DERMATOLOGIC INFECTIONS IN CHILDREN

ROBERTA C. ROMERO, M.D., F.P.D.S.
TROPICAL DISEASE FOUNDATION

DERMATOLOGICAL INFECTIONS

- BACTERIAL
  - IMPETIGO/SSS
  - FOLLICULITIS, FURUNCULOSIS
- FUNGAL
  - TINEA VERSICOLOR
  - DERMATOPHYTOSIS
  - CANDIDA
- VIRAL
  - HAND FOOT AND MOUTH DISEASE
  - MOLLUSCUM CONTAGIOSUM

6 YEAR OLD BOY

-SKIN LESIONS
OF 4 DAYS
DURATION

-GOLDEN YELLOW
CRUSTS ON SHALLOW
EROSIONS ON FACE

-NOT TENDER, NOT
ITCHY, SLIGHT FEVER

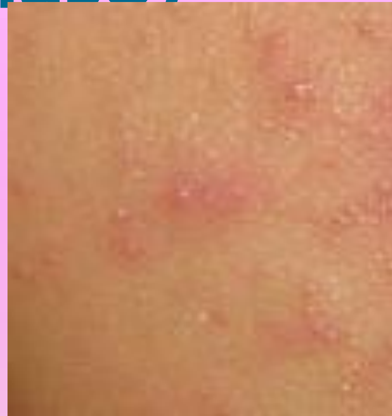
DIAGNOSIS?????

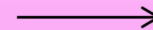
DIAGNOSIS: Impetigo Contagiosa Recognition

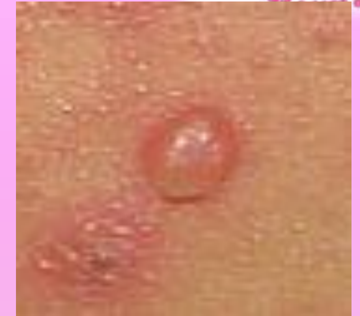
- Rapid evolution: Erythematous macule → papulovesicle → pustule → superficial erosions with honey-colored crusts ("mamaso")
- Not tender, not painful, +/- fever
- Areas: face, extremities, buttocks
- Etiologic agents: Mainly *Staph aureus*, sometimes GABHS

Typical clinical presentation of Impetigo Contagiosa (Mamaso)

Starts with a single 2-4 mm erythematous macule

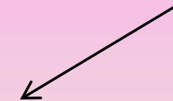


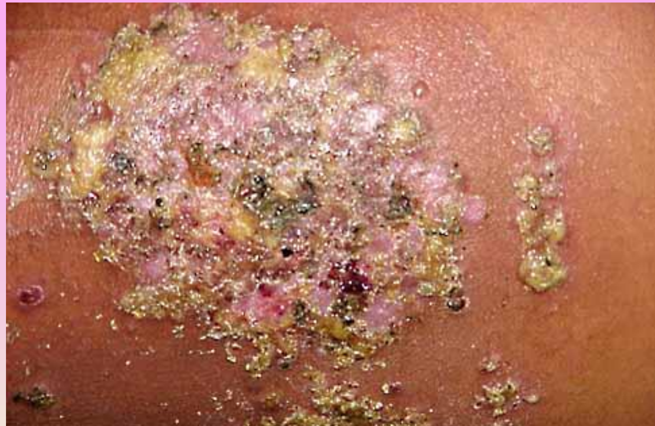




Vesicles form

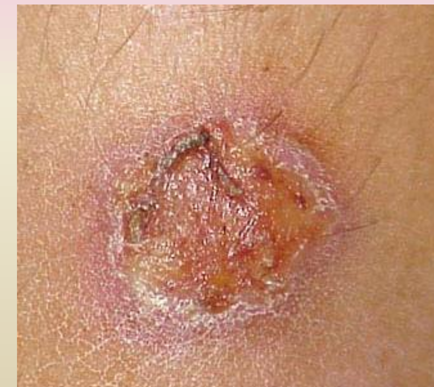
Vesicles easily rupture





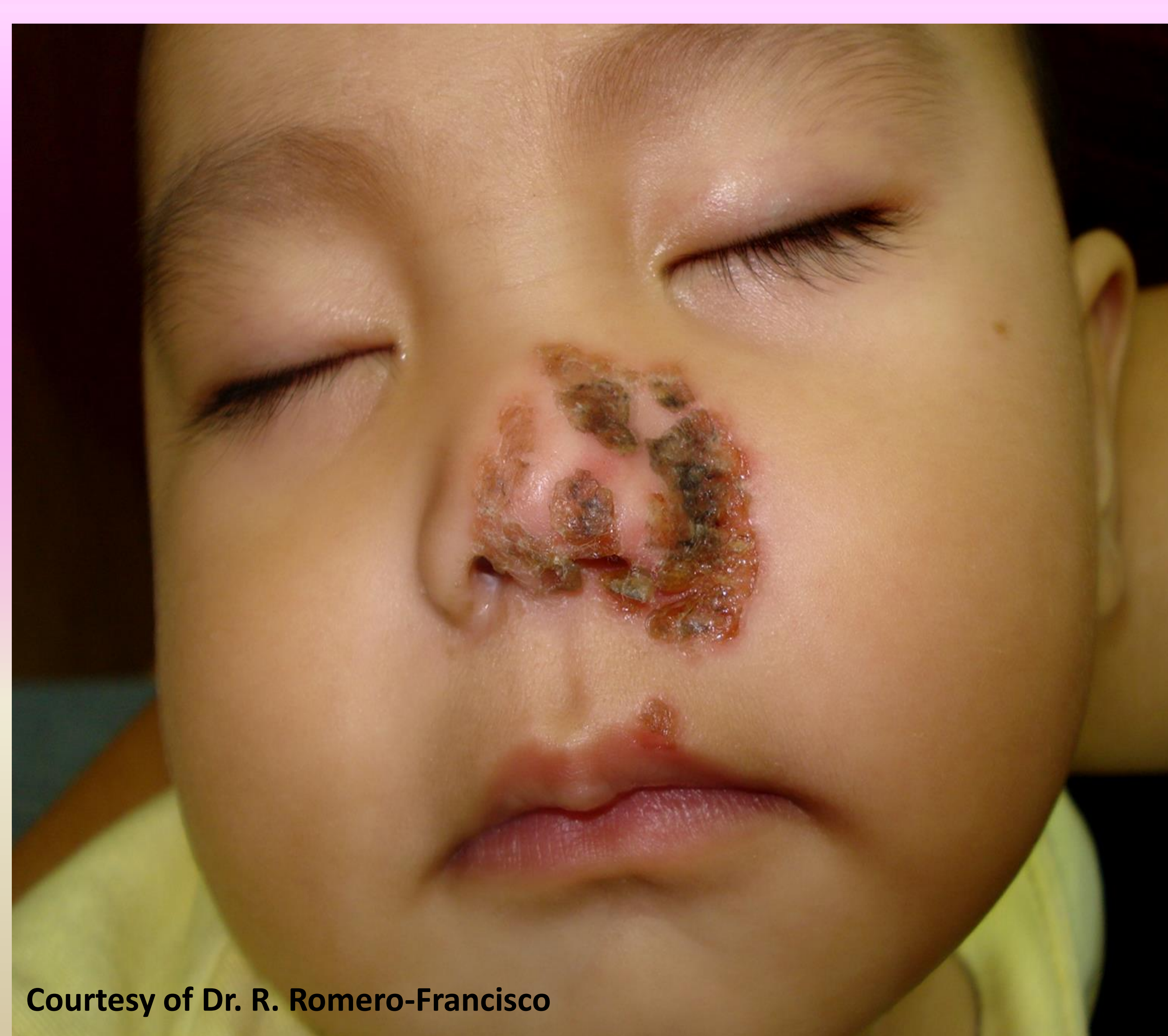
Several individual or coalesced macules/patches

Direct extension rapidly follows



Form "honey-colored" crusts

Courtesy of Dr. B.Bince


Courtesy of Dr. R. Romero-Francisco

PIDSP
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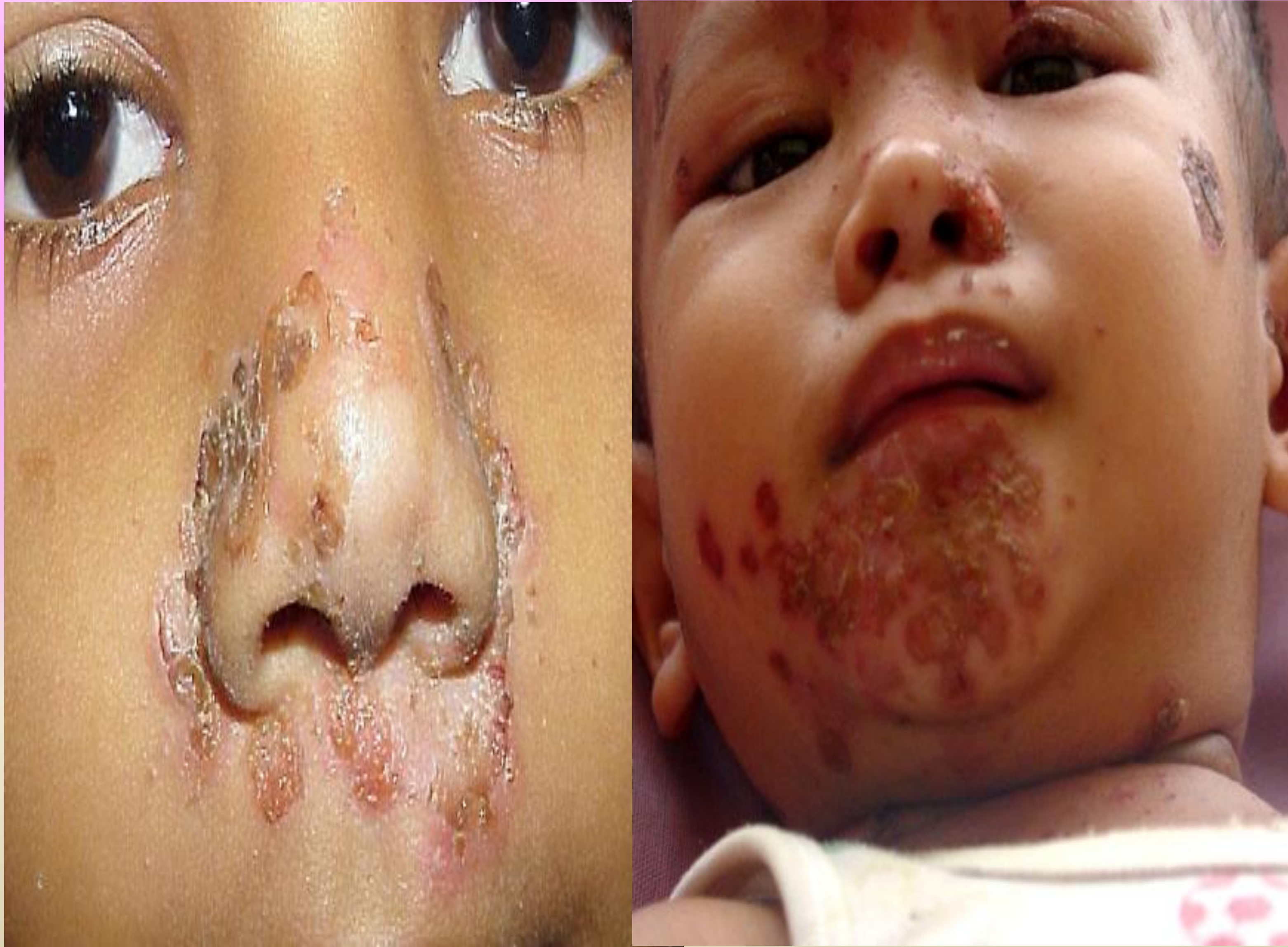
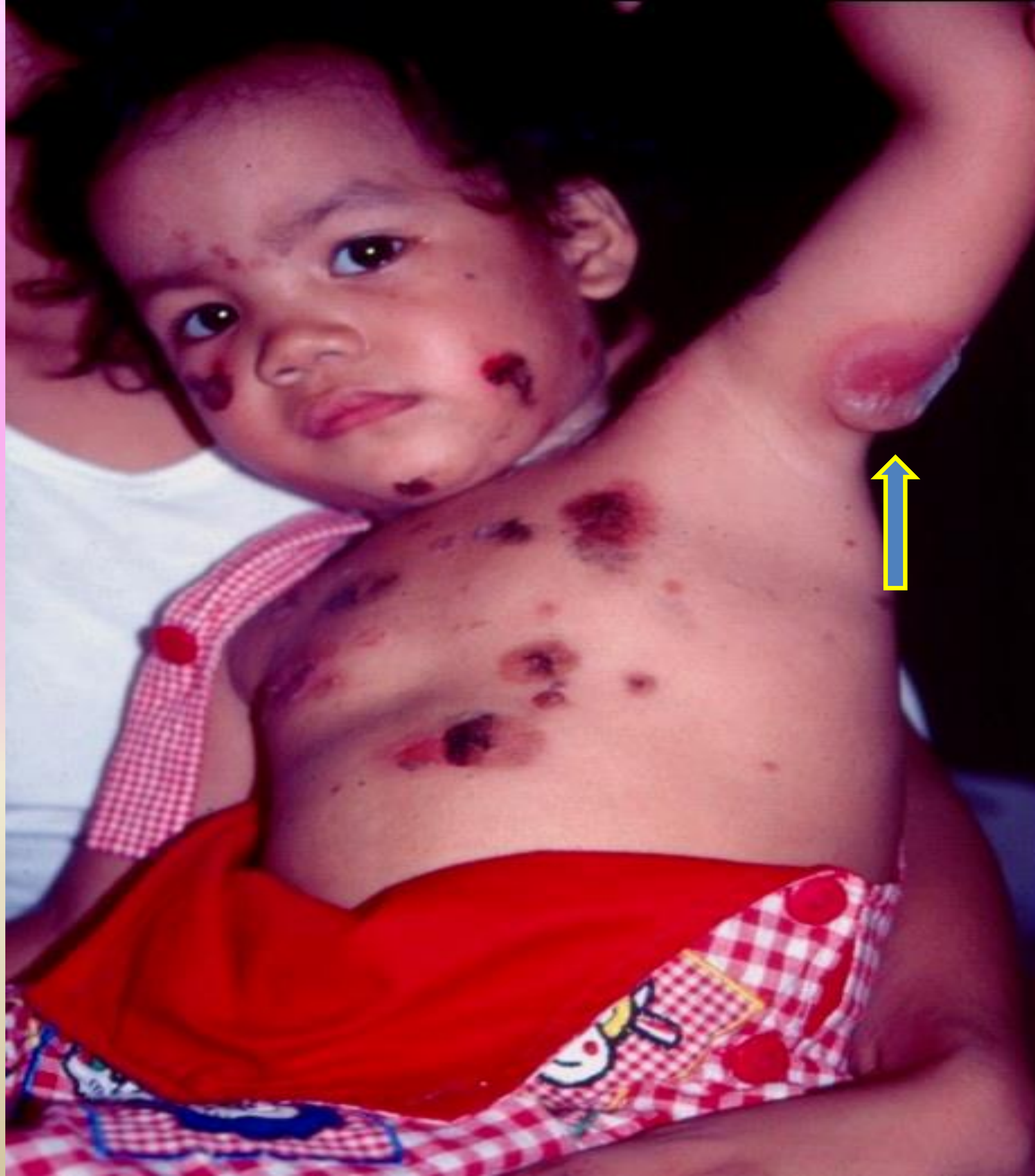


