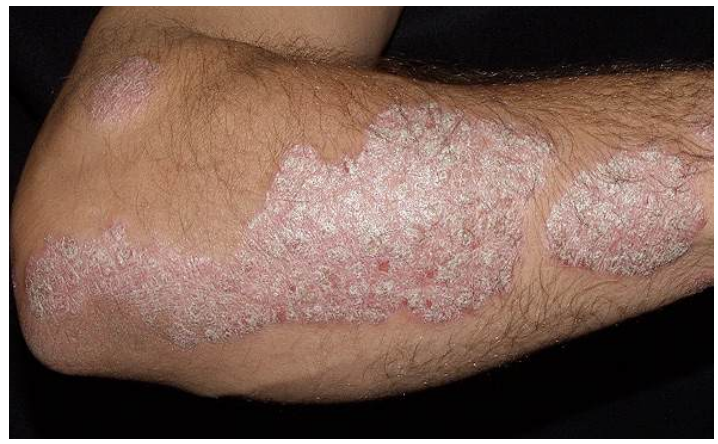
Management

- Often resolve promptly once the offending drug is removed.
- Oral prednisone may be used for acute management.
- Once the offending drug has been identified, it is important to discuss future avoidance with your patient.



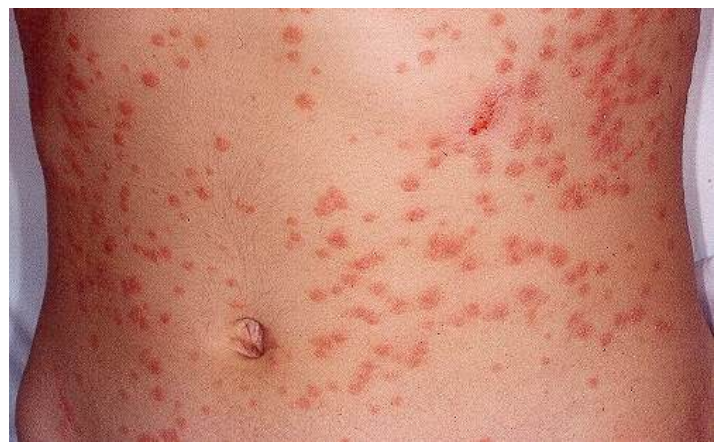
PSORIASIS

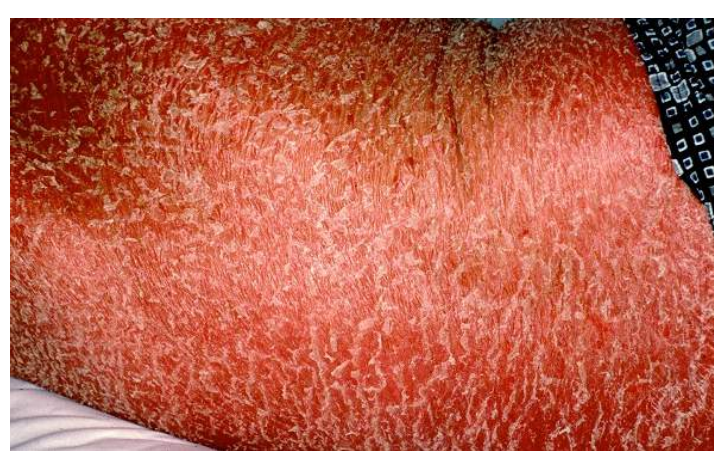
- A chronic disorder with multiple clinical presentations including: psoriasis vulgaris, pustular psoriasis, and psoriatic erythroderma.
- Clinical presentation can vary greatly from few localized plaques to complete skin involvement.
- Commonly affected sites: shins, knees, elbows and scalp.
- 10-25% of patients with psoriasis also have psoriatic arthritis.



Diagnosis

- Common subtypes include:
  - **Plaque psoriasis**: 80-90% of all psoriasis patients. Well defined reddish to salmon-pink plaques with a loosely adherent silvery-white scale (fig. 1).
  - **Guttate psoriasis**: often appears following group A streptococcal pharyngitis. Compared to plaque type, guttate psoriasis lesions are smaller, more discrete papules that may coalesce to form plaques (fig. 2).
  - **Pustular psoriasis**: classically presents as pustules arising on areas of erythematous skin. Lesions may be generalized (ie. generalized pustular psoriasis) or localized to the palms and soles (palmoplantar pustulosis) (fig. 3).
  - **Psoriatic erythroderma**: psoriasis to which there is complete body redness. There are many causes of generalized erythroderma, as such diagnosis is often challenging and requires biopsy (fig. 4).
  - **Intertriginous (inverse) psoriasis**: involves skin folds.



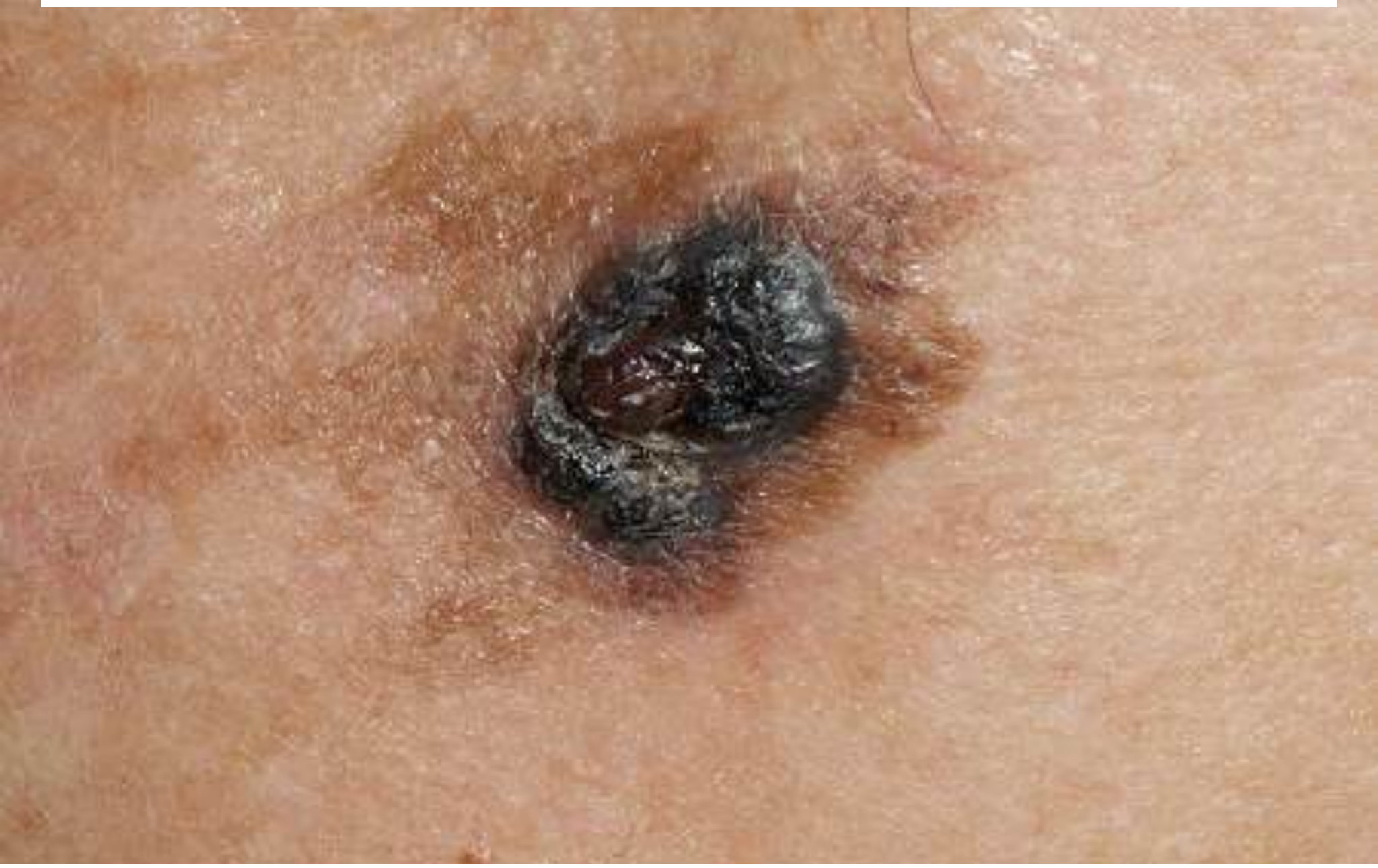


Management

- Treatment is governed by factors including patient age, type of psoriasis, severity of disease, site of involvement, previous failed treatments and associated comorbidities.
- Generally, topical corticosteroids may be used for patients with minor involvement. Patients who are unresponsive to topical therapy or experience more severe involvement should be referred to dermatology for other treatment options including phototherapy, methotrexate, cyclosporine or biologics.
- Due to the immunosuppressive effects of non-topical treatments, patients are at greater risk of infectious outcomes including respiratory tract infections and cutaneous infections.

