

Primary Health Care Initiatives (PHCI) Project  
Contract No. 278-C-00-99-00059-00  
Abt. Associates Inc.

## **COMMON SKIN PROBLEMS IN CHILDREN**

### **LEARNING OBJECTIVES**

- Describe the most common skin problems seen in children
- Understand the pathophysiology and management of common skin problems
- Describe the most important dermatologic conditions that should be referred for specialty management

### **TEACHING STRATEGIES**

- Use transparencies and overhead projector, or white board, for presentation of didactic material
- Encourage participants to describe their own experiences in management of common skin problems
- Using textbook pictures of common skin problems, have participants in small groups develop an evaluation and management plan for each pictured skin problem

### **MATERIAL AND EQUIPMENT NEEDED**

- Overhead projector and transparencies of didactic material
- White board or flip chart for summarizing small group discussions
- Color pictures of common skin problems for illustration and small group discussion

### **LEARNING POINTS**

- Dermatologic terms and definitions
  - Macule – flat discoloration with defined margins
  - Papule – elevated solid lesion <5 mm.
  - Plaque – larger elevated solid lesion >5 mm., often a combination of several papules
  - Nodule – palpable solid lesion deeper than a papule
  - Hive – pale-red edematous plaque
  - Pustule – raised collection of pus
  - Vesicle – raised collection of clear fluid, <5 mm.
  - Bulla – raised collection of clear fluid >5 mm.
  - Crust – collection of dried serum, blood, or purulence
  - Erosion – superficial loss of epithelium
  - Ulcer – focal loss of epidermis and dermis
  - Fissure – crack in epidermis
  - Atrophy – thinning of the epidermis and dermis
  - Excoriation – erosion caused by scratching
  - Lichenification – thickened epidermis caused by scratching

- Evaluation of any skin lesion
  - Observation
    - Observe as much of the skin as possible, not just the area in question. Many clues can be gained by finding asymptomatic lesions in other areas
    - Distribution of the lesions – where on the body they are located
    - Look closely at the lesion in question for evidence of inflammation, hair growth in the lesion, regularity of the borders, etc.
  - History
    - Time of onset and duration
    - Where lesion began and how it spread
    - Aggravating factors or factors that improve lesion
    - Associated symptoms – itching, burning, numbness
    - Other symptoms – fever, weight loss
    - Other illnesses – URI, diabetes
    - Family history of similar problems
  - Palpation
    - Use gloves if there is any question that the lesion could be contagious
    - Feel for firmness, nodularity, irregularity, thickening of skin
    - Feel around lesion for thickening
    - In areas of erythema, feel for roughness (as in scarlet fever), or thickening of skin
  
- Eczema, Atopic Dermatitis
  - Acute Eczema – often small vesicles, very itchy
    - May be result of irritant such as chemicals or plants
    - Often seen in initial phase of contact dermatitis – allergic reaction to chemical or substance to which patient is sensitive
    - Most common causes of contact dermatitis – rubber, metal with nickel alloy (most silver metals), adhesives (Band-Aid strips)
  - Chronic Eczema – most commonly seen as part of atopic dermatitis
    - Often a strong family history of eczema, allergic rhinitis, and asthma
    - Noted in infants with eczematous rash on cheeks, may get worse with intake of milk or other foods initially
    - In older children, eczematous rash in bends of elbows, knees; usually not related to significant food allergies
    - Characterized by chronic itching, thickening (lichenification) of skin frequently scratched
    - Secondary infection can be caused by itching – usually diagnosed by increased inflammation with honey-colored crust over eczema plaque
    - Often worse in winter (cold and dry weather) and somewhat better in summer (exposure to sun, warm weather)
    - In older children, symptoms often worse with stress and anxiety
  - Management of eczema
    - Patients and parents need to understand that while the symptoms can be controlled with treatment, this is a chronic, recurrent disease for which there is no cure
    - Primary goal is to reduce the itching and scratching
    - Moisturize skin – apply thick cream or ointment after hydrating skin in bath or shower – Eucerin®, Neutrogena®, Vaseline®
    - Use corticosteroid cream or ointment 1 – 3 times daily.