Courtesy of Dr. R. Romero-Francisco



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3 year old girl

-Skin lesions of 3 days duration

-See superficial blister on left underarm

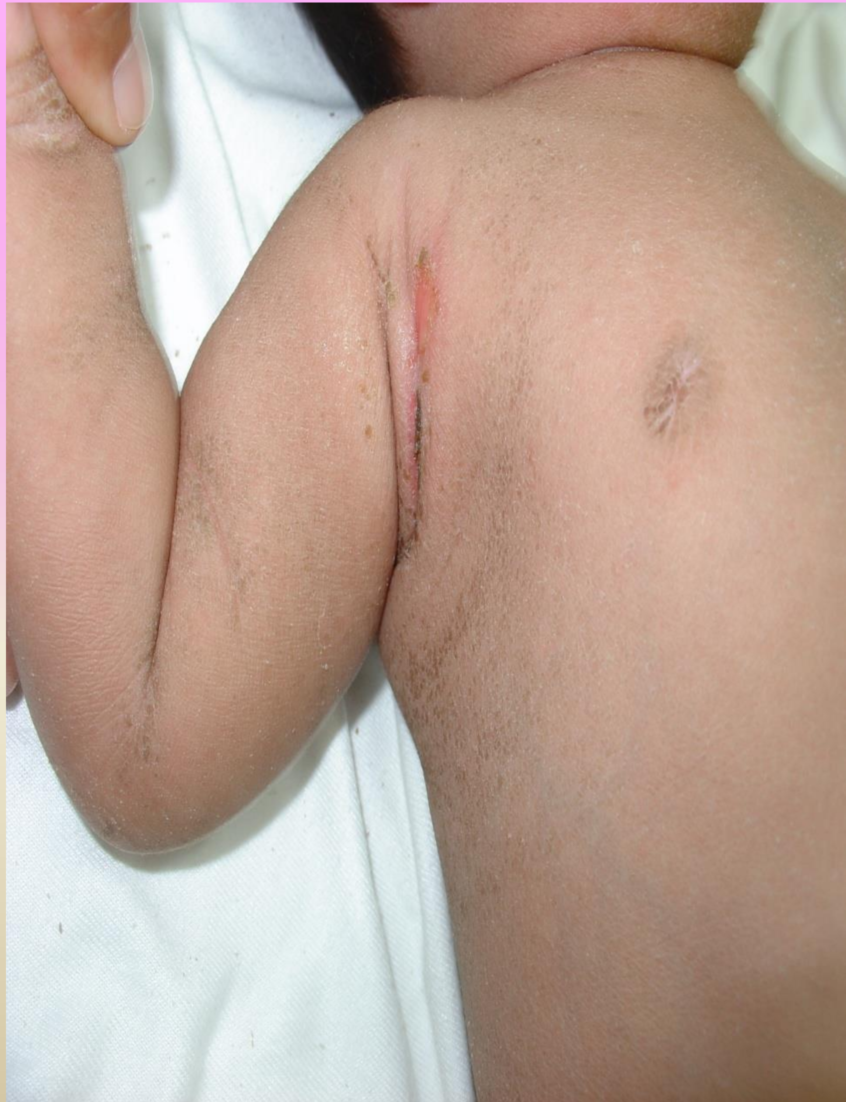
Diagnosis????

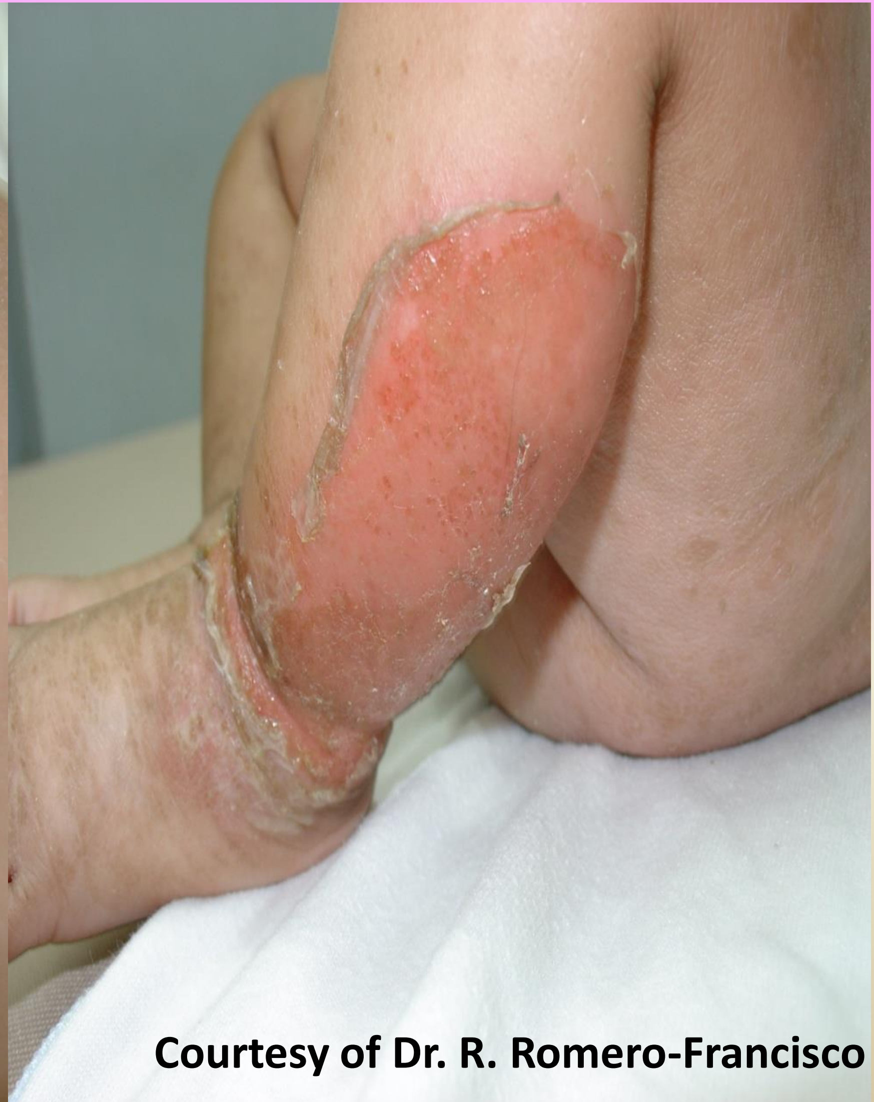
IMPETIGO CONTAGIOSA

BULLOUS IMPETIGO

- Staph aureus produces epidermolysin (exfoliatoxin)
- Cleavage of superficial layer of epidermis → formation of a superficial blister Bullous impetigo or erosion of epidermis (mamaso)

Blister has been unroofed → erosion





Courtesy of Dr. R. Romero-Francisco

Impetigo Contagiosa: Management

- Topical antibiotics:
  1. few, localized lesions
  2. superficial lesions
  3. asymptomatic child

  Meds: Mupirocin, Fusidic acid 3x a day

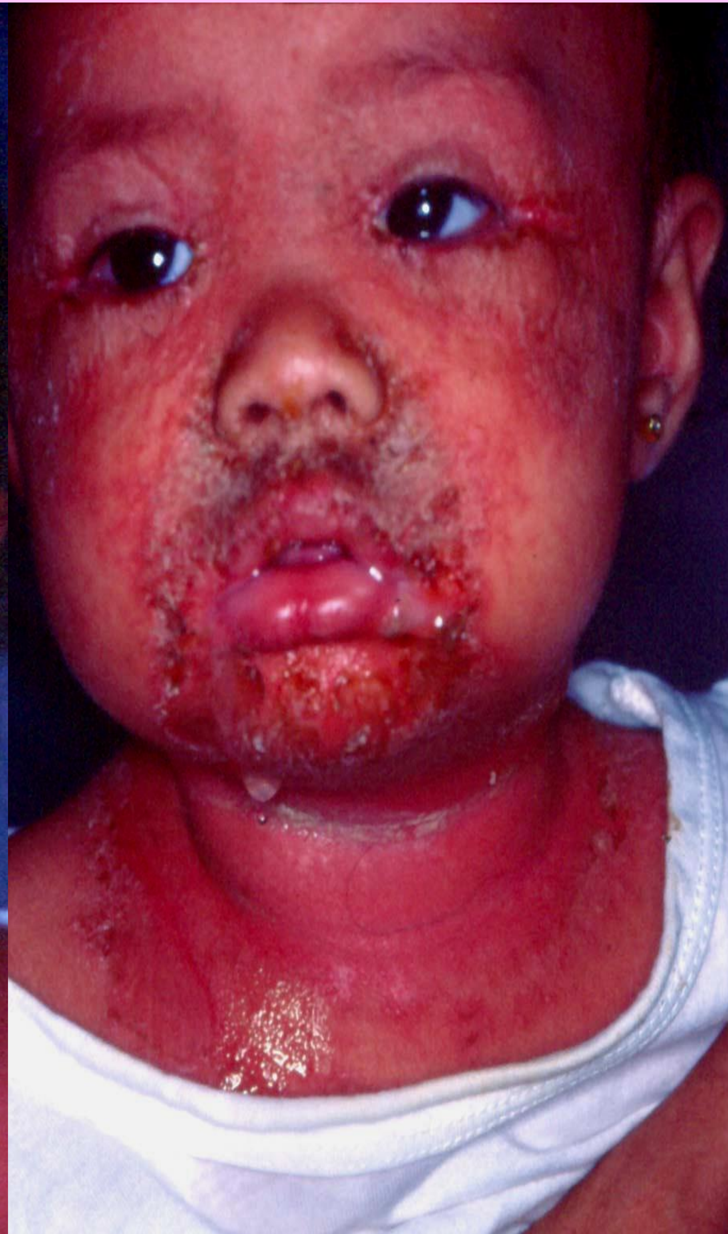
- Oral antibiotics if multiple and widespread: Cloxacillin, Erythromycin

13 month old baby girl

1 day duration of whole body erythema with superficial erosions

Baby is very irritable

Diagnosis??????