CHAPTER 5

PREMALIGNANT AND MALIGNANT SKIN TUMORS



CHAPTER TOPICS

- Basal cell carcinoma
- Squamous cell carcinoma
- Actinic keratosis
- Dysplastic nevus
- Cutaneous melanoma

In this chapter we will cover premalignant lesions (actinic keratosis and dysplastic nevus) and the three most common dermatological cancers (basal cell carcinoma, squamous cell carcinoma and melanoma). Treatment is required for each skin condition covered within this chapter, as they are associated with more serious long-term complications.

BASAL CELL CARCINOMA (BCC)

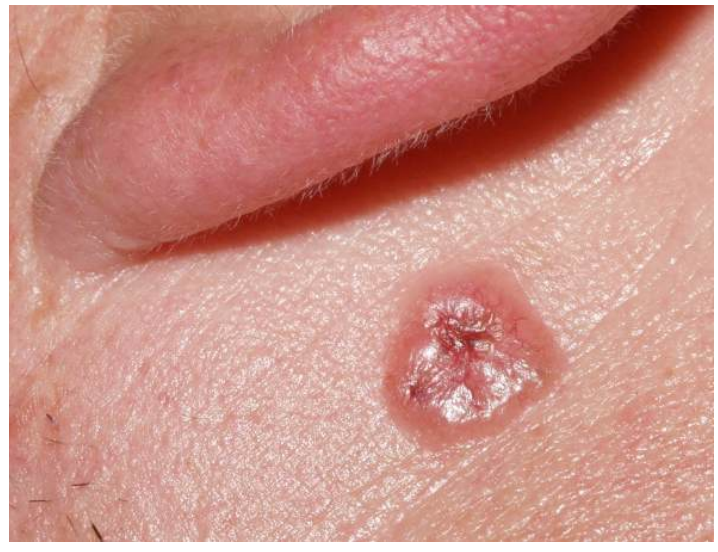
- Most common cancer in humans.
- >40 years of age, males > females.
- Involvement is most commonly localized, locally destructive and slow growing. Metastases are rare.

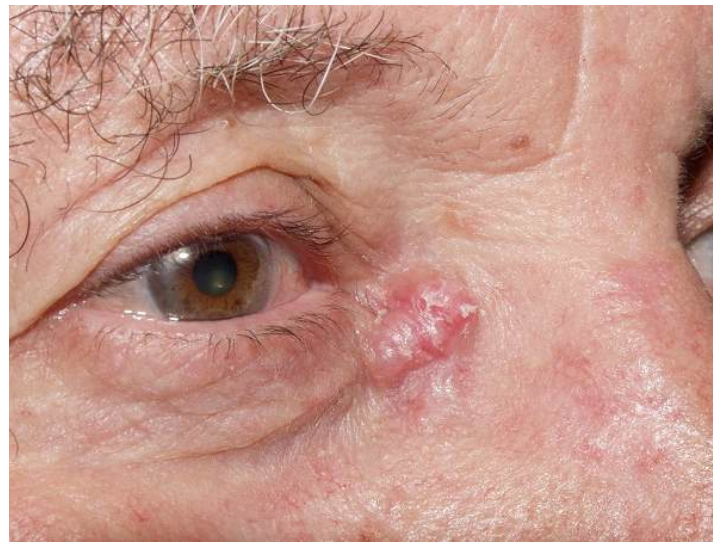
Diagnosis

- A slow growing nodular lesion most often on the face with a pearly appearance.
- Some lesions may bleed and/or be erosive in appearance.
- Although lesions may be skin coloured or pigmented, the most identifiable feature is the pearly appearance of BCCs.
- Diagnosis is made clinically and confirmed with pathology following removal.

Management

- Surgical excision is the definitive treatment. In early stages of the disease with minimal involvement, deep shave excision and electrocautery is sufficient.
- When lesions are larger and more involved, microscopically controlled surgery (Mohs surgery) may be required.





SQUAMOUS CELL CARCINOMA (SCC)

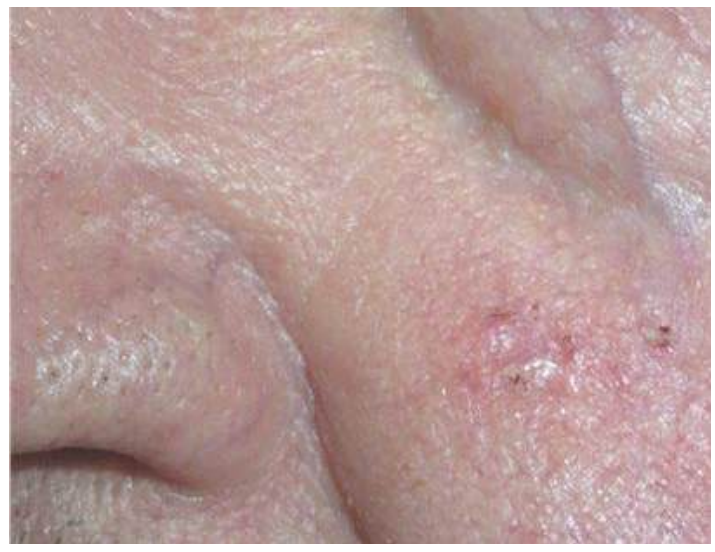
- >55 years of age, males > females.
- Tumour of keratinocytes, arising within the epidermis.
- Exposure to sunlight, history of sunburns, and skin damage related to UV radiation are the most important risk factors.
- Unlike BCCs, SCCs are associated with a risk for metastasis (1-3 years after initial diagnosis).
- More common in immunosuppressed patients (transplants etc.)

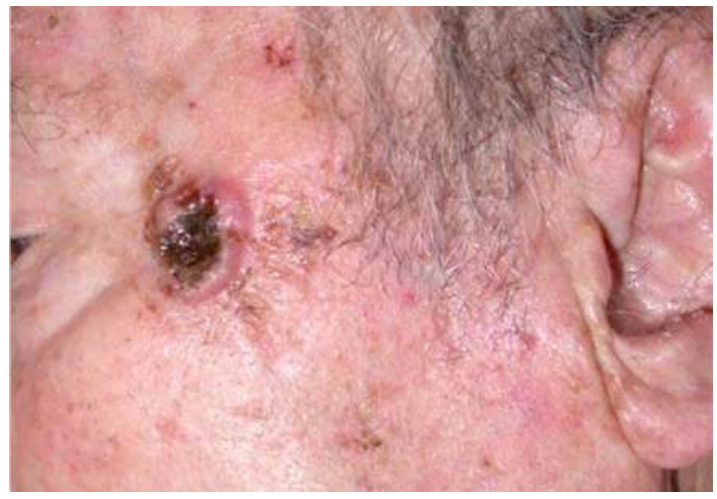
Diagnosis

- An isolated keratotic or eroded papule or plaque is considered a carcinoma until proven otherwise.
- Presentation can vary greatly (fig. 1 vs 2).
- Lesions most often appear in sun-exposed areas (face, scalp, ears). The keratotic lesion is often slow growing and will persist for over a month without resolution.
- Diagnosis is made clinically and confirmed with pathology following removal.

Management

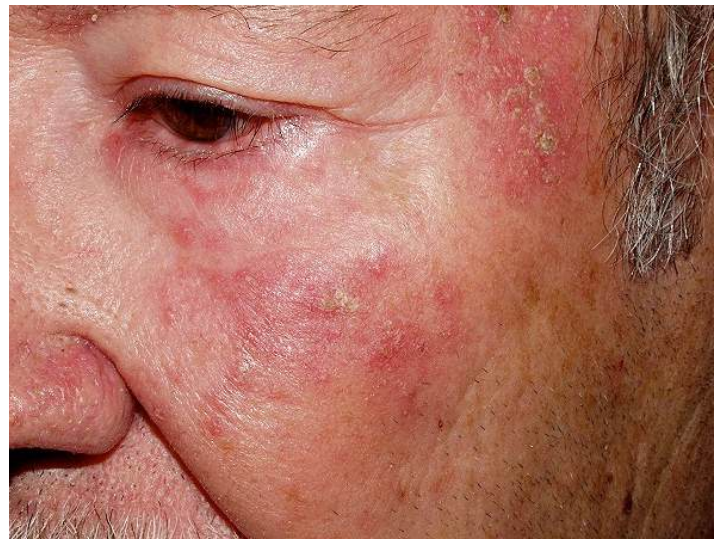
- Surgical excision is required. Skin grafts may be needed for more extensive lesions.

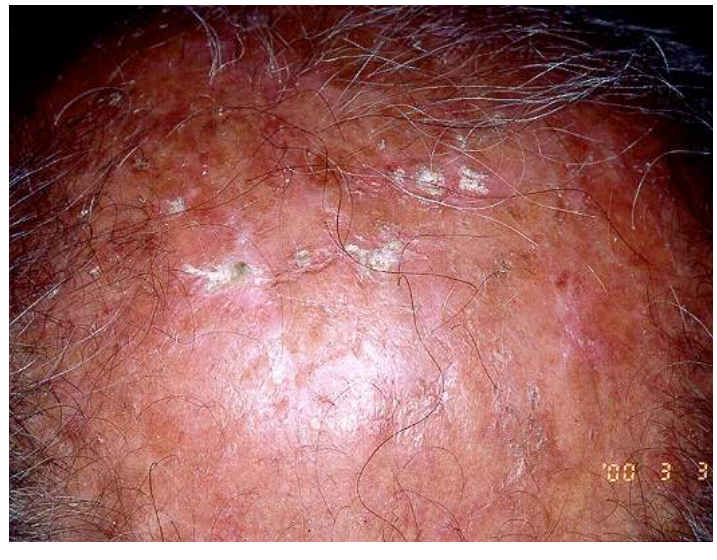




ACTINIC KERATOSIS (AK)

- Most commonly appear in middle age, males > females.
- Caused by prolonged and repeated sun exposure leading to cumulative keratinocyte damage. As such, AKs take many years to develop.
- Although AKs may spontaneously resolve on their own, treatment is recommended as they have the potential to progress into a squamous cell carcinoma (5-10% over 10 years).