- Important to use lower potency creams or ointment in children (Hydrocortisone 2%, Triamcinolone 0.1%) when possible
    - If no effect from low potency creams, may use short course of high potency cream (fluocinonide, betamethasone) for 3-5 days in affected areas only
    - Overuse of high potency topical steroid can lead to atrophy of skin, growth stunting, cushingoid symptoms
    - Apply cream only to affected areas, not to whole body
  - If secondary infection present (crusting of lesions with honey-colored discharge), treat with erythromycin orally for 5 – 10 days
  - Keep fingernails cut short, use cool compresses to decrease itching rather than scratching
- Acne
    - Inflammatory reaction in oil glands of skin – most commonly face, shoulders, chest, and back
    - Associated with increased concentration of bacteria (*Propionibacterium acnes*) in skin glands
    - Most commonly seen during adolescence as result of sebum (skin oil) changes due to hormonal changes. If significant scarring can be avoided, acne usually decreases by age 20-22.
    - Can be worsened by certain medications (corticosteroids, lithium, isoniazid, oral contraceptives with high progesterone content (Depo-Provera®, Ovrал®)
    - Acne NOT generally worsened by certain foods in adolescents (ie, chocolate, fatty foods, spicy foods), but IS worsened with stress and anxiety and menstruation
    - Acne is generally NOT due to a lack of hygiene. It can actually be worsened by washing face too frequently with strong soaps.
    - Psychological impact of acne may be more severe than patient can communicate. Need to approach patient with sympathy and understanding, even in mild cases
  - Management of acne
    - Treatment depends on severity of acne, and must generally be continued until end of adolescence.
    - Mild acne – mainly closed comedones, very few inflammatory pustules
      - Benzoyl peroxide cream, gel – 2.5 – 10 % once to twice daily
      - Add tretinoin (Retin-A®) cream at bedtime if necessary
    - Moderate acne – moderate number of inflammatory pustule or small cysts
      - Benzoyl peroxide cream, gel – 2.5 – 10 % once to twice daily
      - Begin with topical antibiotic – clindamycin or erythromycin cream once or twice daily
      - Switch to oral antibiotics (tetracycline 250 – 500 mg or erythromycin 250 mg twice daily) if topical treatment not effective
      - May add tretinoin (Retin-A®) cream at bedtime if necessary
    - Severe acne – many large inflammatory pustules and cysts, unresponsive to topical measures
      - Benzoyl peroxide cream, gel – 2.5 – 10 % twice daily
      - Begin with oral antibiotic – tetracycline 250 – 500 mg or erythromycin 250 mg two to three times daily
      - Tretinoin (Retin-A®) cream once to twice daily

- Consider hormonal treatment for women – low dose combined oral contraceptive with low progesterone content
- Consider referral to dermatologist for treatment with isotretinoin (Accutane) if no response.
- Scabies
  - Pruritic papules caused by reaction to small insect that burrows in subcutaneous tissue – *Sarcoptes scabiei*
  - Spread by direct contact with insect – can remain alive in clothing or bedding of infected person for up to two days.
  - Most common in children because of their close contact with each other, but easily spreads to other household members.
  - Common symptoms and findings:
    - Moderate to severe itching, worse at night
    - Small papules or vesicles, often between fingers, on wrists, forearms, thighs, buttocks
    - Classic finding is two or more 2 mm. papules linked by a small red line (tunnel) of 0.5 – 1 cm.
    - Because of scratching, may look like eczema with thickened skin
    - Can become secondarily infected with scratching – impetigo or staph infection
  - Differentiate from atopic dermatitis or eczema by the following:
    - Scabies is more acute itching; eczema is more chronic with positive family history
    - Scabies often localized to distal extremities and central trunk; eczema more localized to flexor areas of elbows and knees
    - Topical corticosteroids do little to relieve itching of scabies; but significantly improve eczema
  - Management of scabies
    - Permethrin 5% cream is treatment of choice. Apply to entire body (not just itchy or popular areas) from neck to feet and wash off in 8 – 14 hours.
    - If permethrin cream not available, can use lindane cream or solution. Application is the same – from neck to feet for 8 hours. However, should not be used on small children, and application should not be repeated more than once because of toxicity to nerves.
    - Crotamiton (Eurax®) can be used, but is less effective than permethrin or lindane. Crotamiton has advantage of reducing pruritis (itching)
    - Secondary infection should be treated with one of following:  
Erythromycin by mouth 3 times daily  
Dicloxacillin by mouth 3 –4 times daily  
Mupirocin (Bactroban®) topical ointment for small infected areas.
    - Itching can be suppressed with antihistamines such as:  
Diphenhydramine (Benadryl®) 1.25 mg/kg/dose every 6 hours  
Promethazine (Phenergan®) 1.25 mg/kg/dose every 6 hours  
Hydroxazine (Atarax®) 1.25 mg/kg/dose every 6 hours  
(NOTE – all these antihistamines can cause drowsiness)
    - All affected members of family should be treated at the same time, if possible
  - Instructions for patients and parents