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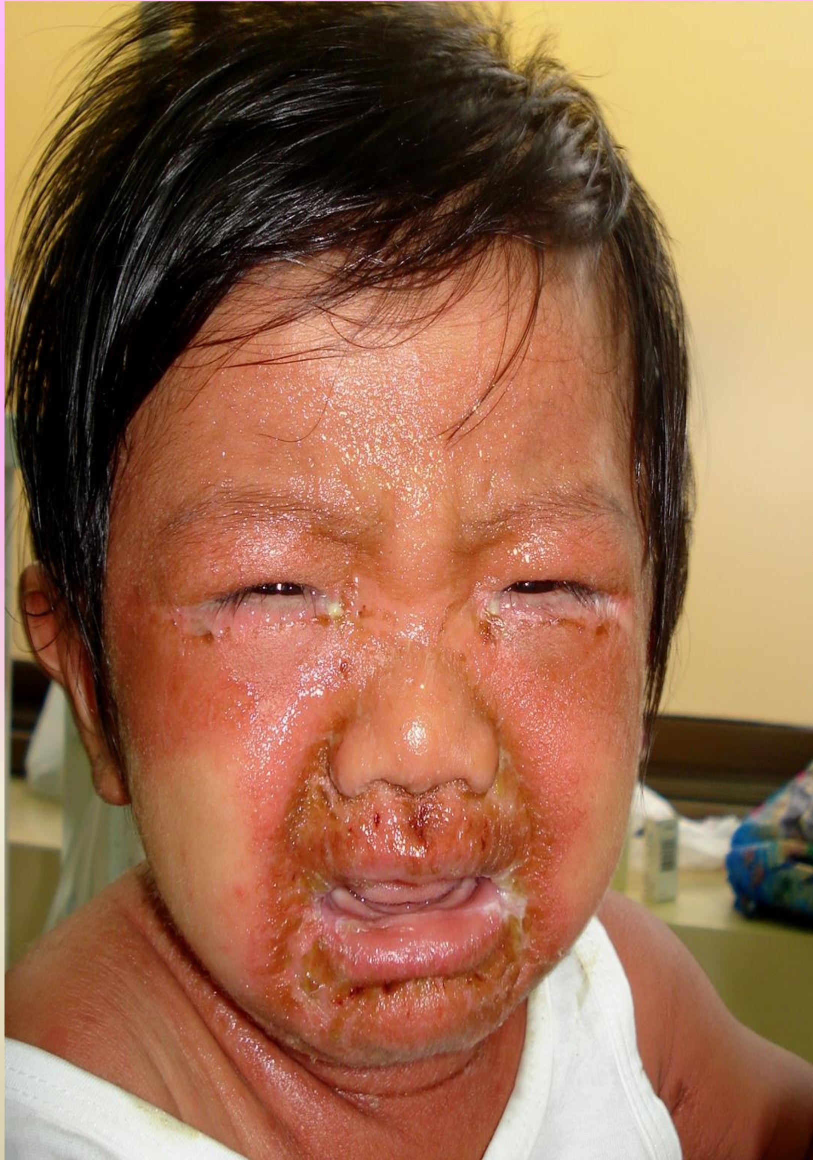
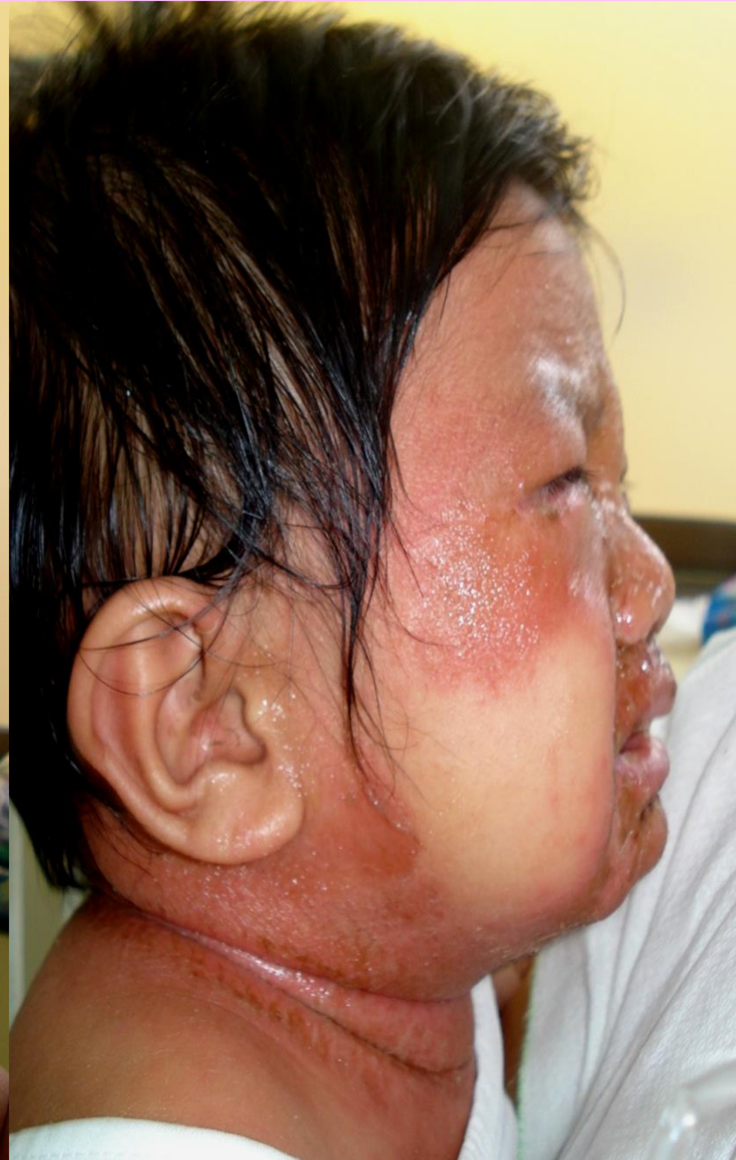
Staphylococcal Scalded Skin Syndrome or SSSS

- A child less than 5 y/o with diffuse tender erythema → scarlatiniform eruption accentuated in flexures and periorificial areas → “wrinkled” appearance and superficial desquamation
- Severe cases with diffuse sterile flaccid blisters and erosions

SSSS: Recognition

- **Characteristic facies**: peri-orificial erythema and scaling → distinctive radial crusting and fissuring
- May have pharyngitis, conjunctivitis and superficial erosions of the lips with sparing of oral mucosa





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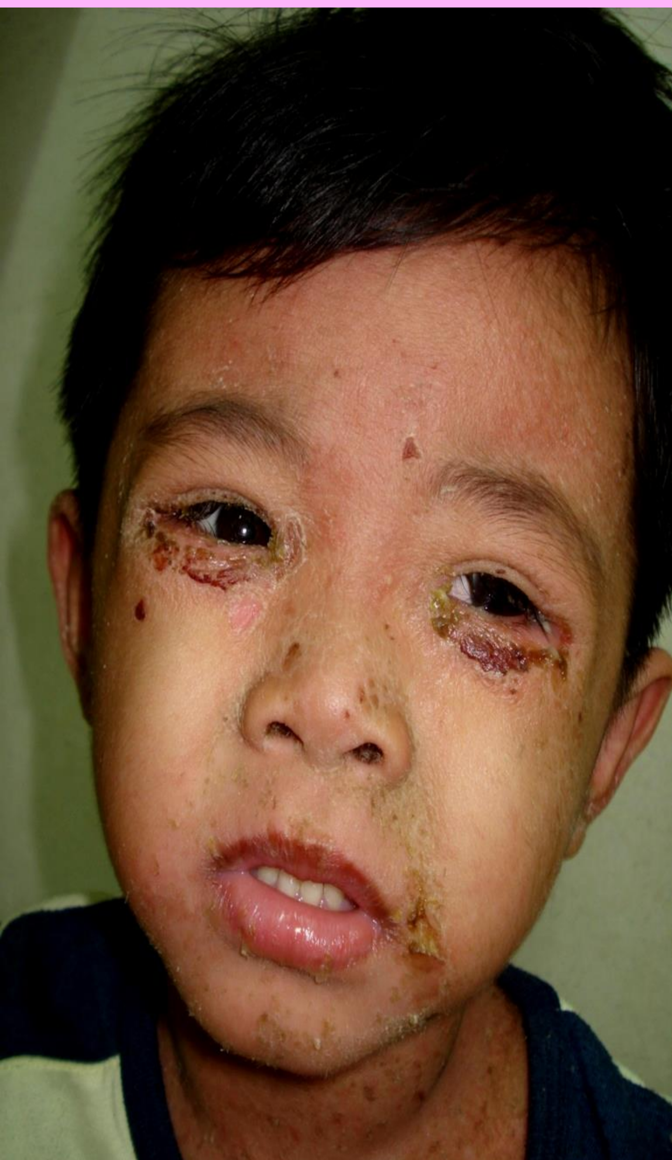

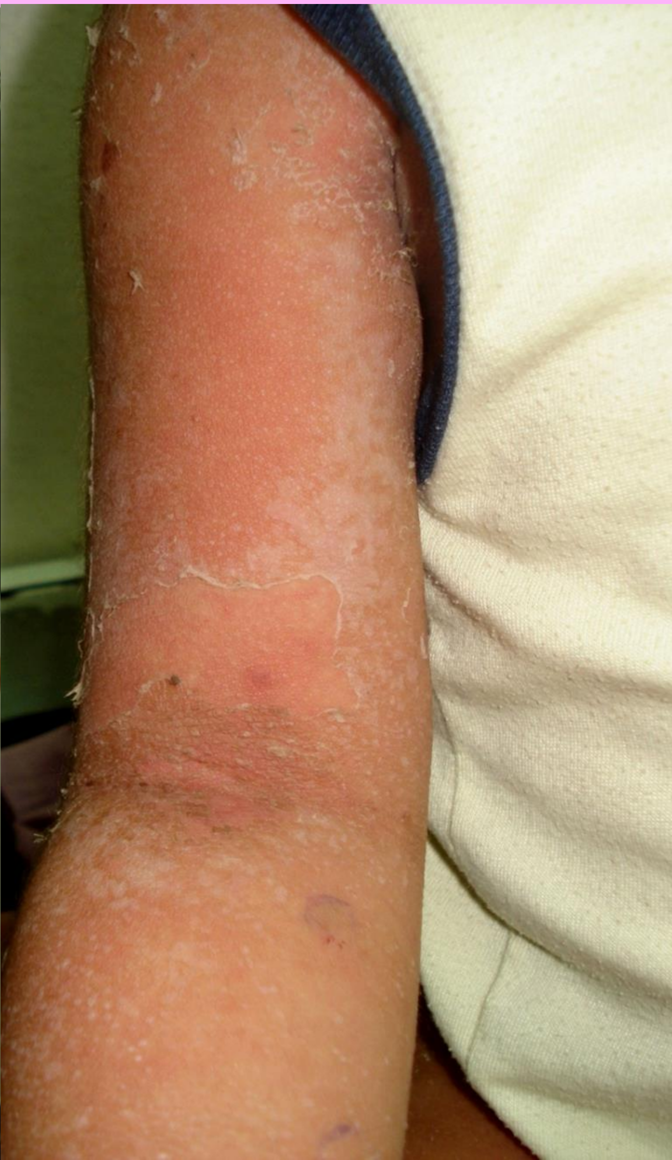

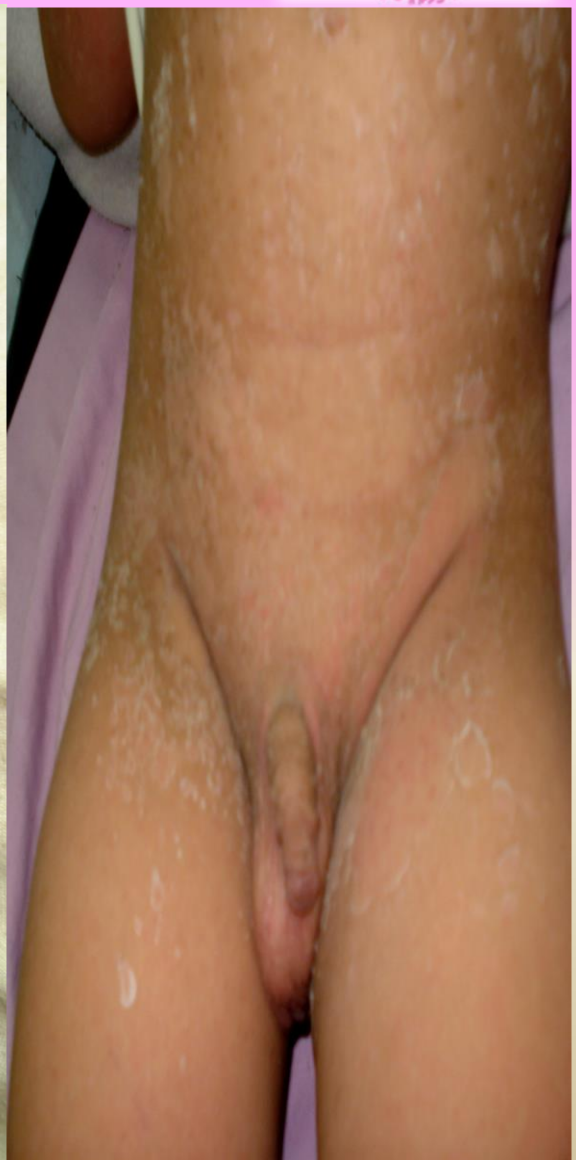

Staphylococcal Scalded Skin Syndrome (SSSS)

- A toxin mediated infection
- Due to exfoliative toxins A, B released by *Staphylococcus aureus* phage Type II

SSSS: Management: Remember that this is a Systemic Staph infection

- Anti-Staph antibiotics for 7-10 days
- Aggressive fluid and electrolyte management
- Denuded phase: NSS compresses
- Desquamation phase: emollients
- Heals without scarring in 10-14 days

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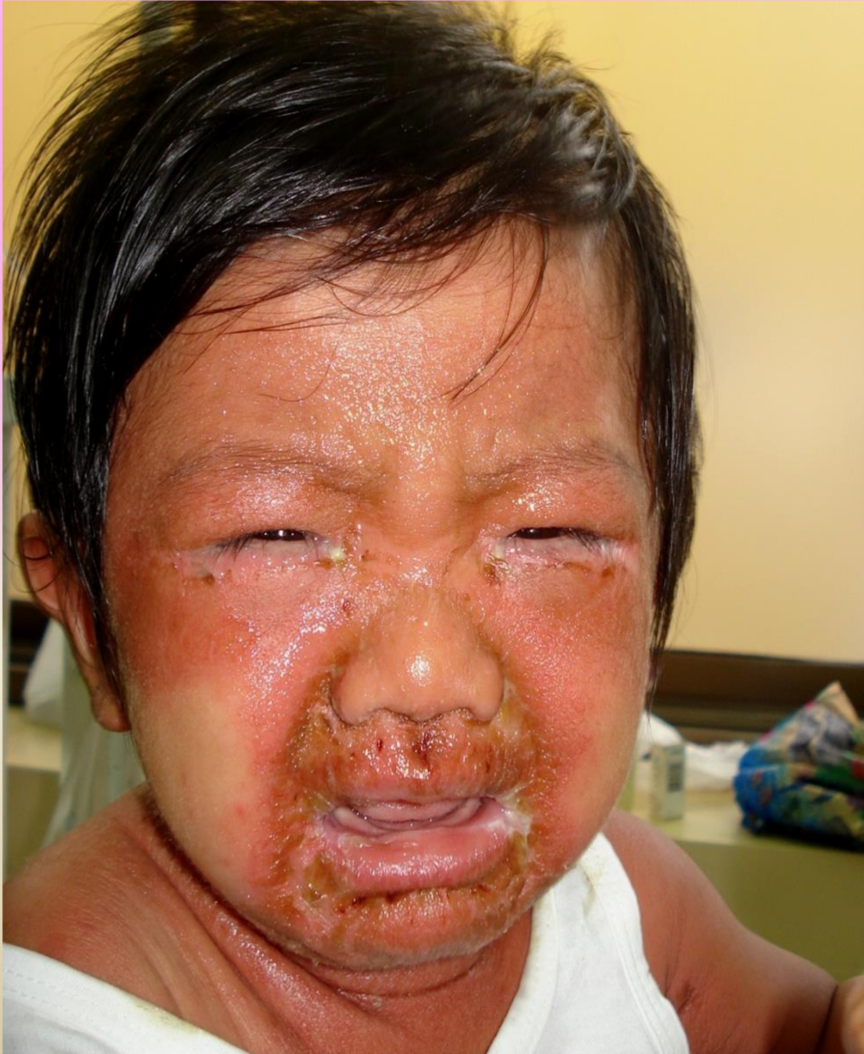
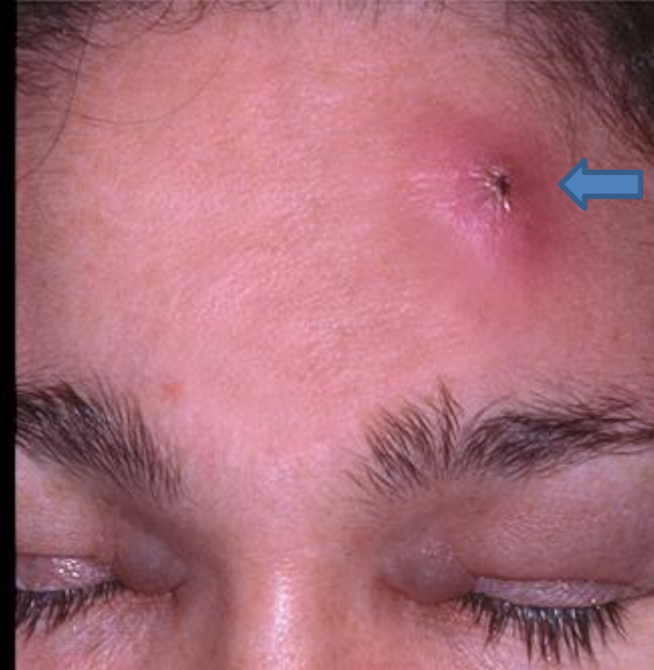