Diagnosis

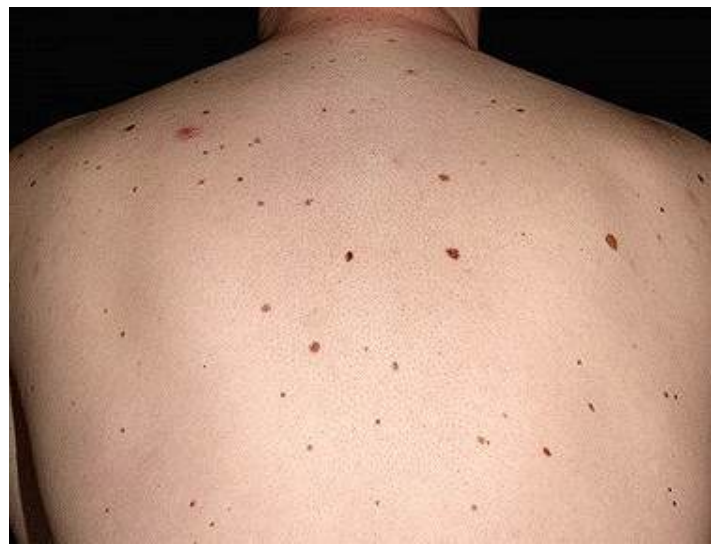
- Oval to round, skin-coloured/ yellow-brown/ brown appearance with a reddish tinge and a hyperkeratotic scale.
- Primary feature is the sandpaper like feeling on palpation.
- May be isolated or found in multiples on sun-exposed areas.

Management

- Sun avoidance and proper sun protection.
- Cryotherapy is most often used as it is quick and effective. However, freezing may be cosmetically bothersome as it often leads to hypopigmentation.
- Topical creams are effective in treating large areas (5-FU, imiquimod, ingenol mebutate.

DYSPLASTIC NEVUS

- Classified as a precursor to melanoma: a benign lesion with the potential of progressing into a malignant melanoma.
- May present sporadically or in relation to familial dysplastic nevus syndrome.



Diagnosis

- Differentiated from common acquired nevi as they are larger, lack uniformity in colour, asymmetrical, and have irregular borders.
- Clinically it is important to look for the "ugly duckling" which are a different colour or size than the patients other nevi.
- Most commonly seen on the trunk or extensors surfaces of limbs.

Management

- These patients should be followed regularly. Patients should take photos of their abnormal looking nevi and follow their progression with personal skin exams monthly and by their family doctor or dermatologist yearly.
- Surgical excision with narrow margins followed by histopathological analysis to rule out melanoma should be completed for changing dysplastic nevi or ones with characteristics of melanoma.

ABCDE'S OF MELANOMA SCREENING:

A = asymmetry (asymmetrical)

B = borders (irregular)

C = colour (uneven)

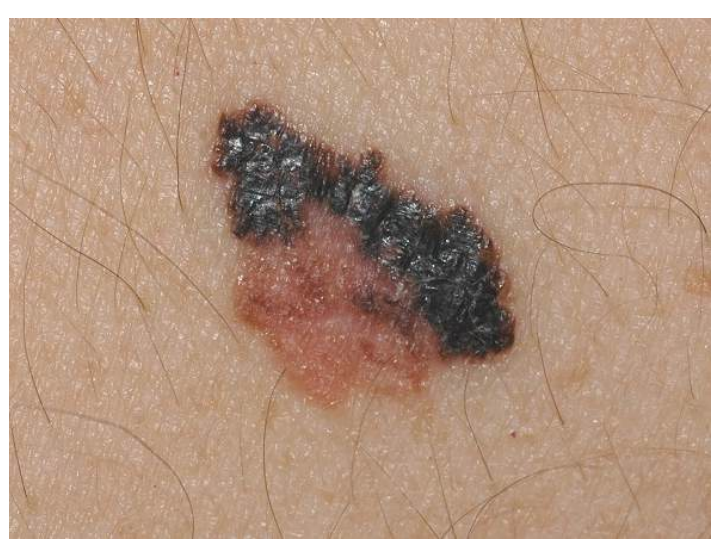
D = diameter (> size of pencil eraser head)

E = evolution (change in size and shape with time)

CUTANEOUS MELANOMA

- The most concerning malignant tumour of the skin as it is has a high potential to become invasive and metastasize.
- Risk factors include: personal or family history of melanoma, fair skin, history of prolonged sun exposure and sunburns, number of dysplastic nevi (>5) and specific genetic markers.
- Classic growth pattern includes a radial growth phase within the epidermis followed by a vertical growth phase where the melanocytes migrate into the dermis and can access surrounding vessels.
- Variation in the duration of the radial growth phase is the predominant differentiating factor of the four types of melanoma:

Four Types of Melanoma	Percent of Melanomas	Radial Growth Duration	Vertical Growth Pattern
Superficial spreading	70%	Months to years	Delayed
Nodular	15%	No radial growth appreciated clinically	Rapid
Lentigo maligna	up to 15%	Years	Delayed
Acral lentiginous	up to 10%	Months to years	Early



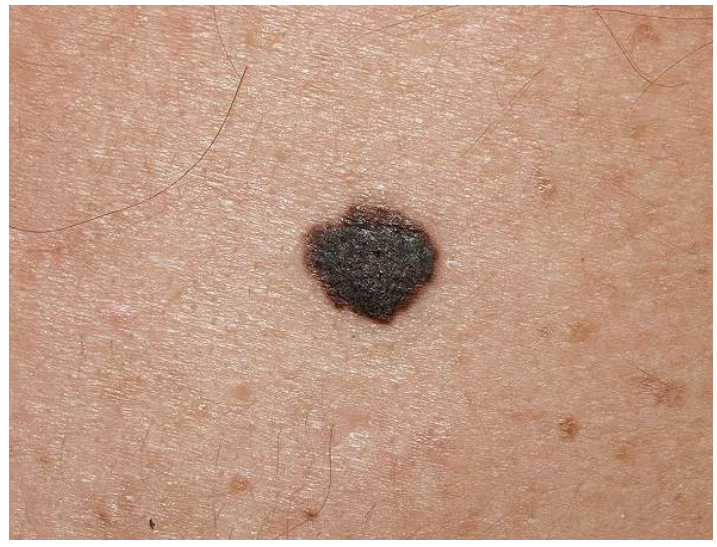
- Melanoma in situ, a histopathologic diagnosis, is when the melanoma cells are confined within the epidermis. All melanomas start as melanoma in situ. Recognition and treatment of this early stage of melanoma is associated with good prognosis.

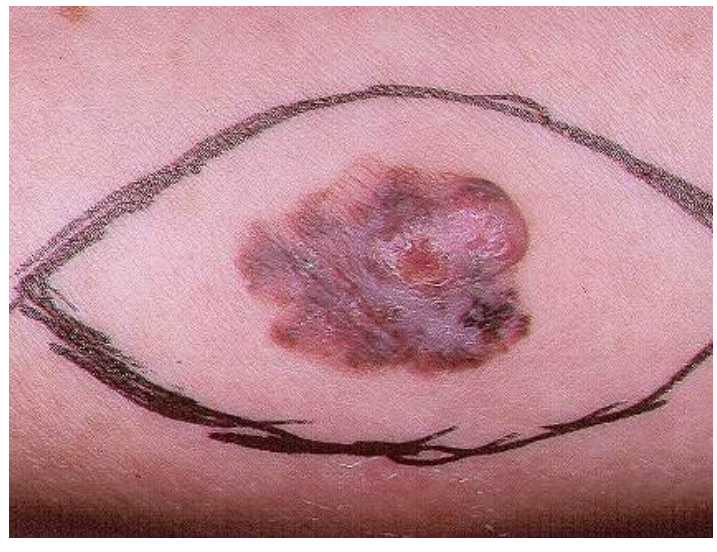
Diagnosis

- 70% of melanomas arise on "normal" skin. As such, it is easy to mistaken a melanoma lesion with a normal nevi on persons with numerous nevi.
- It is important to use the ABCDEs of melanoma to identify potentially malignant lesions.

Management

- Early recognition and complete surgical excision is curative with very minor risk of reoccurrence at the same site (fig. 4).
- As a health care provider, it is your duty to screen all patients for melanoma at each clinical encounter when appropriate. Early recognition greatly increases chance of survival.
- Patients with a personal history of melanoma should have a complete skin exam done by their family doctor or dermatologist regularly as they are at higher risk of developing a second melanoma. Lymph node examination should be conducted at each visit.