- As treatment is started, all recent clothing and bedding should be washed. Placing clothing and bedding in boiling water or in sunlight prior to washing may be useful
  - VERY IMPORTANT – patients and parents should be informed that the itching may persist for up to 10 days after treatment, because protein of dead insects is slowly dissolved by the body, and is an irritant until completely dissolved. Retreatment should not be done unless itching and papules persist for more than 2 weeks after treatment
  - Overtreatment with lindane (ie, daily applications) can cause seizures in children
- Fungal Infections
    - A chronic infection that can affect any part of the body. Type of infection and management varies by area infected
    - Tinea capitis – fungal infection of the scalp
      - Diagnosed by areas of hair loss with broken hair in center, surrounding mild inflammation and some scaling of skin
      - Often seen in school epidemics
      - Best treated with oral griseofulvin – 10-20 mg/kg/day for 4 – 8 weeks. Give with a high fat meal to improve absorption
    - Tinea corporis – fungal infection of the skin
      - Can be seen in almost any part of the skin
      - Often associated with pets (cats or dogs) in the house, or close contact sports activities
      - Diagnosed by circular patch of itchy inflammation, usually clear center with an inflammatory rim
      - Small to moderate areas can be treated with topical antifungal (clotrimazole cream, terbinafine cream) applied 2–3 times daily for 7 – 15 days
      - Large areas of infection may require oral griseofulvin – 10 20 mg/kg/day for 2 – 4 weeks
    - Tinea cruris – fungal infection of the groin
      - Usually occurs because of increased sweating in the area; more common in obese patients or athletes
      - Distinct from tinea corporis in that it may involve Candida infection, which requires specific anti-fungals. Candidiasis distinguished by presence of satellite lesions (inflammatory papules beyond the sharp margin of fungal infection) and increased inflammation and discharge from lesion
      - Management begins with cooling and drying of groin area – moist cool compresses of water and bicarbonate of soda (baking soda) applied to the area 3 – 4 times daily
      - Follow application of compresses with anti-fungal effective against Candida, such as clotrimazole 3 – 4 times daily
      - May need to add low potency topical corticosteroid cream (Hydrocortisone cream 1-2%) twice daily to decrease inflammation. Do not continue for more than 5 – 6 days.
    - Tinea pedis – fungal infection of the feet
      - Usually seen as itching white patches between the toes; may extend to involve the entire toe or other parts of the foot
      - Seen most commonly in athletes, those whose feet sweat much

- Management begins with exposing feet to air as much as possible – wearing sandals much of the day, wearing tennis shoes or closed shoes only when necessary
- Treat with topical anti-fungal such as clotrimazole cream twice daily. Will need to continue treatment for 2 – 4 weeks. Recurrences are common, and will require retreatment
- Onychomycosis – fungal infection of the fingernails or toenails
  - Diagnosed as chronically white, thickened nail
  - Usually associated with preceding tinea pedis
  - Nails infected with fungus are very difficult to treat; do not respond to topical anti-fungals. However, problem is primarily cosmetic – no systemic problems noted with onychomycosis
  - Require long term dosage of newer antifungal such as terbinafine or itraconazole orally for 3- 6 months. Because of potential toxicity, blood counts and liver function tests must be monitored
  - Griseofulvin has been used, but clears only about 25% of all cases after one year of treatment.
- Impetigo
  - Bacterial infection of the skin, usually with B strept. and staph.
  - Diagnosed as well-defined area of inflammation with honey-colored crusting and serous discharge, usually enlarges slowly
  - Management is by treatment of bacterial infection:
    - Small patches can be treated with topical antibiotic such as mupirocin (Bactroban®) 3 –4 times daily. Parents should carefully wash hands after application to avoid contagiousness. Note that topical neomycin or bacitracin is usually NOT effective because of poor absorption into skin.
    - Larger areas require oral or parenteral antibiotics
    - May initiate treatment with Penicillin orally for 7 – 10 days
    - If no improvement in first 3- 4 days with Penicillin, switch to anti-staphylococcal antibiotic such as erythromycin or dicloxacillin.
  - Because impetigo can be contagious, lesions should be covered with sterile dressing until healed.

## **PREVENTION ISSUES AND HEALTH EDUCATION MESSAGES**

- Children with potentially contagious skin problems (such as impetigo, herpes, scabies, tinea capitis or tinea corporis) should be kept away from close contact with playmates until treatment shows some improvement. They can sometimes attend school as long as infected area is well covered with dressing.
- Treatment with topical medications (hydrocortisone, clotrimazole, etc.) should be continued for full course of treatment or at least for 4 –6 days AFTER apparent healing of the lesion, to avoid recurrences.
- Some skin problems such as eczema or tinea pedis are frequently recurrent. Patients should be counseled to watch for this, and begin treatment as soon as recurrent symptoms noted.
- Treatment for scabies should be applied only once, and to entire body from neck down to feet, not just itchy areas. Patients must wait at least 7 – 10 days for itching to subside, but may take anti-histamines for this as necessary

## **CASE STUDIES**

Ask 2 - 4 participant volunteers to give brief presentations of a patient they recently saw with a common skin problem. Discuss the potential management of this patient in small group discussion, or in the large group.

## **CRITICAL ELEMENTS FOR REFERRAL**

- Significant secondary infection of primary problem such as eczema or scabies, especially with fever or toxicity
- Severe nodulo-cystic acne that does not respond to topical and oral antibiotic treatment
- Severe scabies unresponsive to topical treatment
- Failure of improvement of any skin problem with normal treatment

## **CRITICAL ELEMENTS FOR EVALUATION OF COMPETENCE**

- Describe the most common signs and symptoms of common skin problems such as eczema, acne, scabies, and fungal infections
- Describe the best management, including instructions to the patient, of each of these skin problems.
- Understand when a patient with a skin problem should be referred to a dermatologist for management.