2 year old boy with pustules over the upper lip of 4 days duration

Painful

Diagnosis??



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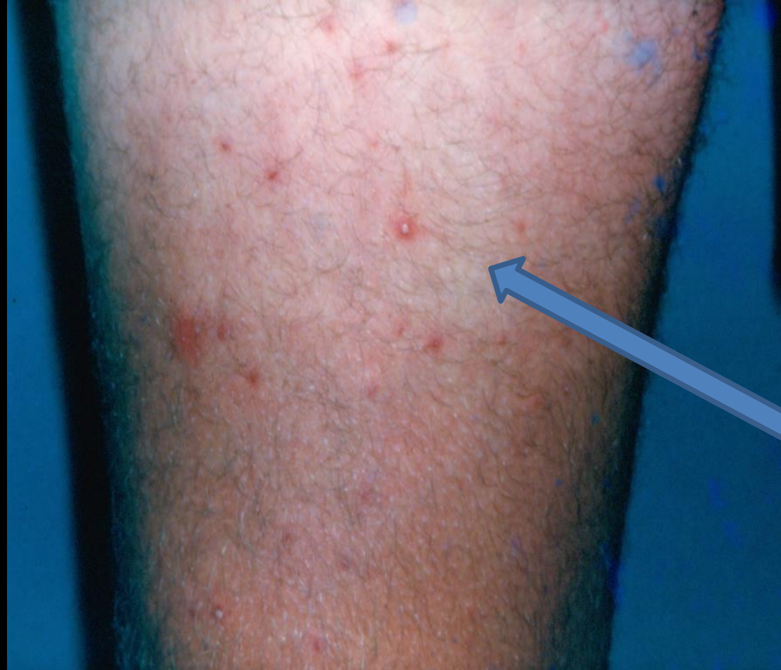

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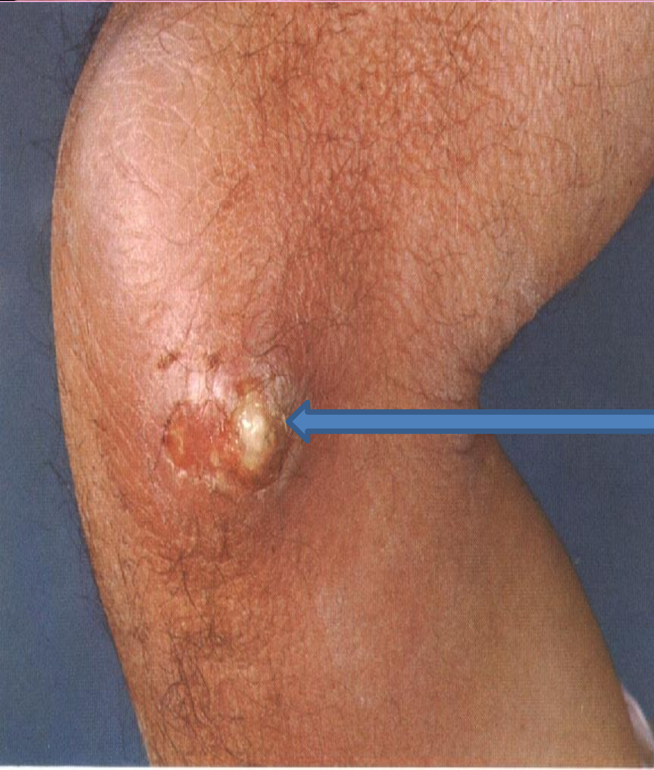
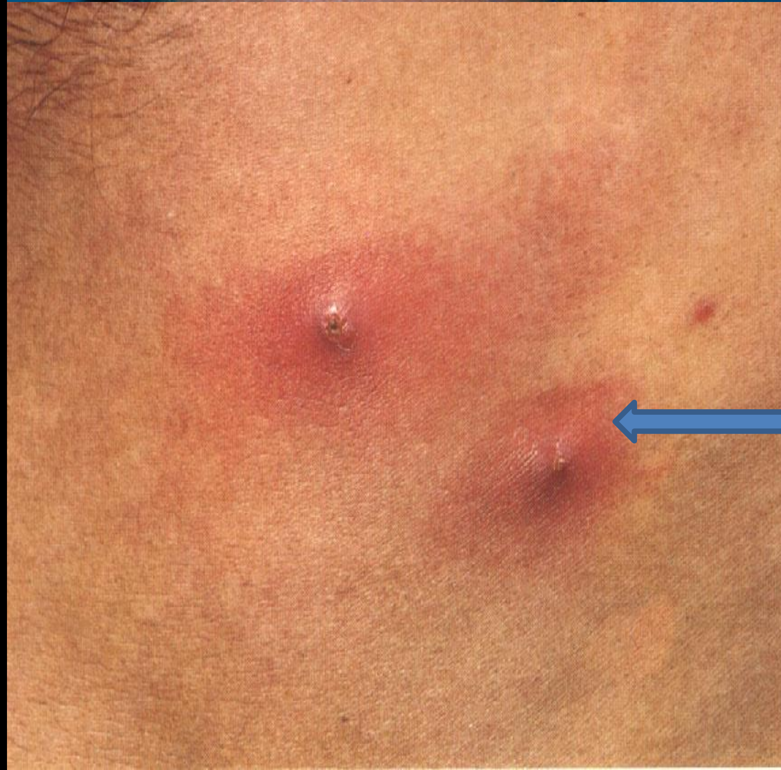




Fu-run-
cles

Major Bacterial Infections of the Skin

Folliculitis, Furuncles and Carbuncles

Medical History

Involves hair follicle
Often occurs in the axillae, face and buttocks

Complications

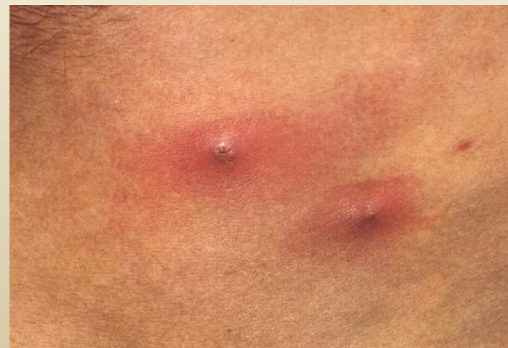
Rare
If untreated, may spread to deeper layers of the and form carbuncles with multiple sinuses

Clinical Findings

Lesions initially similar to impetigo but go on to ulcerate, penetrate the epidermis and extend into the dermis
Advanced lesions covered by greenish-yellow Crusts
Pain, tenderness, erythema

Pathogen

Staphylococcus aureus



Furuncles and Carbuncles

If single and not involving the dangerous triangle of the face: simple incision and drainage may suffice.

May apply topical mupirocin on surrounding skin to avoid inoculation with pathogen

Historical perspective

Comparison of Bacterial Isolates:

	*1995		**2005
Staphylococcus aureus	84.5%	=	85.5%
Sensitivity to Oxacillin	**97.7%**		**55.4%**

*Romero R, et. al. Bacterial Isolates among primary and secondary skin infections in the community. Research paper in fulfillment of fellowship. Phil Children's Medical Center

** Romero, R., et al.Efficacy and safety of mupirocin in superficial bacterial infection. Phil J Int Med. 2006

Why the sudden change?

- Possibilities: (Philippine scenario)
  - Incomplete intake of prescribed antibiotics
  - Self medication – availability of antibiotics from local drugstores w/o prescription
  - Application of “penicillin” powder on infected wounds

Community Acquired Methicillin Resistant Staph Aureus (CA-MRSA)

What is MRSA (CDC Definition)?

MRSA is, by definition, any strain of *Staphylococcus aureus* bacteria that has developed resistance to beta-lactam antibiotics which include the penicillins (methicillin, dicloxacillin, nafcillin, oxacillin, **etc.) and** the cephalosporins**.**

Community acquired MRSA is a hybrid strain from a previously hospitalized patient who developed MRSA and the strain normally found in the community.

Community Acquired Methicillin Resistant Staph Aureus (CA-MRSA)

•The resistance of MRSA to beta-lactam antibiotics is due to the presence of the ***mecA* gene** sequence.

•The *mecA* gene produces **transpeptidase PBP2a** (penicillin-binding peptide) that decreases the bacterial affinity of the beta-lactam antibiotics.

•Most CA-MRSA hybrid strains may acquire a virulence factor not seen with HA-MRSA

Management of CA-MRSA

- Most cases do not need hospitalization
- For furuncles and carbuncles:
  - Incision and drainage
  - Get culture and sensitivity
  - Initiate antibiotic therapy
    - Trimethoprim 160 mgs, Sulfamethoxazole 800mgs: 1 tablet 2 x a day or
    - Clindamycin HCl 450 mgs 3x a day

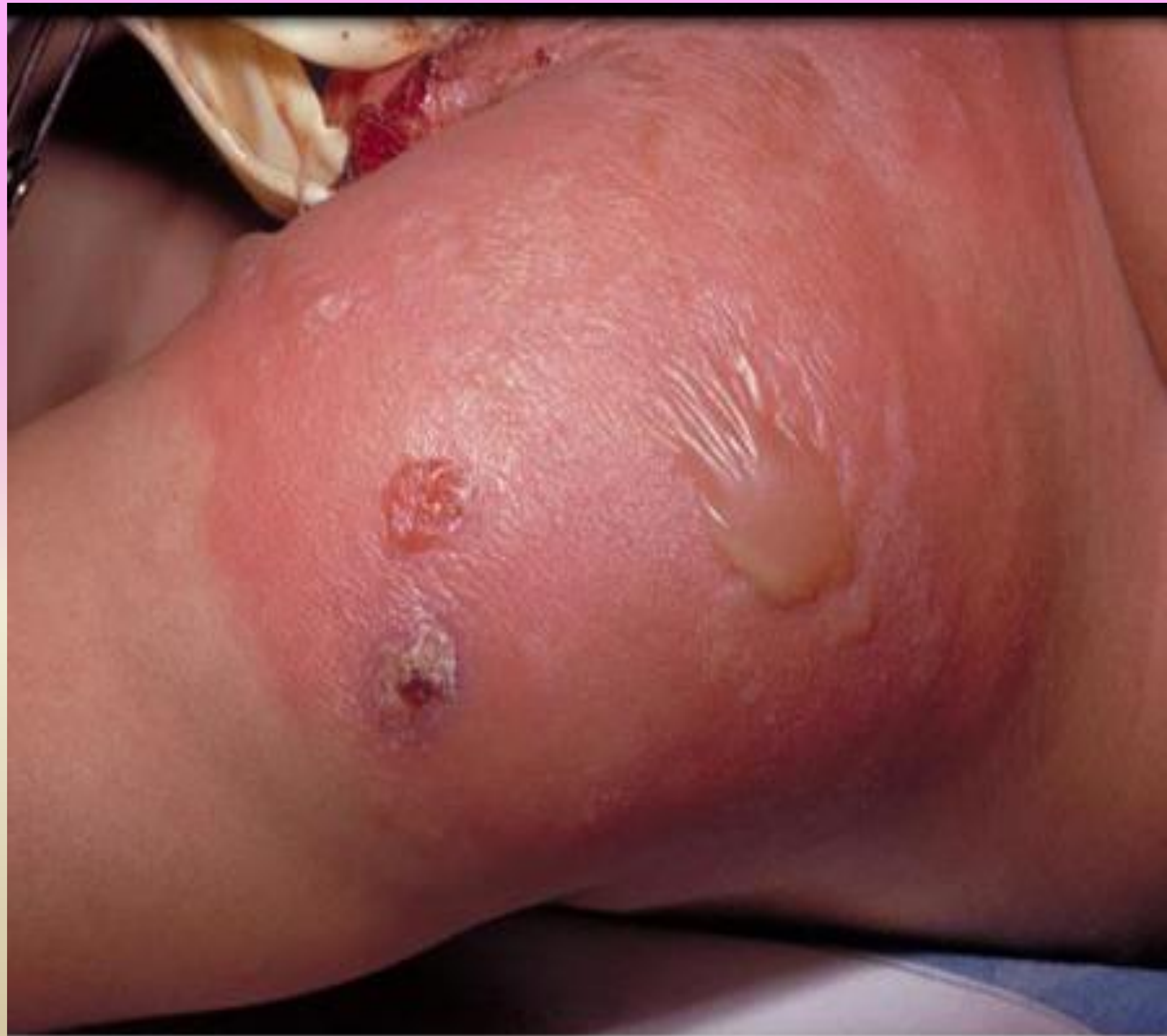
Frei, C.R. TMP or Clindamycin for CA-MRSA Skin Infections. J AM Board of Fam Med 2010:23(6):714=719

Recognition of Severe MRSA infection

No improvement or worsening after 2 days of antibiotics.