CHAPTER 6

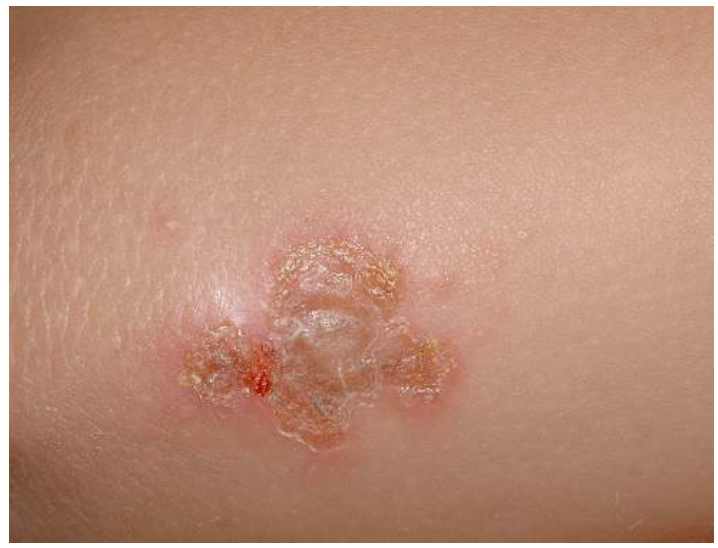
SKIN INFECTIONS

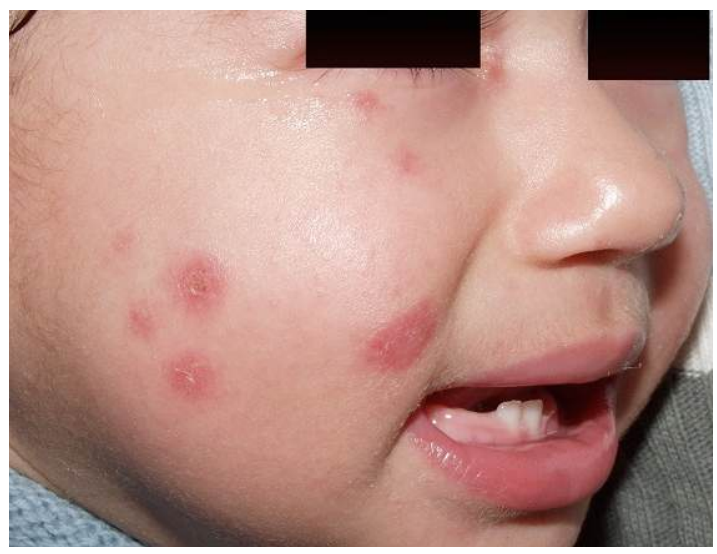
CHAPTER TOPICS

- Impetigo
- Warts
- Tinea versicolor
- Cellulitis

Although the human skin acts as a barrier to infectious agents, certain conditions may predispose it to bacterial, viral or fungal infections. Factors that may increase ones risk of infection include minor trauma, poor hygiene, pre-existing skin disease, and an impaired immune system. This chapter will cover common skin infections seen in all fields of medicine.

IMPETIGO





- Superficial infection caused by *S. aureus* or *group A streptococcus* (GAS); bacteria not part of the skin microbiome of healthy patients.
- Lesions most often appear at sites where *S. aurues* colonization can occur – common sites include the face where nasal *S. aurues* colonizes areas where there are breaks within the epidermis.
- If left untreated, deeper skin and soft-tissue infection may develop.
- Due to the erosive nature of impetigo, patients are at high risk of secondary infections.

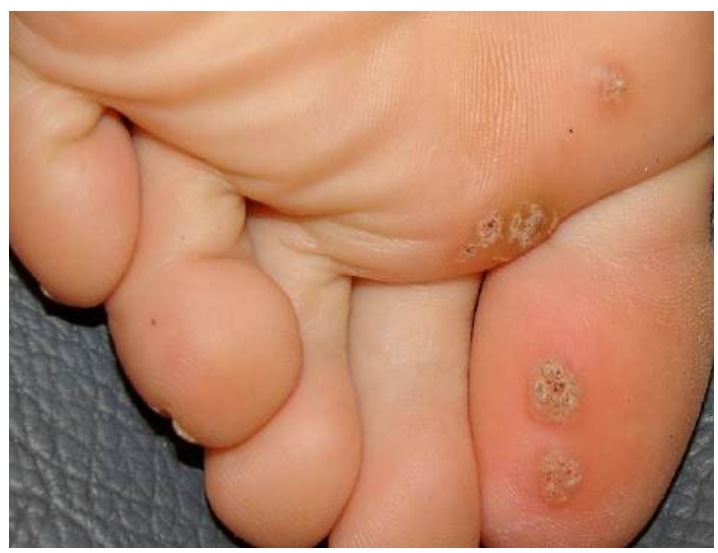
Diagnosis

- Gold-yellow crusted erythematous erosions.
- Isolation of *S. aureus* or GAS with culture confirms clinical findings and diagnosis.

Management

- Benzoyl peroxide wash is best used for prevention of impetigo.
- Topical mupirocin ointment can be applied to affected areas in order to eliminate *S. aureus*.
- Systemic antibiotics can be used in more severe, extensive impetigo.

WARTS



- Caused by HPV infection of keratinized skin.
- Skin-to-skin contact is the most common form of transmission. Breaks within the epidermis can further facilitate infection.

Diagnosis

- Well-defined, slow growing, isolated or multiple firm, hyperkeratotic papules.
- Size, extent of involvement and duration are greatly governed by the immune status of the patient.
- Common sites of involvement include hands, feet and knees.

Management

- Usually resolves spontaneously in immunocopetent individuals.
- Multiple sessions of cryotherapy may be used. Patients should be warned of discoloration and scarring.
- Salicylic acid or other chemo-irritants are useful.
- Imiquimod cream with debridement 3x/week may be used for lesions that are not thickly keratinized.
- Patients with suppressed immune systems may be resistant to all treatment modalities as clearance requires the immune system to react to destructive measures.

TINEA (PITYRIASIS) VERSICOLOR

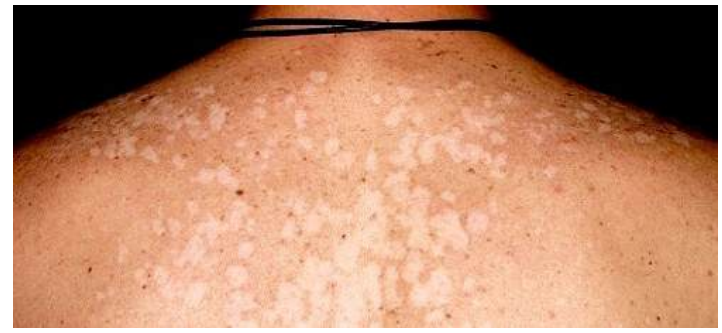
- Fungal infection of the skin caused by the overgrowth of *Malassezia furfur* and *M. globosa* – yeast that normally reside within skin keratin.
- Young adults most often affected.
- Sweating, warm seasonal climates, and oily skin are all predisposing factors.

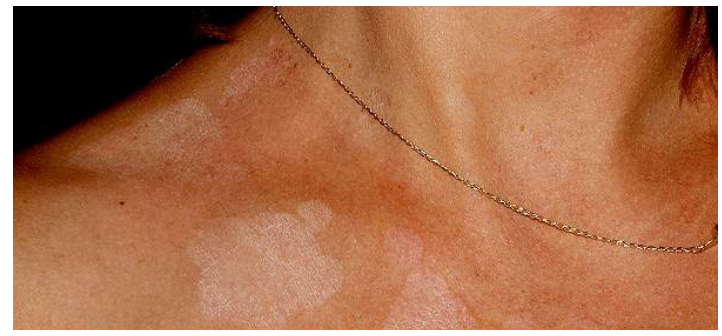
Diagnosis

- Well-demarcated, asymptomatic, slowly progressing, round or oval macules (+/- scale) of varying size.
- Macules with fine scale suggest active fungal infection.
- Lesions appear darker in nontanned skin and hypopigmented in darker skinned individuals.
- The infection may last for years if conditions permit. Pigmentary changes last for several months after the infection has been eradicated.

Management

- Although no health risks exists, the pigmentary changes associated with tinea versicolor are often cosmetically bothersome.
- Topicals: selenium sulfide (2.5%) shampoo, Ketoconazole shampoo +/- cream.
- Systemic therapy: oral azoles anti-fungal.





VARIOUS CLINICAL MANIFESTATIONS OF TINEA. COMMON PRESENTATION INCLUDE:

Tinea Pedis: dermatophytic infection of the feet.

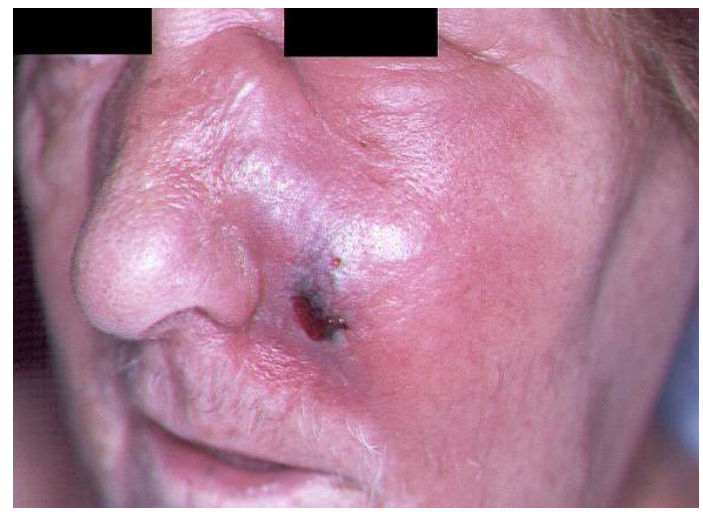
Tinea Manuum: dermatophytic infection on the hands.

Tinea Cruris: dermatophytic infection of inguinal and pubic regions, often with upper thigh involvement.

Tinea Corporis (Ringworm): dermatophytic infection of the neck, truck, arms, and/or legs without involvement of the hands, feet or groin.

CELLULITIS

- Acute skin infection affecting both the dermis and subcutaneous tissue (versus **erysipelas**, which is a superficial skin infection affecting only the upper dermis).
- *S. aureus* and GAS are the most common causative agents in adults.
- Portal of entry into the cutaneous tissue is often easily identified (common sites include surgical wounds, leg and foot ulcers).



Diagnosis

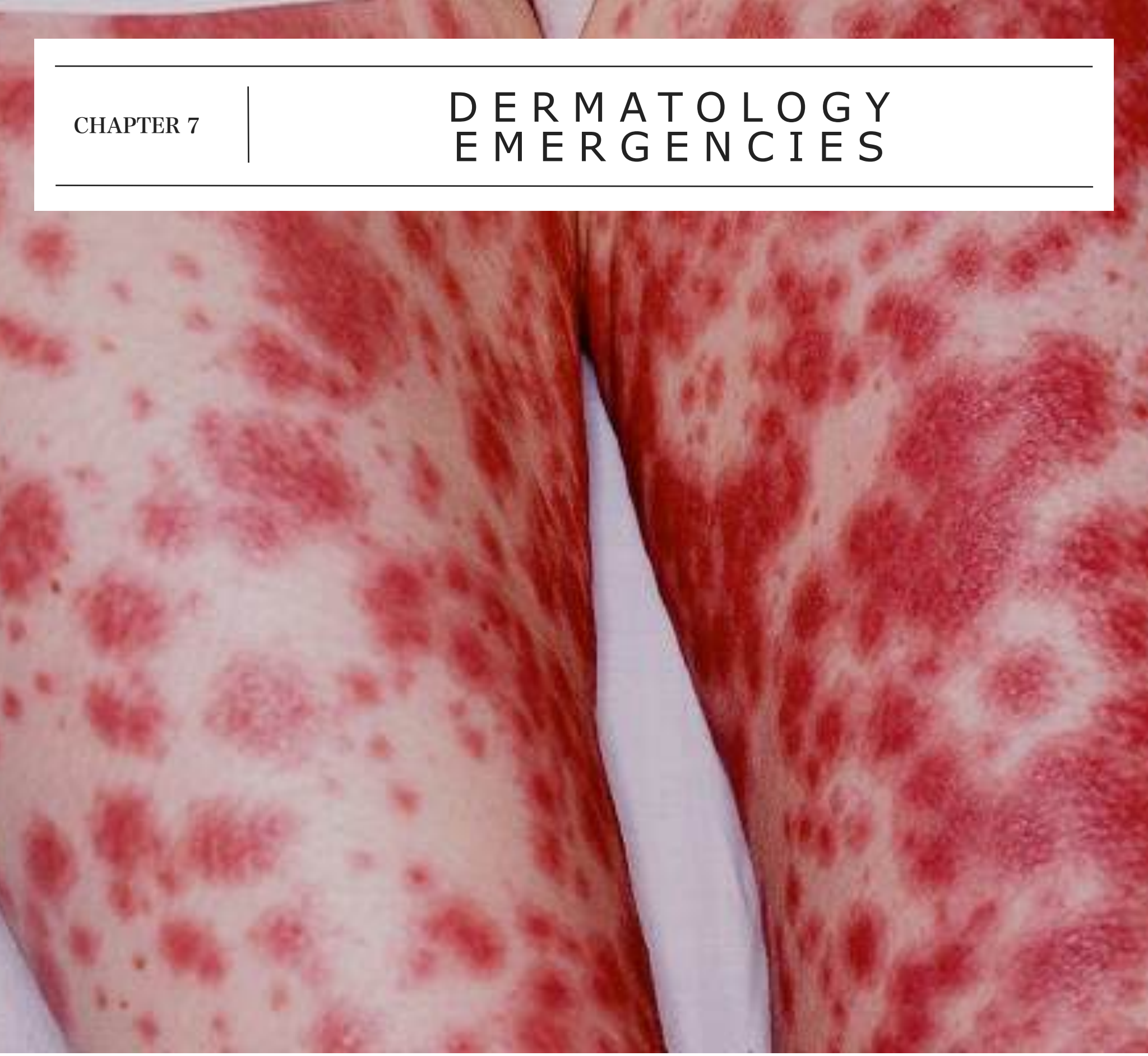
- Recognition of erythema, warmth, edema and pain are the most reliable clinical features for making an early diagnosis.
- The erythematous plaque is sharply defined and enlarges with proximal extension. Vessicles, bullae, erosions, haemorrhage, and necrosis may also be present within the lesion.
- Symptoms of fever and chills may present prior to cutaneous presentation.

Management

- Oral antibiotics.

CHAPTER 7

DERMATOLOGY EMERGENCIES



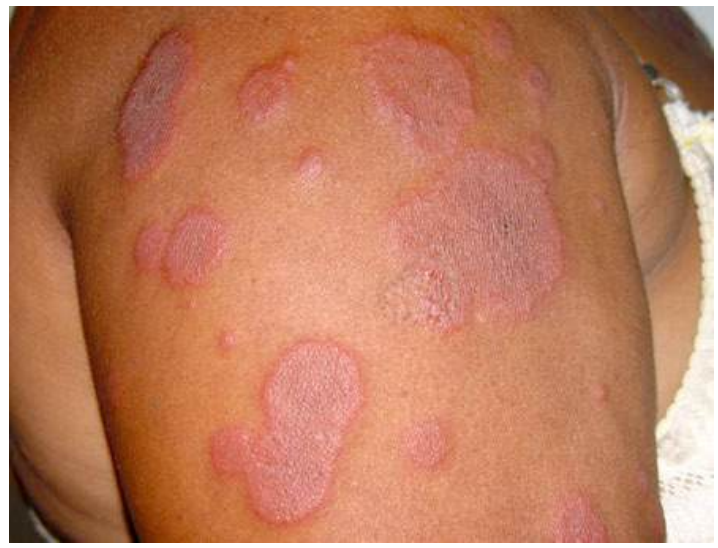
CHAPTER TOPICS

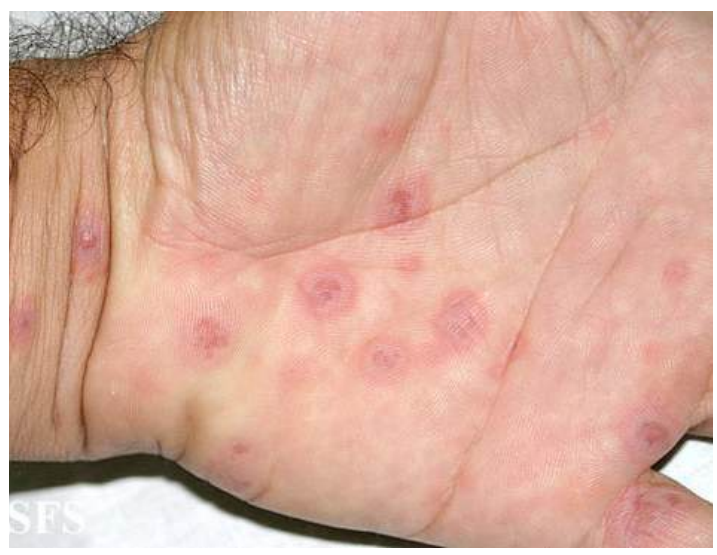
- Erythema multiforme
- Stevens-Johnson Syndrome (SJS) and Toxic Epidermal Necrolysis (TEN)

At this point, we have reviewed other dermatological conditions that are not commonly life threatening, however may be if not managed properly (cellulitis, pustular psoriasis, melanoma and more). Due to impairment of the cutaneous barrier in many of the diseases discussed this far, these patients are at greater risk of infection and long-term complications. In this chapter we will review two more common skin conditions that may be life threatening.