Severe pain.

Fever, nausea, vomiting, other constitutional signs and symptoms



Management of CA-MRSA

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  - Get culture and sensitivity
  - Initiate antibiotic therapy
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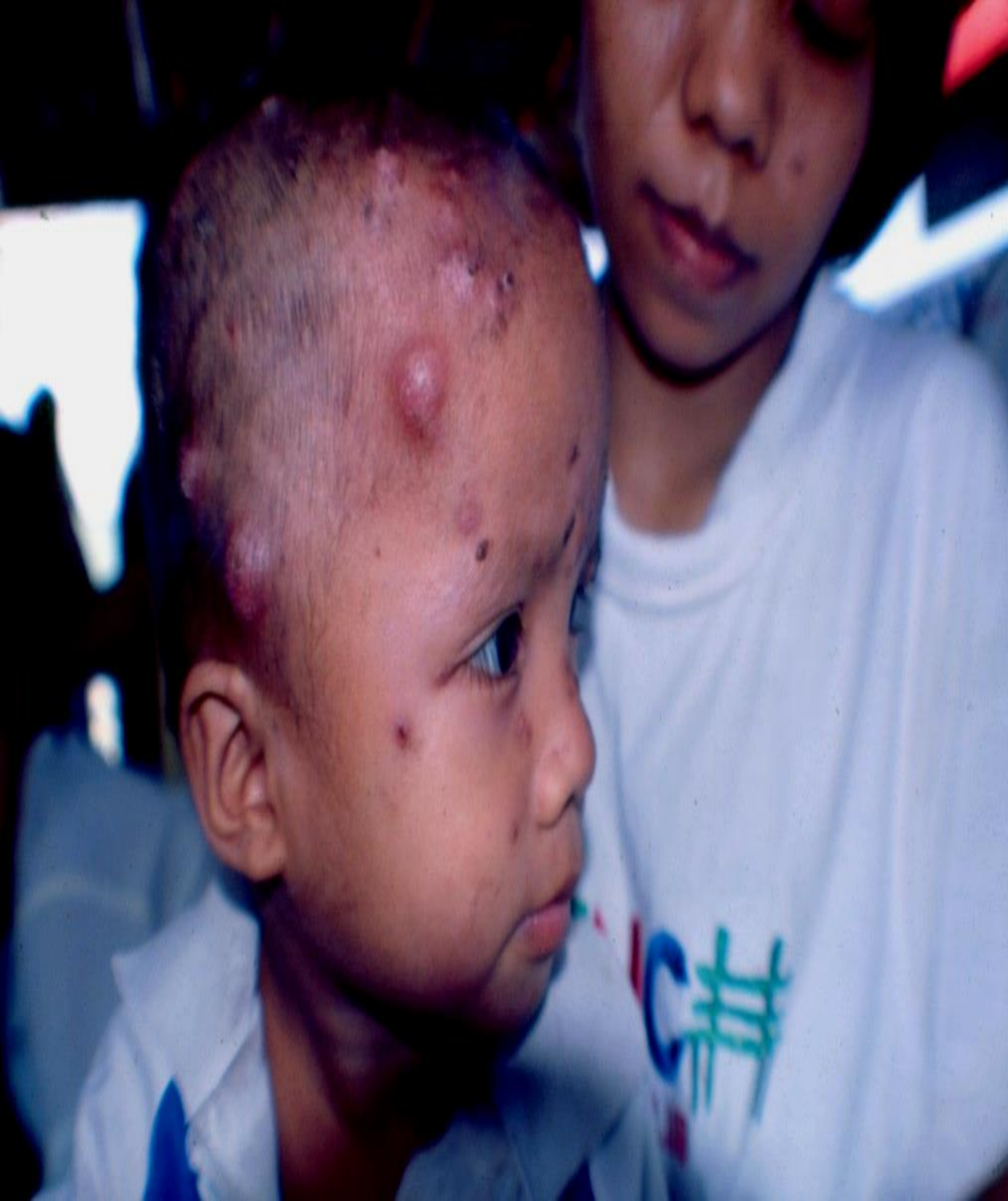
    Note: in severe cases: HOSPITALIZE

Frei, C.R. TMP or Clindamycin for CA-MRSA Skin Infections. J AM Board of Fam Med 2010:23(6):714=719



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2 year old boy with recurrent crops of carbuncles and furuncles responsive to oral cloxacillin.

Problem:

Why recurrent?

Recurrent Furunculosis

- Frequent attacks of furuncles/carbuncles: (1 or more episodes per month despite oral antibiotics)

  Look for source of staphylococcus!

  May have to do culture of anterior nares of patient or caregiver(s)

  If +: Apply mupirocin 4x a day for 5 days to anterior nares

  Or Rifampicin plus Cloxacillin for 7 days

Recurrent *Staph* infections

- Look for the source of infection (auto-inoculation? Personal contact?)

- “Reservoirs” of *Staph aureus*:

  1. anterior nares
  2. ears
  3. throat
  4. hands
  5. axillae
  6. perineum/anus

Algorythm for recurrence

Mupirocin BID-QID x 5 days

applied on the internal nares

Culture other sites

(perineum, fingernails,

Toe webs, axilla)

Add rifampicin

Or

Rifampicin plus minocycline

Rifampicin plus co-trimoxazole

**MRSA

Guay D. Treatment of bacterial skin and skin structure infections. Expert Opin Pharmacother 2003; 4(8): 1259-75.

Fungal Infections

- Candida
- Pityriasis versicolor
- Tinea capitis

Infant with "diaper rash" of one week duration

No response to cortisone cream

Diagnosis?

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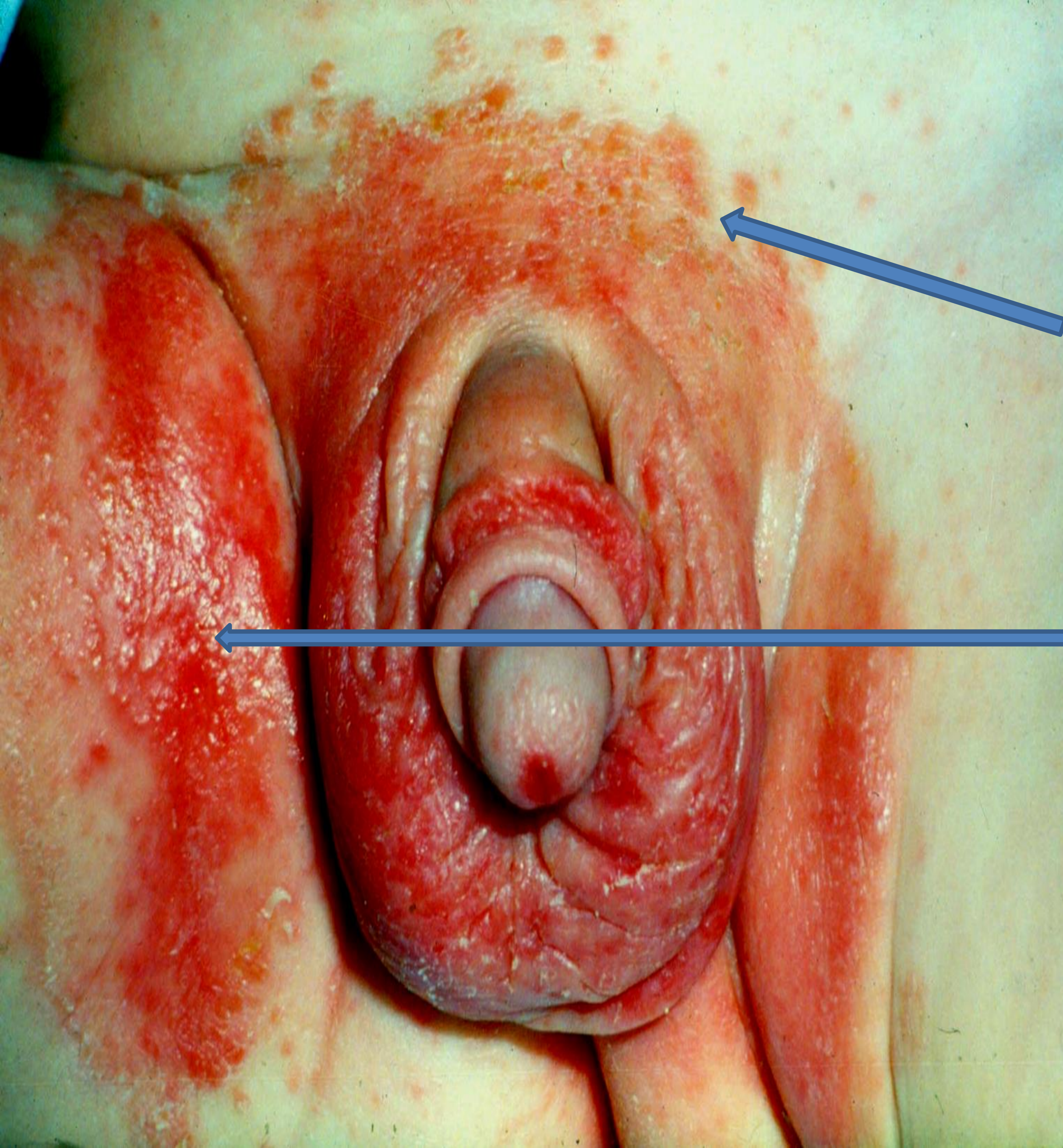
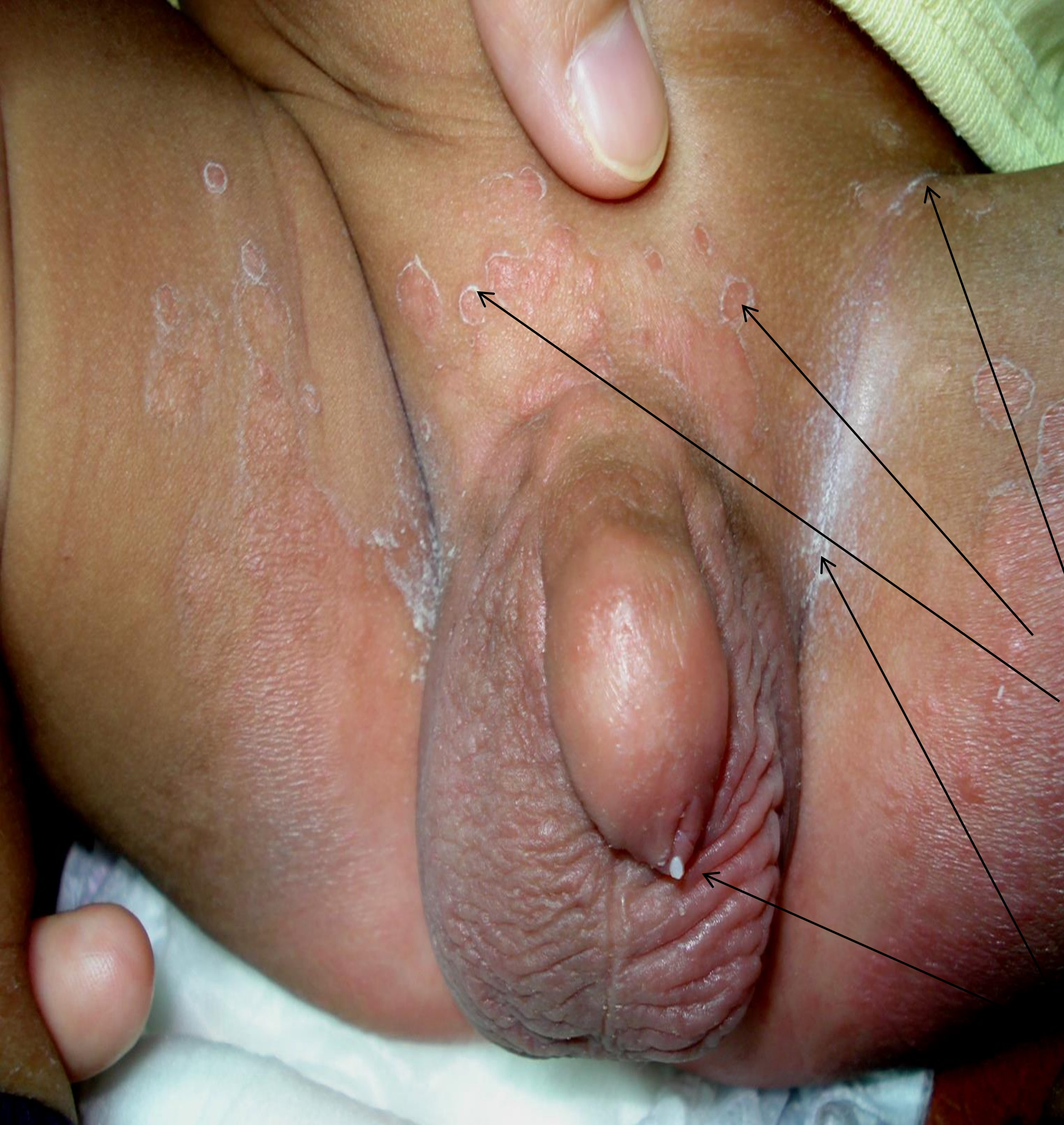