ERYTHEMA MULTIFORME

- Classically presents in young males (<20 years of age).
- Acute, often recurrent inflammatory disease most commonly caused by infectious agents (herpes simplex virus) or drugs.
- Classified as a hypersensitivity reaction affecting blood vessels in the dermis with secondary epidermal changes.
- Clinically separated into EM minor (benign course, self resolving, and recurrent) and major (potential dermatologic emergency).





Diagnosis

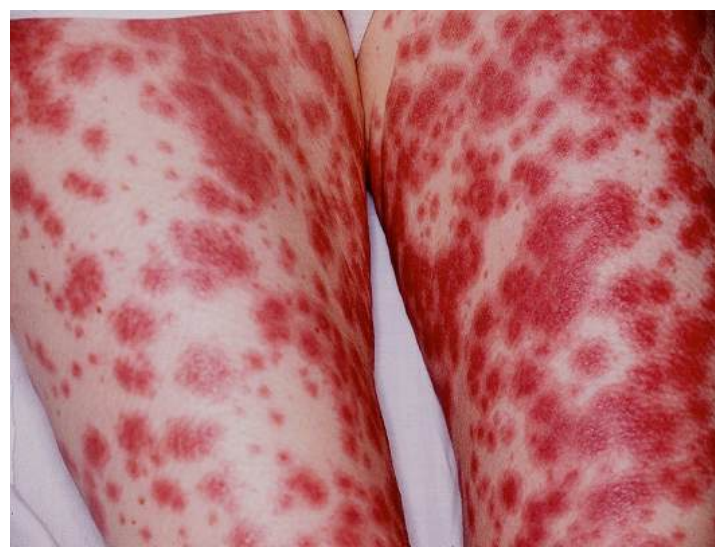
- Target lesions and papules developing over a 10-day period.
- Common sits of involvement include the extremities (particularly the palms and soles) and mucous membranes.
- Minor: lesions are often sporadic, confined to the extremities, and face with no mucous membrane involvement or systemic symptoms.
- Major: Extensive cutaneous involvement, mucous membranes are affected in all cases and systemic symptoms include fever and weakness.

Management

- It is important to identify the causative agent and manage accordingly. Oral valcyclovir may be used for HSV associated erythema multiforme and prevent recurrence.
- Minor: often left untreated.
- Major: supportive care. 1-3 week course of prednisone.

STEVENS-JOHNSON SYNDROME (SJS) AND TOXIC EPIDERMAL NECROLYSIS (TEN)

- Rare, life-threatening mucocutaneous blistering diseases characterized by necrosis and detachment of the epidermis.
- SJS and TEN are believed to be variants of the same disease. The differentiating factor between the two is the extent of involvement, where SJS = <10% epidermal detachment, SJS/TEN = 10-30% and TEN = >30%.
- Although drugs are by far the leading causative factor (~50% of all cases), infection, immunizations and chemicals have all been described.

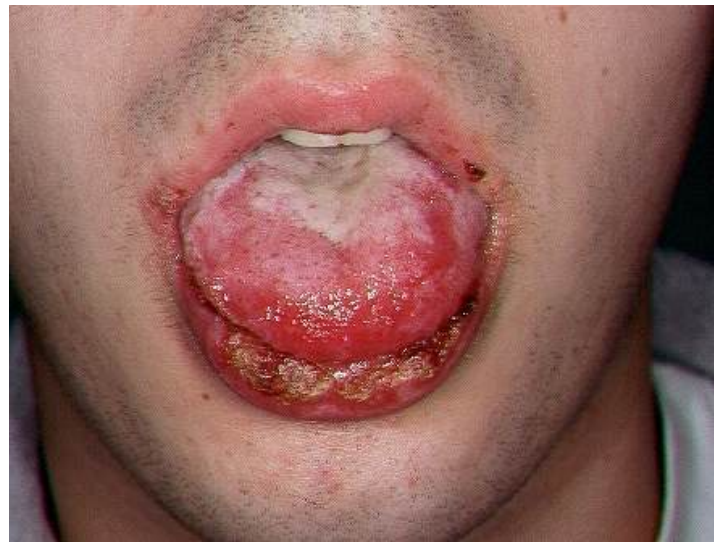


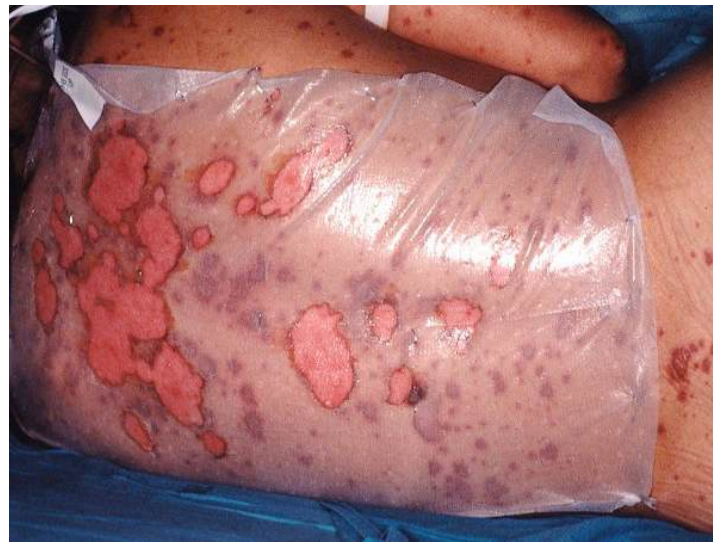
Diagnosis

- Time to initial presentation of symptoms usually occurs 1-3 weeks after a new drug is started.
- Early symptoms include skin tenderness/pain, burning sensation, parasthesia, fever, malaise and arthralgia's (often 1-3 days before the skin eruption).
- All patients taking a new medication who present with red to purple papules or plaques, blisters or erosions and mucosal involvement (it is important to check the oral mucosa) should be assessed for SJS/TEN.
- Although these patients often present mentally alert, distress is caused by severe pain.

Management

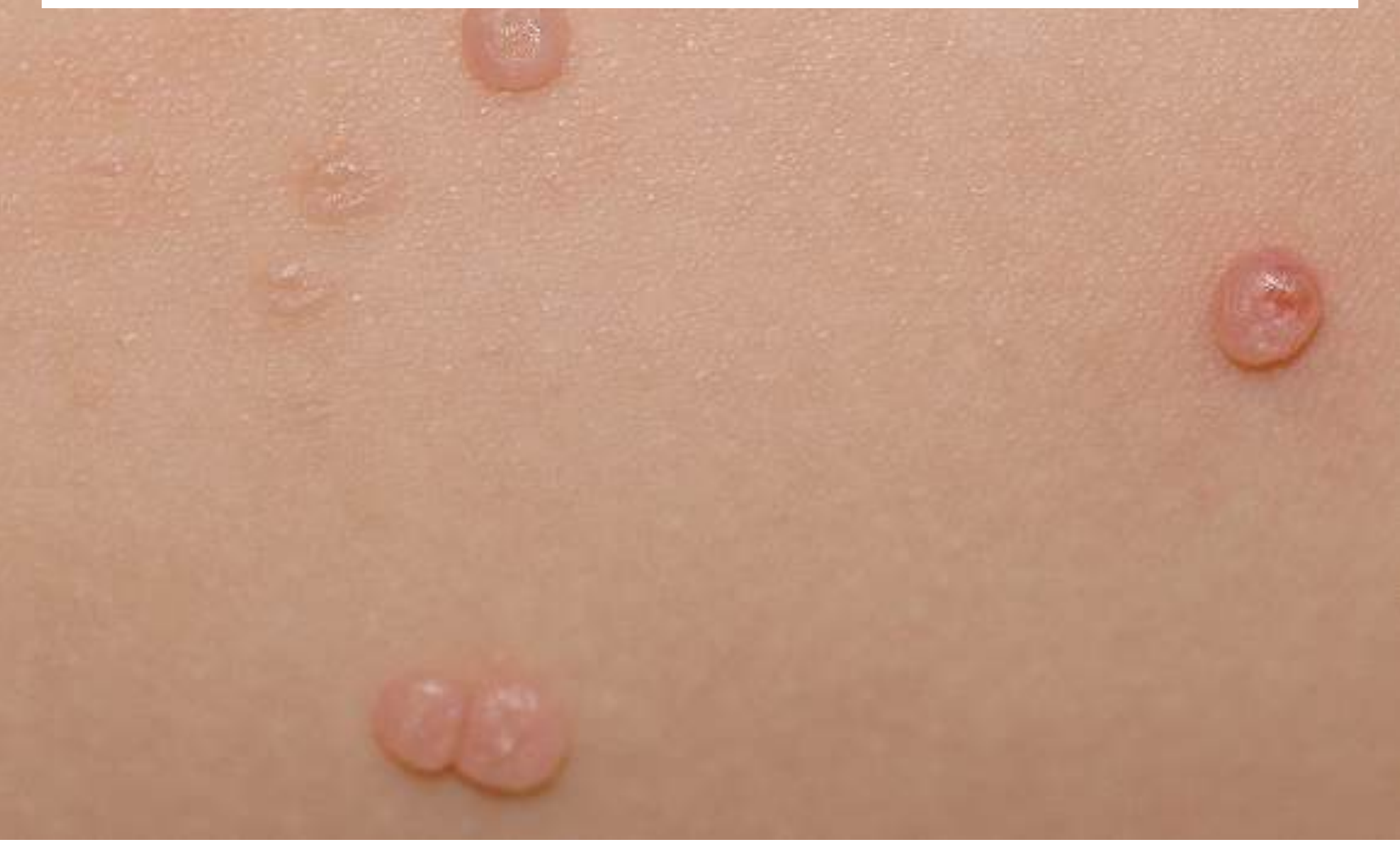
- The earlier a patient with SJS/TEN are diagnosed and management is initiated, the better the prognostic outcome.
- Patients are best managed in an intensive care or burn unit.
- Acute management includes supportive care: fluids, electrolytes, wound care.
- Medical management: systemic glucocorticoids, high-dose immunoglobulins and management of infectious risks.