Note:
Satellite pustules

Glazed, beefy red shiny skin

Diagnosis:
Candidal Diaper Dermatitis



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Other signs of candidal infection:

fine scaling on border of erythematous lesions

White cheesy material

Diaper Candidiasis: Recognition

- usually presents as well demarcated erythema with peripheral scale and satellite papules/pustules
- inguinal creases are involved
- in some instances, erythema has been described as “beefy red”

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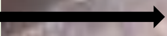
White plaque
difficult to scrape



Courtesy of Dr. R. Romero-Francisco

Oral Thrush: Recognition

- “Thrush”: pseudomembranous Candidiasis
- white to gray, “cheesy” looking colonies that form pseudomembranes
- gentle removal reveals a raw red base

Candidiasis: Management

- Topical anti-candidal agent (nystatin or an azole preparation) +/- topical steroid
- NOTE: after the eruption has cleared, continue the anti-candidal agent for three more days
- Oral mycostatin or fluconazole if recurrent and extensive

16 year old male

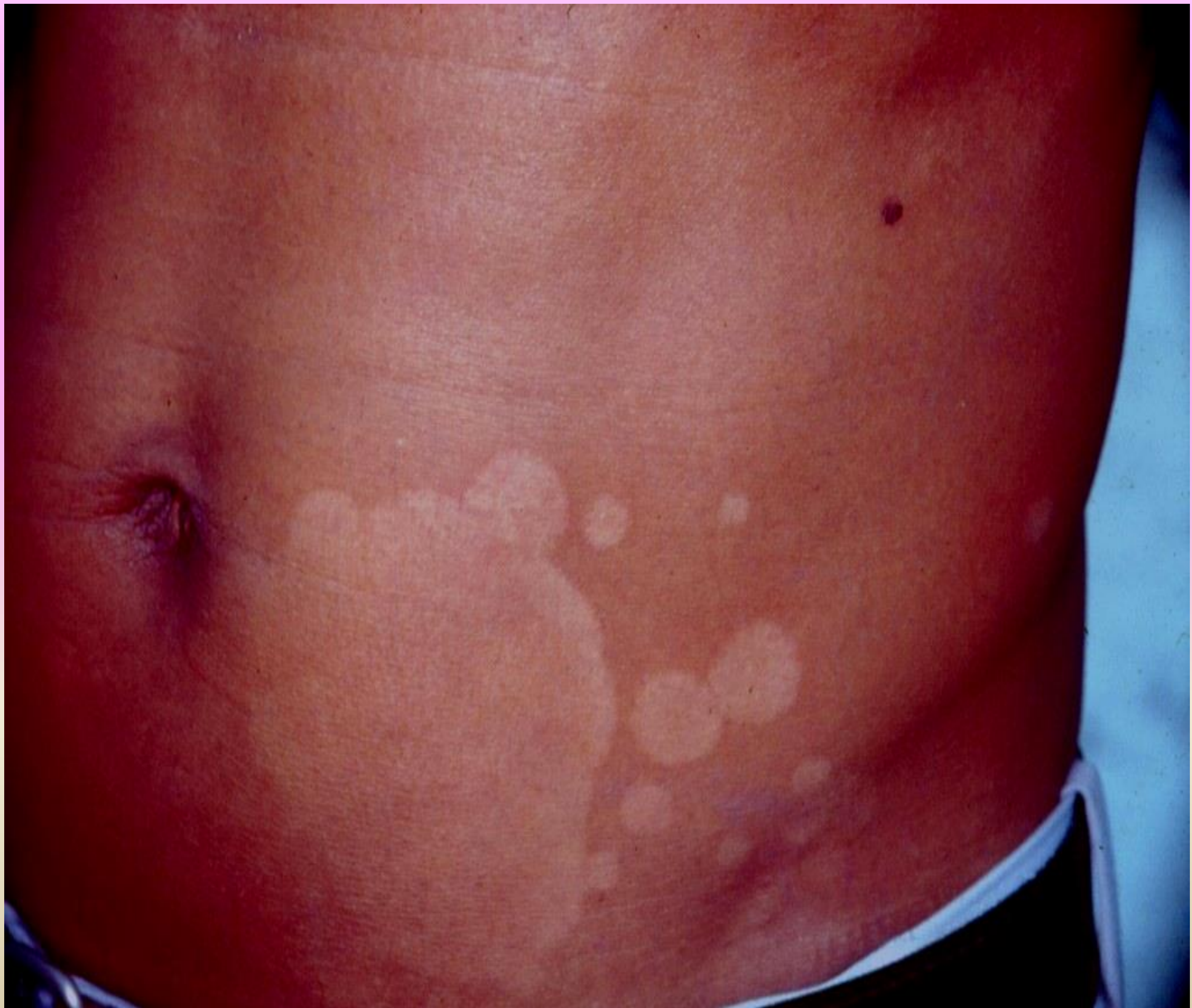
Increasing number of hypopigmented patches

Asymptomatic

Other lesions on upper chest

Diagnosis????

KOH Smear



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Pityriasis Versicolor: Recognition

- Small round to oval macules or minimally elevated plaques with "wrinkling" and superficial scale ("fingernail sign")
- Lesions may be erythematous to brownish to hypopigmented ("an-an")

Pityriasis Versicolor: Recognition

- Most common on the chest, back and proximal arms
- Face involved in younger children
- May be mildly pruritic
- Etiologic agent: *Pityrosporum ovale* or *Malassezia furfur*

Pityriasis versicolor: Management

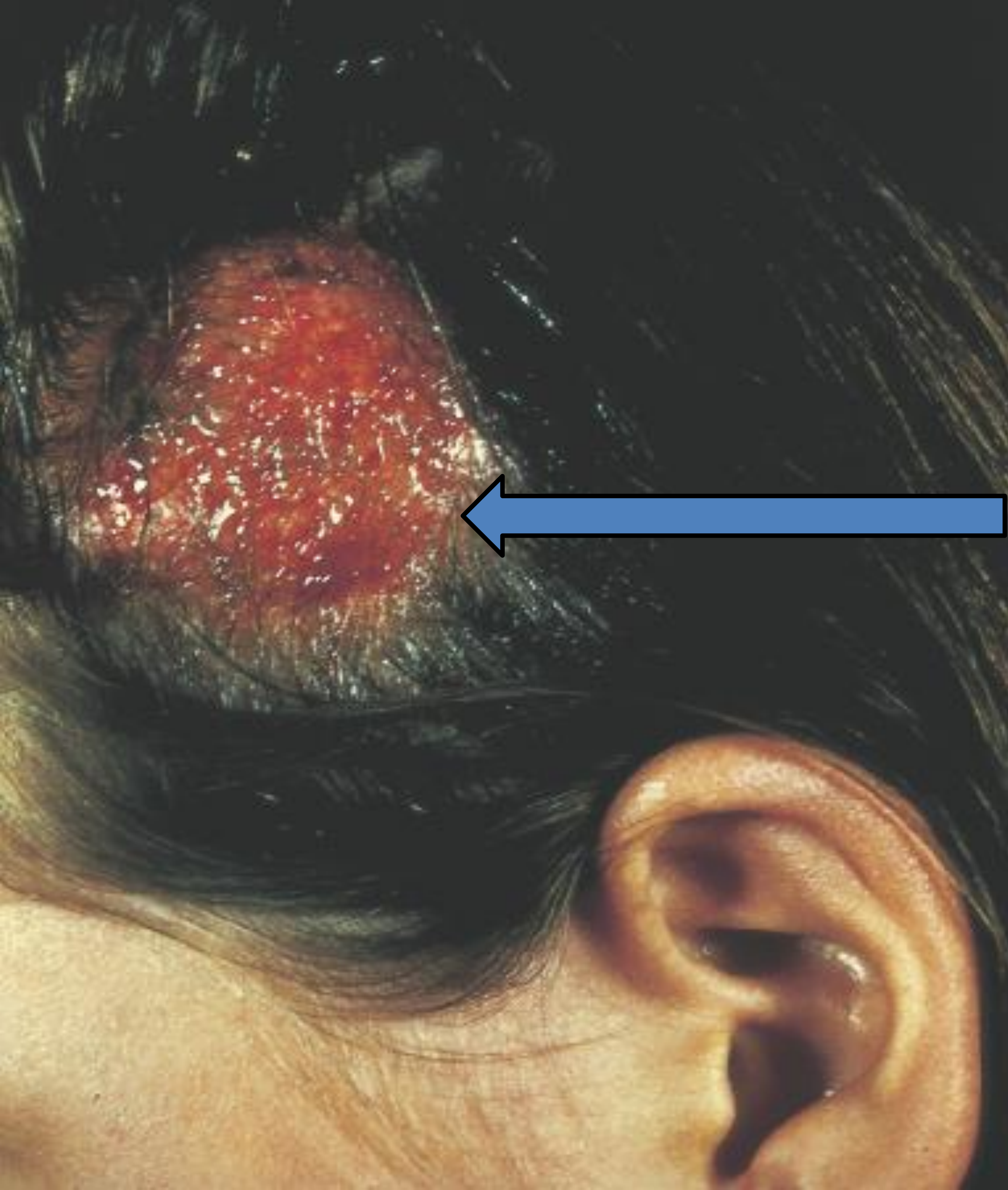
- Selenium sulfide or Zinc pyrithione 10-15 mins/day for 1-2 weeks
- Ketoconazole shampoo 5 mins/day for 3 days
- Ketoconazole cream
- Oral ketoconazole discouraged
- Advise on residual pigmentation

12 year old girl with a mass on L parietal area, asymptomatic

Several weeks duration

+ cerviical lymph nodes but
appears to worsen with anti-biotics

Diagnosis????



Note the mass:

Boggy and soggy erythe-matous mass (**Kerion)**

Presence of alopecia

Diagnosis:
Tinea Capitis

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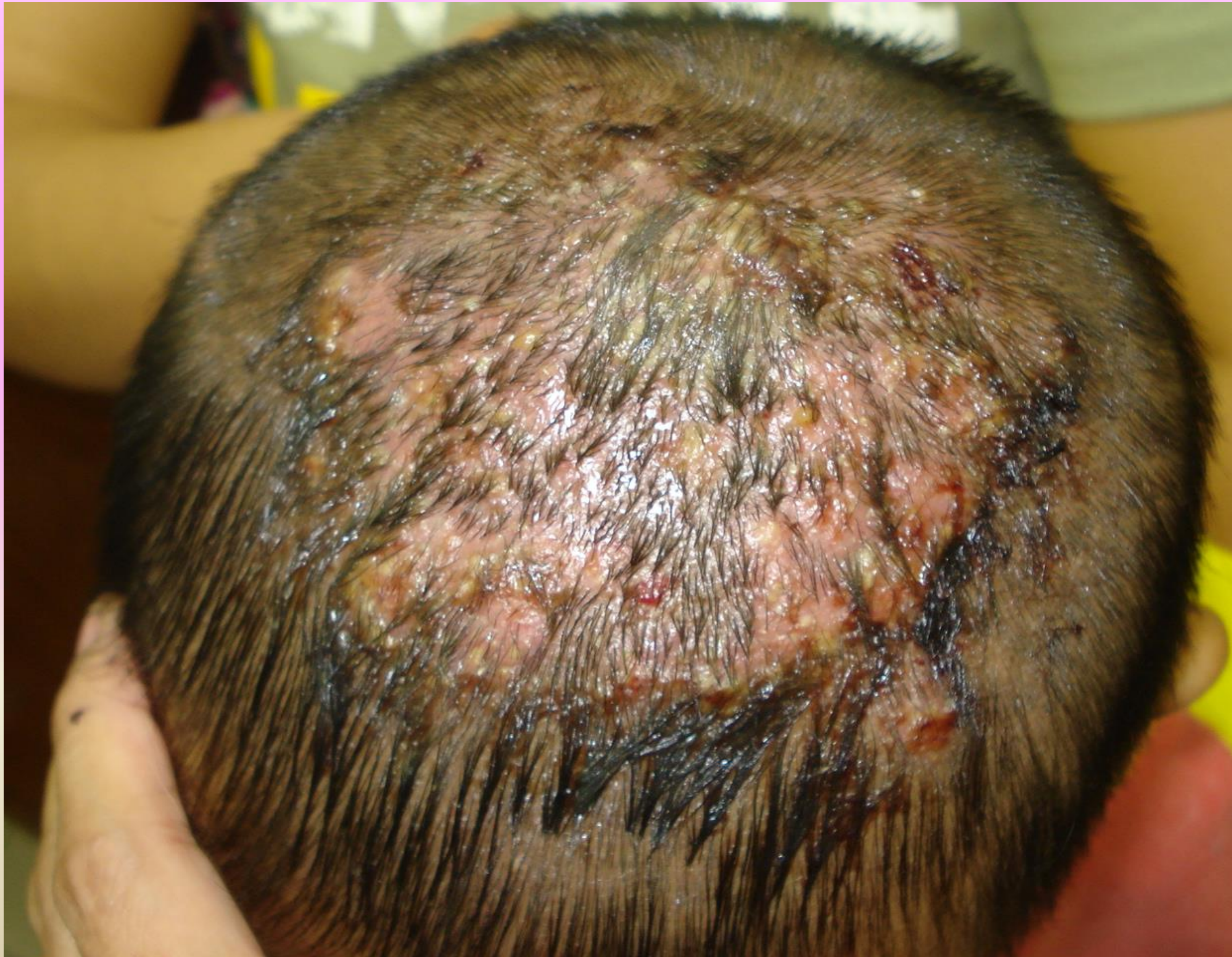
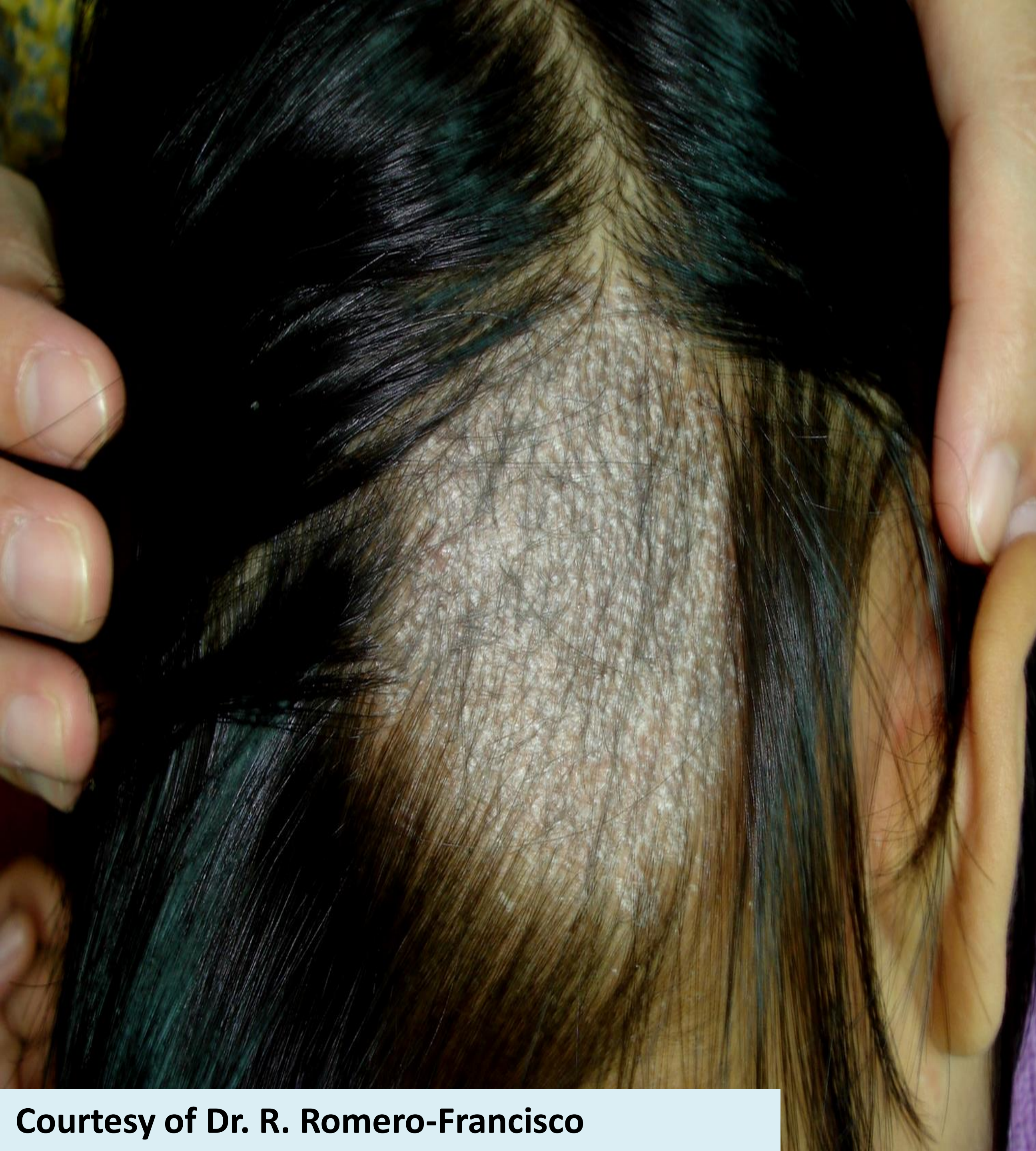


Courtesy of Dr. R. Romero-Francisco



Courtesy of Dr. R. Romero-Francisco

Another presentation of Tinea capitis:

Suspect in a prepubertal child with scaly alopecia

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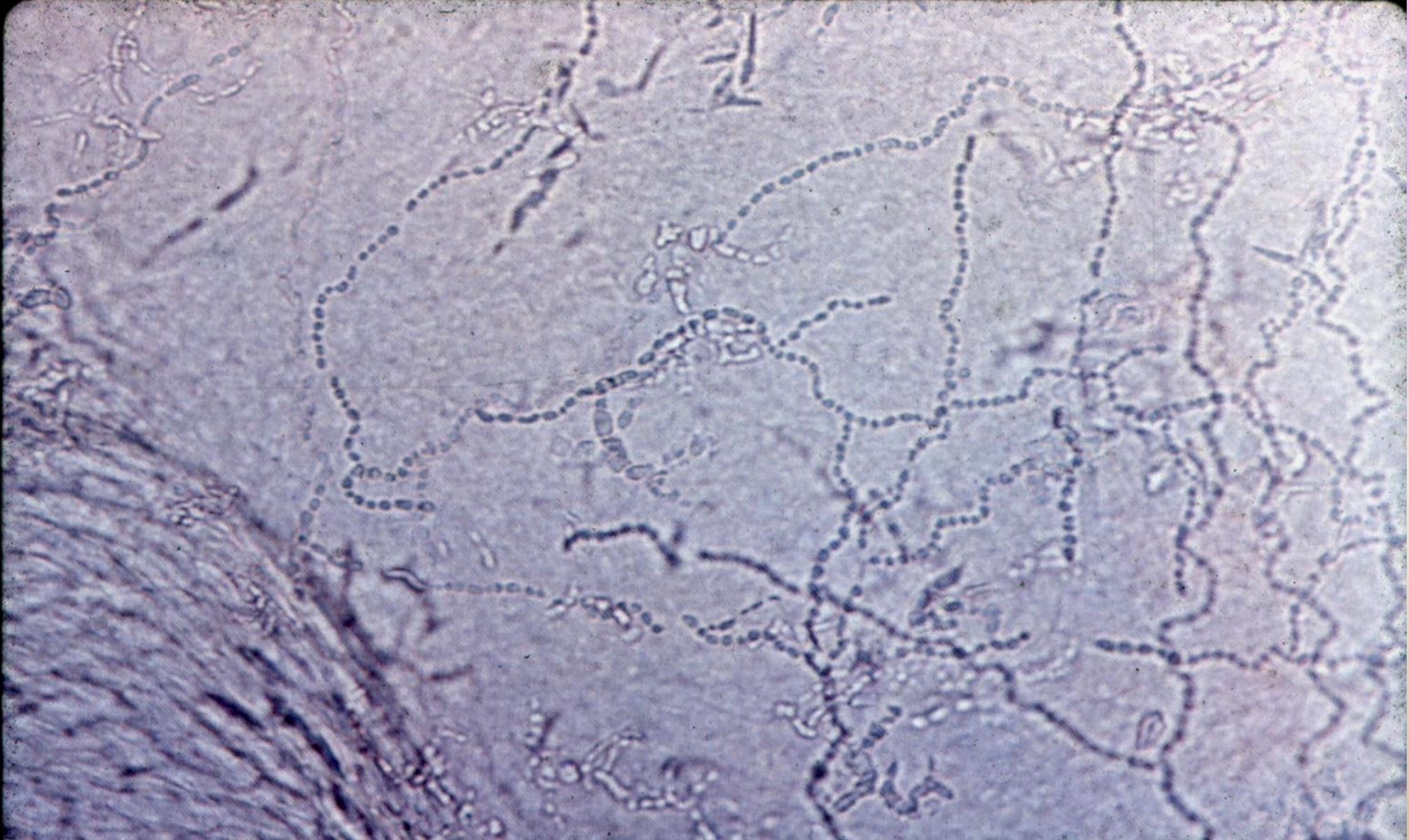
KOH smear



Tinea Capitis" Management

- Oral anti-fungals:

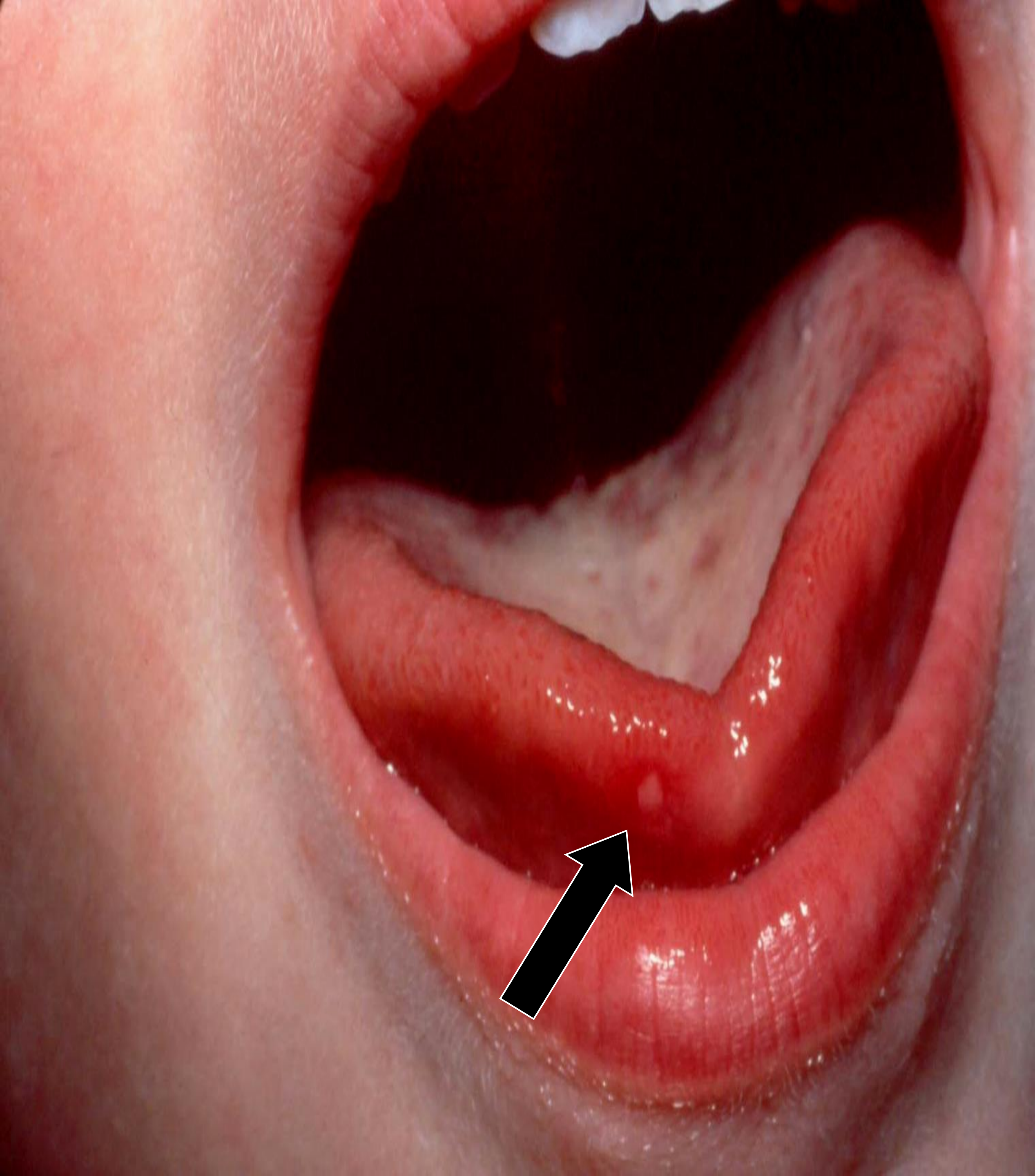
  1. Griseofulvin: 15-25 mkd (max: 1 g/d)

     6-12 weeks

  2. Terbinafine: 3-6 mkd

     face/body/scalp: 2-4 weeks

- Ketoconazole shampoo



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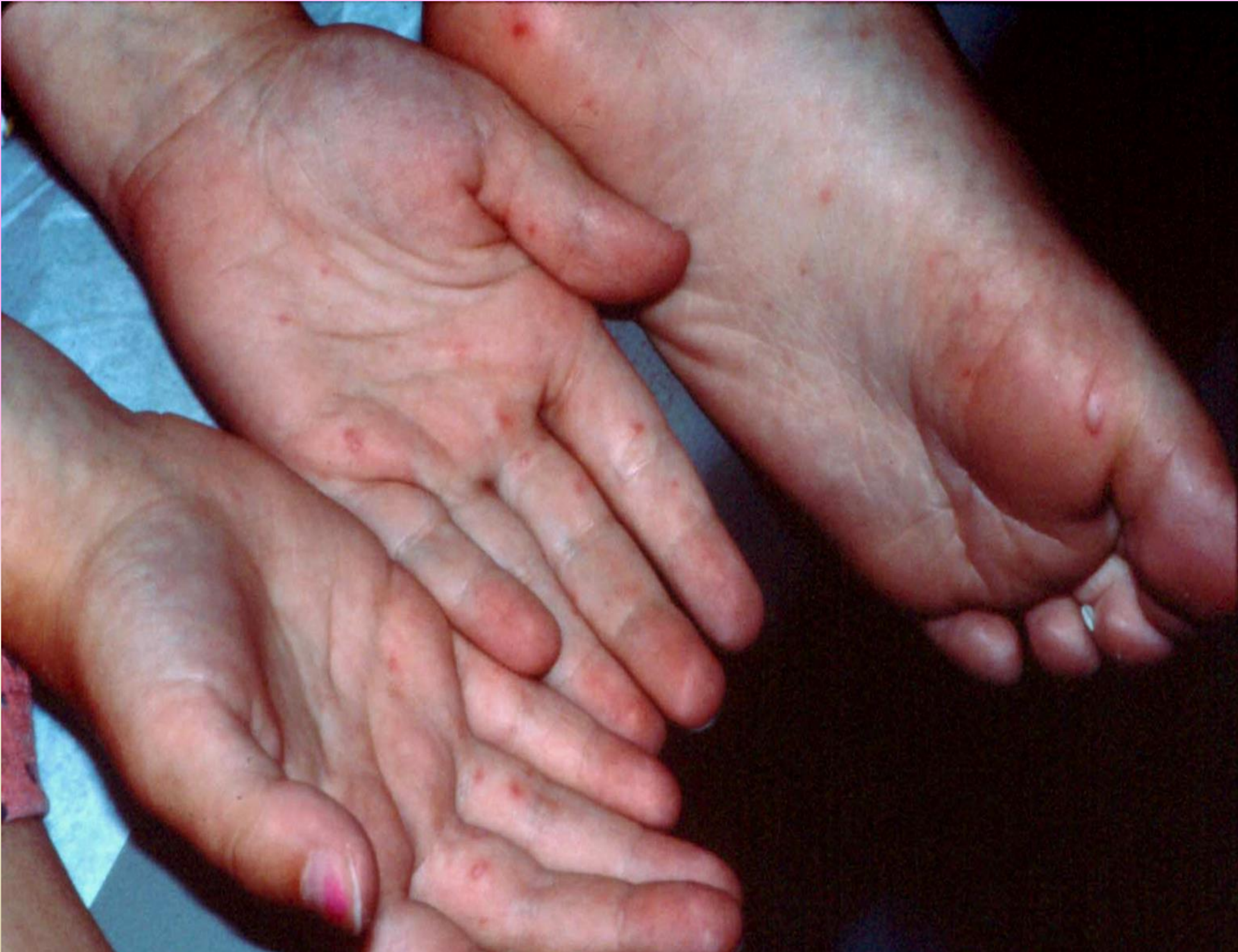
4 year old boy with shallow small ulcers on tongue

Has difficulty eating and with low grade fever

Similar lesions on hands, feet and buttocks

Diagnosis?????