CHAPTER 8

PAEDIATRIC DERMATOLOGY



CHAPTER TOPICS

- Hemangioma of infancy
- Nevus sebaceous
- Infantile seborrheic dermatitis (cradle cap)
- Milia
- Molluscum contagiosum
- Hand-foot-and-mouth disease

This section will cover common skin conditions seen in the paediatric population. It is important to recognize that many of the conditions already covered (eczema, psoriasis, impetigo and others) will also present in younger children.

HEMANGIOMA OF INFANCY

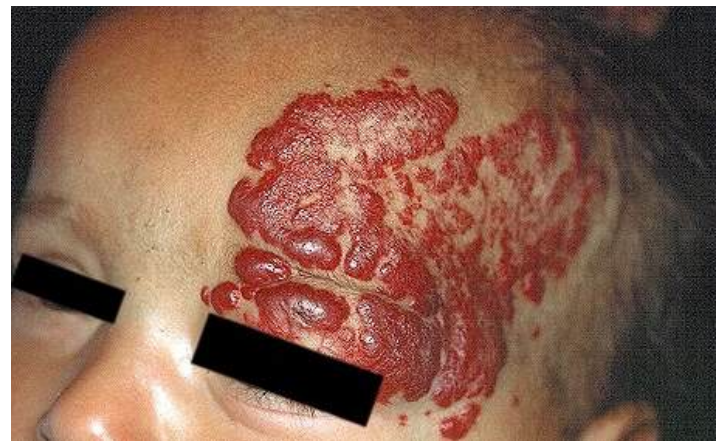
- The most common tumor of infancy (1 - 2.5% of children), 3:1 female to male ratio, and most commonly seen in Caucasian children.
- Classified as a vascular tumor as lesions result from a localized proliferative process of endothelial cells.

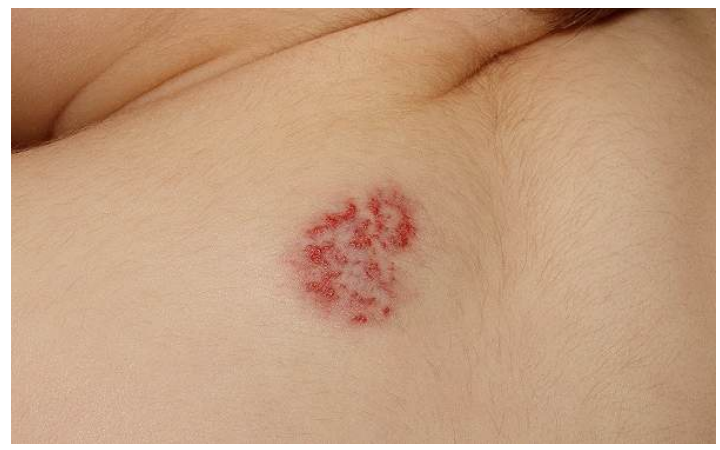
Diagnosis

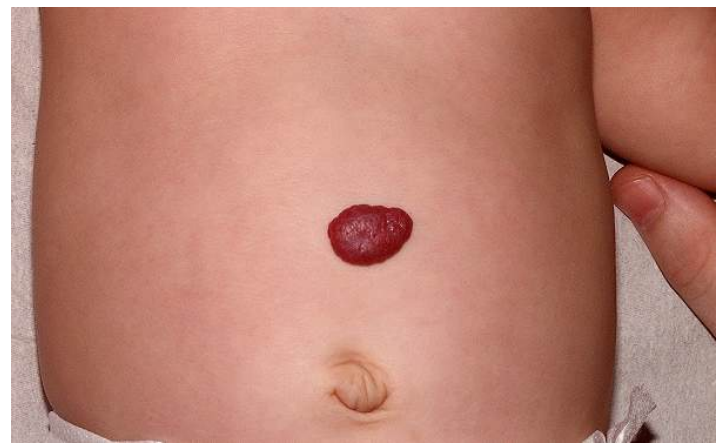
- Hemangioma of infancy are often not present at birth. Early signs include areas of pallor or telangiectatic macules (fig. 2). At their final stage, lesions are solitary, red to deep purple, and soft nodules (fig. 3).
- Lesions often progress rapidly within the first year of life, followed by slow regression over a 2 to 6 year period. Involution is typically complete by age 10.
- Can range from pinpoint to 25cm in size.
- A white-to-gray area within the central part of the lesion often signals start of regression. Site, size or appearance has no affect on the time frame for regression.

Management

- In the majority of cases, nonintervention is preferred as spontaneous regression leads to the best cosmetic outcome.
- In 5-10% of cases, intervention is required due to ulceration or obstruction of vital structures (eyes, ears, larynx).
- Interventions include laser, crysosurgery, high dose glucocorticoids and propranolol.







NEVUS SEBACEOUS

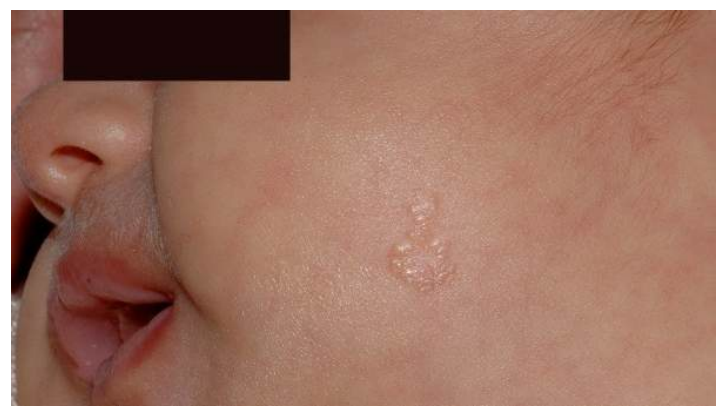
- Congenital malformation resulting from overgrowth of the sebaceous glands in the area of a nevus.
- Nevus sebaceous require monitoring as 10% will develop a BCC.

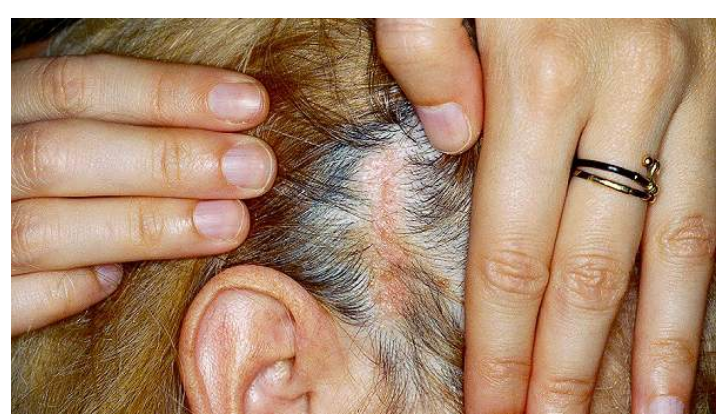
Diagnosis

- Hairless, thin, 1-2cm plaque with an orange and wart like appearance.
- Lesions are present at birth and most commonly present on the scalp, however they may also be found on the face and neck.

Management

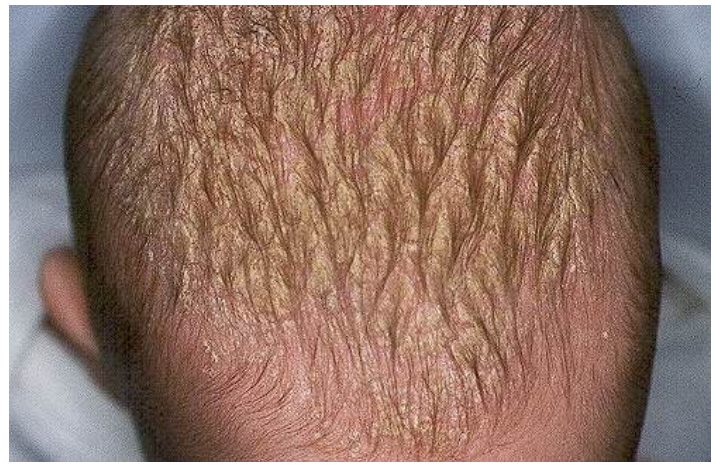
- Surgical excision may be offered.

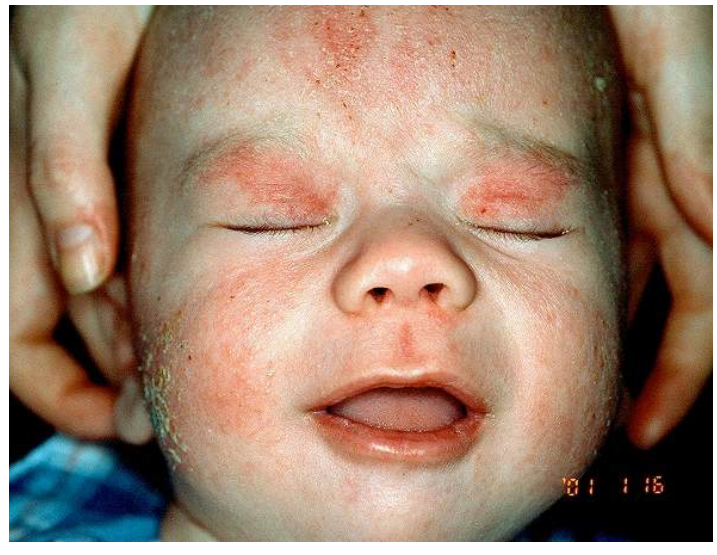




INFANTILE SEBORRHEIC DERMATITITS (CRADLE CAP)

- As stated in chapter 4, seborrheic dermatitis is a common skin condition.
- Presentation may first occur in infancy; common sites include the scalp and diaper region.
- Although the exact reason is unknown, poor hygiene or allergies (common concerns of parents) have NOT been associated with the onset of seborrheic dermatitis.
- Overproduction of oil (from sebaceous glands) and yeast proliferation may play a pathogenic role.





Diagnosis

- Well-demarcated, orange-red patches or plaques with a greasy or white dry scaling.
- Cradle cap: lesions appear on the scalp of infants, often mistaken as dandruff.

Management

- For cradle cap, removal of crusts by gently massaging warm olive oil onto the scalp, followed by washing with a baby shampoo to completely remove the oil is recommended.

MILIA

- Benign 1 to 2 mm keratin filled cyst resulting from a clogged sweat gland.
- These epidermal cysts often present in multiples and although may first appear at any age, they commonly present in infancy.

Diagnosis

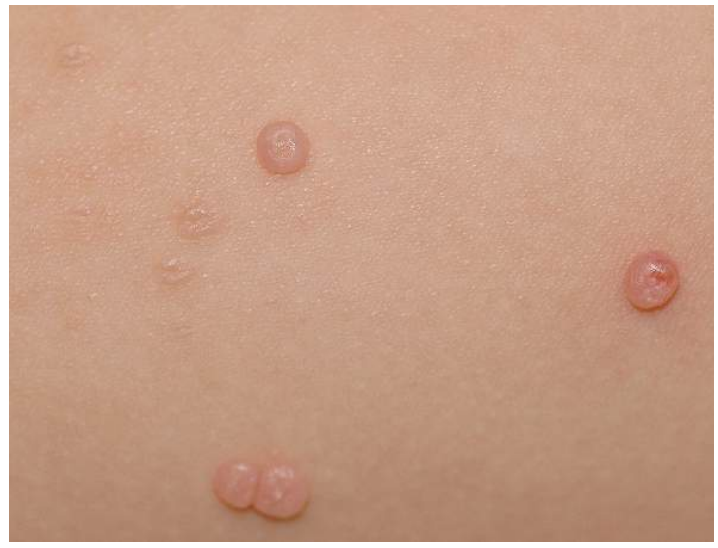
- Small white to yellow puss filled papule.
- Typically found on the face, eyelids and cheeks in isolation or in clusters.

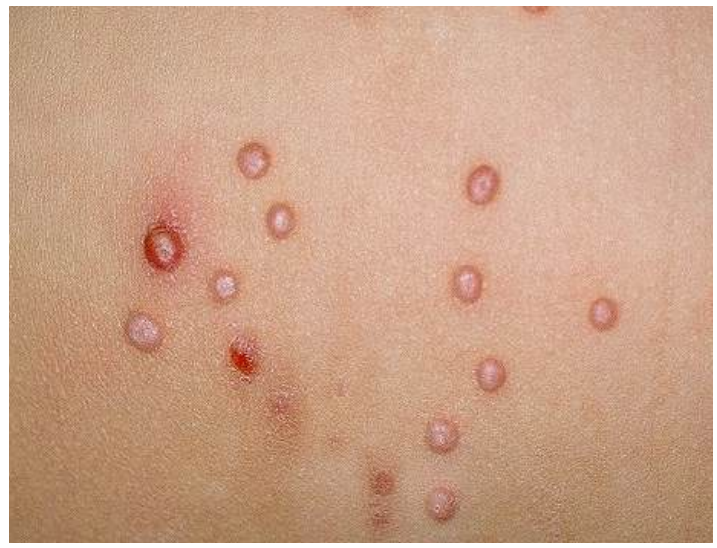
Management

- Treatment is not required as the lesions will often clear within 2-3 weeks.
- For cosmetic purposes, incision and removal of the cystic content may be used.

MOLLUSCUM CONTAGIOSUM

- Self-limiting epidermal viral infection (pox virus) that often presents in children however can be seen in sexually active adults or in individuals with suppressed immune systems.
- Spreads through direct person-to-person contact or by contact with contaminated objects (children often acquire at daycare or school).
- Scratching or injury of lesions can cause spreading to surrounding skin.





Diagnosis

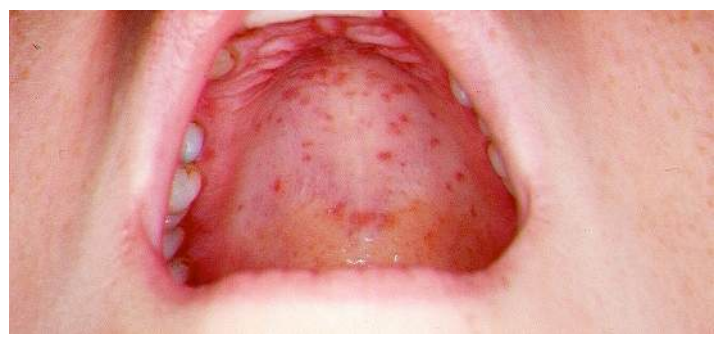
- Small, firm, shiny, painless papules with a central depression found in isolation or clusters.
- Common sites of presentation in the paediatric population include the knees and elbows.

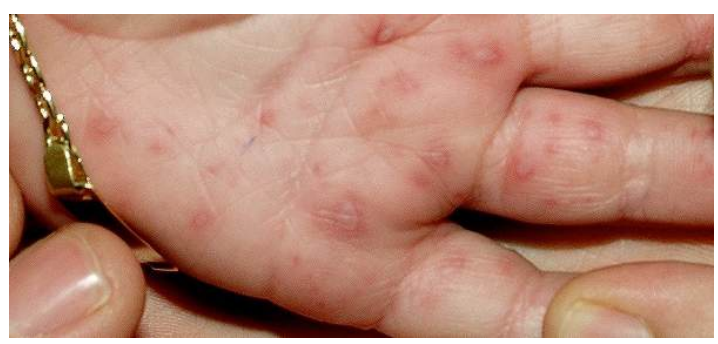
Management

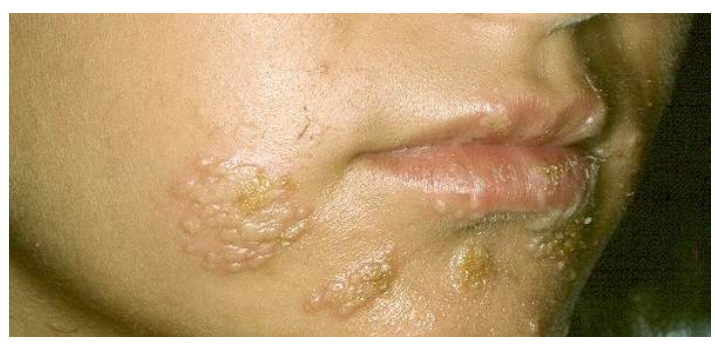
- Treatment may not be required as host immune system often leads to disease regression.
- Curettage, cryotherapy or electrodessication may be used to destroy each lesion, however effective treatment often leads to scarring. In all methods, it is important to completely remove the entire cystic content or the virus will remain and the lesion will reappear.

HAND-FOOT-AND-MOUTH DISEASE

- Considered one of the most recognizable viral exanthems in children, most often caused by Coxsackievirus.
- Spread from person-to-person via fecal or oral secretions.







Diagnosis

- Diagnosis is often made clinically, however, throat or stool culture may be used.
- Must consider HFMD in any child that presents with oral exanthems (first present as vesicles and progress to ulcers commonly on the tongue and buccal mucosa, but may be seen on the hard and soft pallet; fig. 1) and 1-10mm macules and vessicles most often on the palms and soles (fig. 2).
- *note:* consider **herpes zoster virus** in any paediatric patient presenting with lesions on their face/oral mucosa (fig. 3).

Management

- Early detection is critical in order to prevent an outbreak. It is important to keep children out of school and daycare.
- Supportive therapy such as Tylenol may be used for analgesia (often sore mouth and throat).