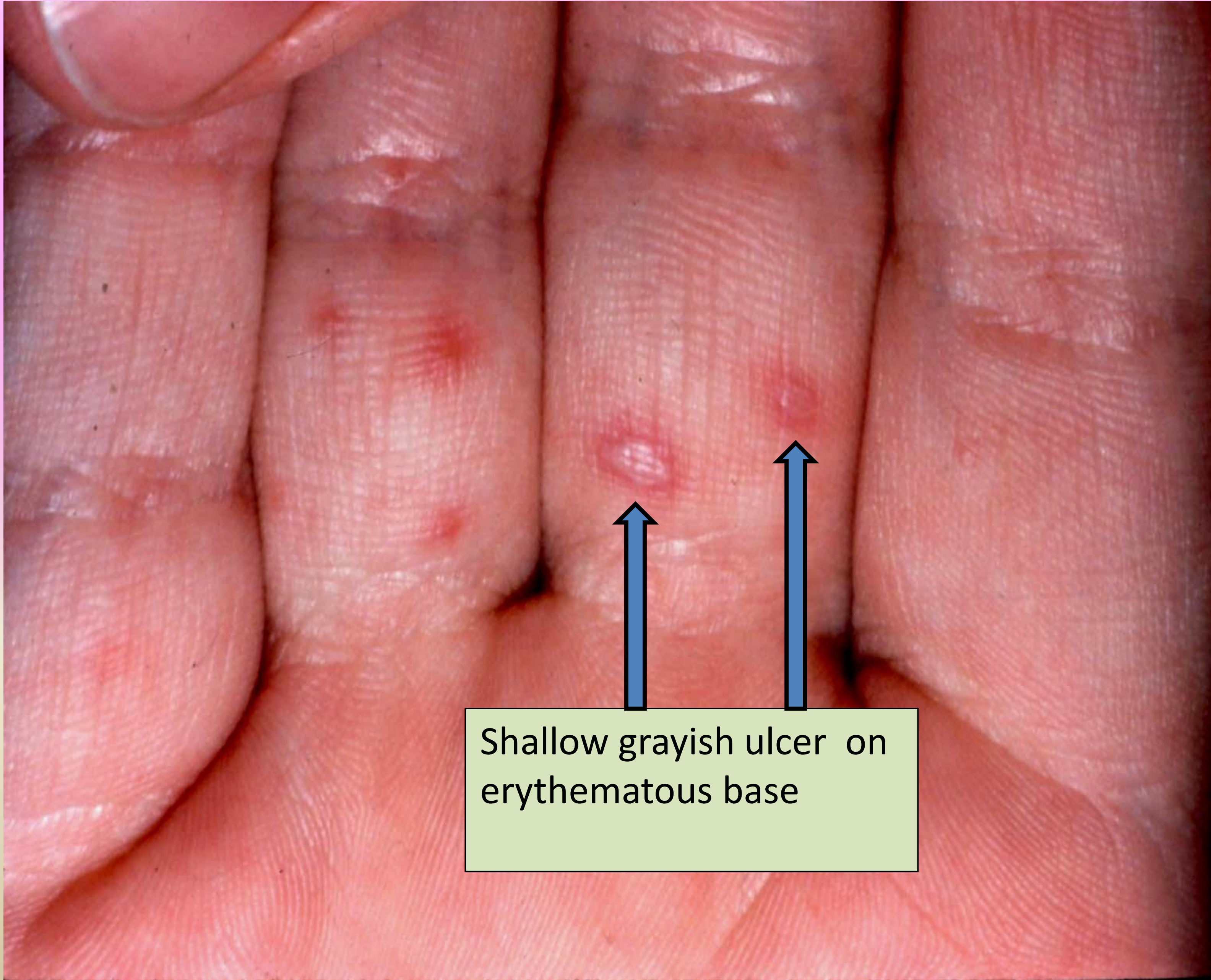


Courtesy of Dr. R. Romero-Francisco

Coxsackie A16 virus: Recognition: HFM

- Distinct pattern: **Hand, Foot and Mouth distribution**

  Lesions vary: maculopapular, roseola-like, urticarial, but most common is vesicular
- Usual evolution: erythematous small macules and papules → superficial gray vesicles on an erythematous base → some may ulcerate, leaving superficial scabs


Shallow grayish ulcer on
erythematous base

Coxsackie A16 virus: Recognition

- **Hand, Foot and Mouth disease**

  > areas involved: mouth, hands and feet, buttocks; may also be seen on face and extremities

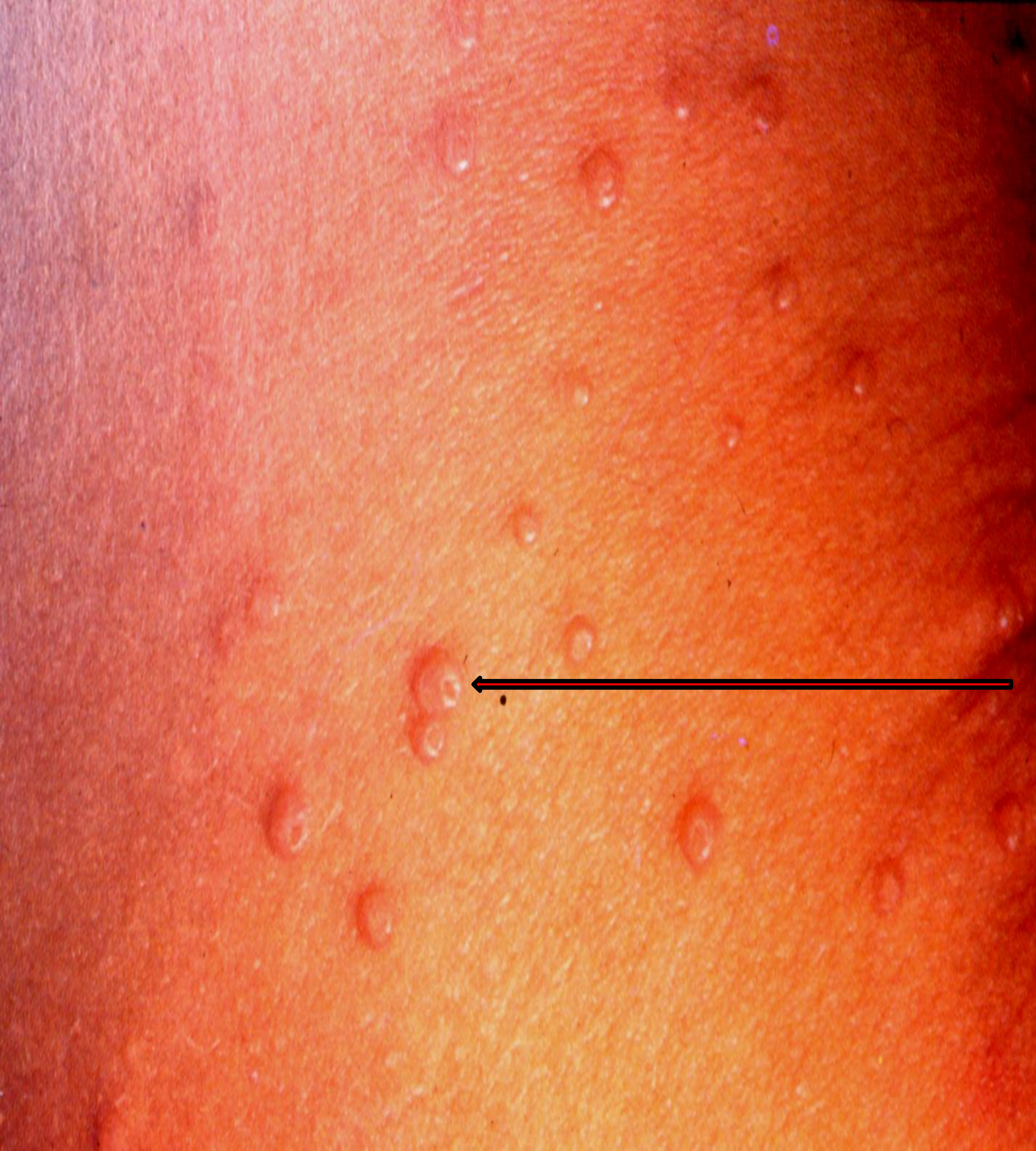
  > rash usually lasts for 2-7 days

  > (+/-) fever, sore mouth, anorexia, malaise, abdominal pain

5 year old child with multiple flesh colored papules on trunk

Asymptomatic but increasing in number

Diagnosis????



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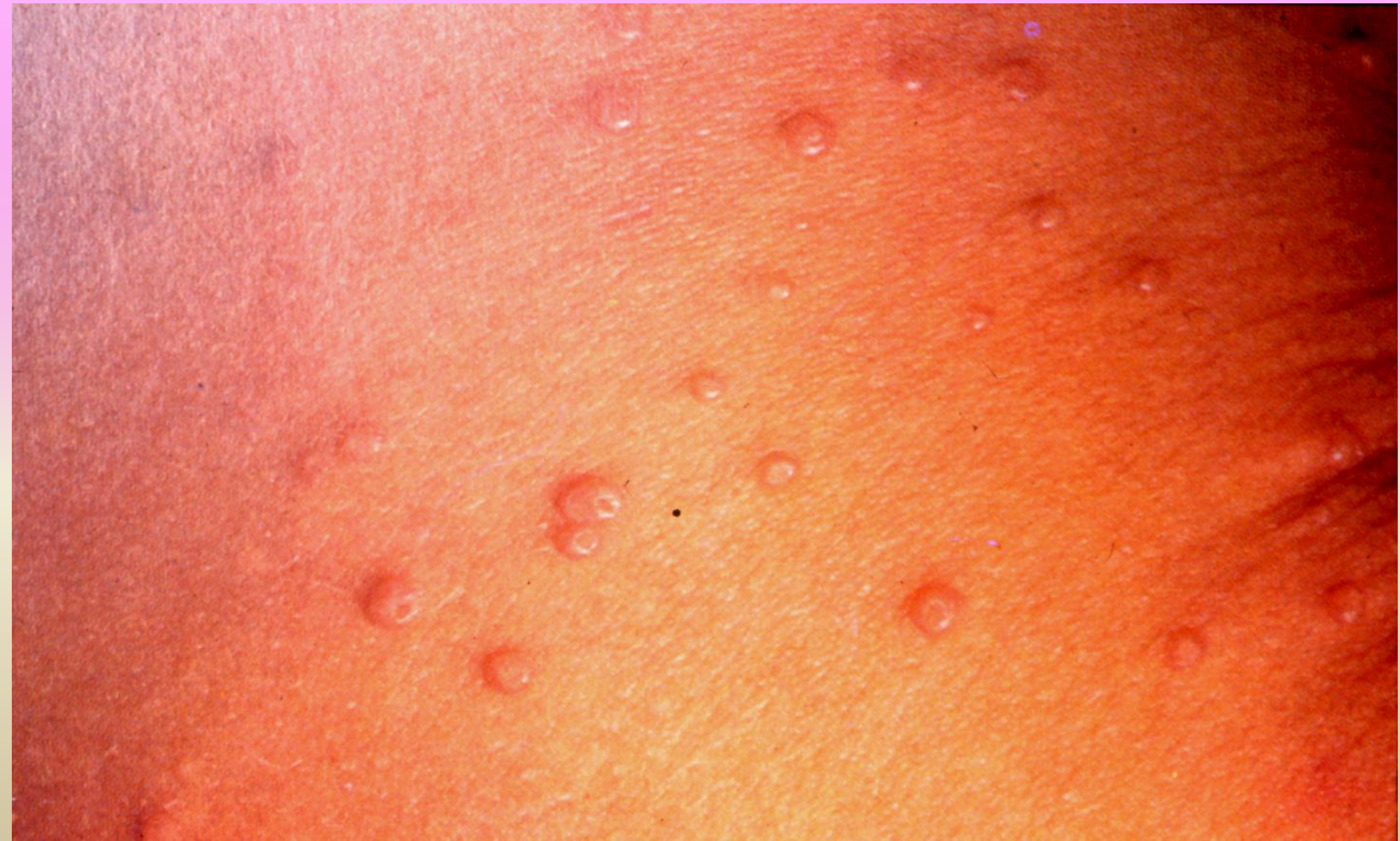
Molluscum Contagiosum

Note:

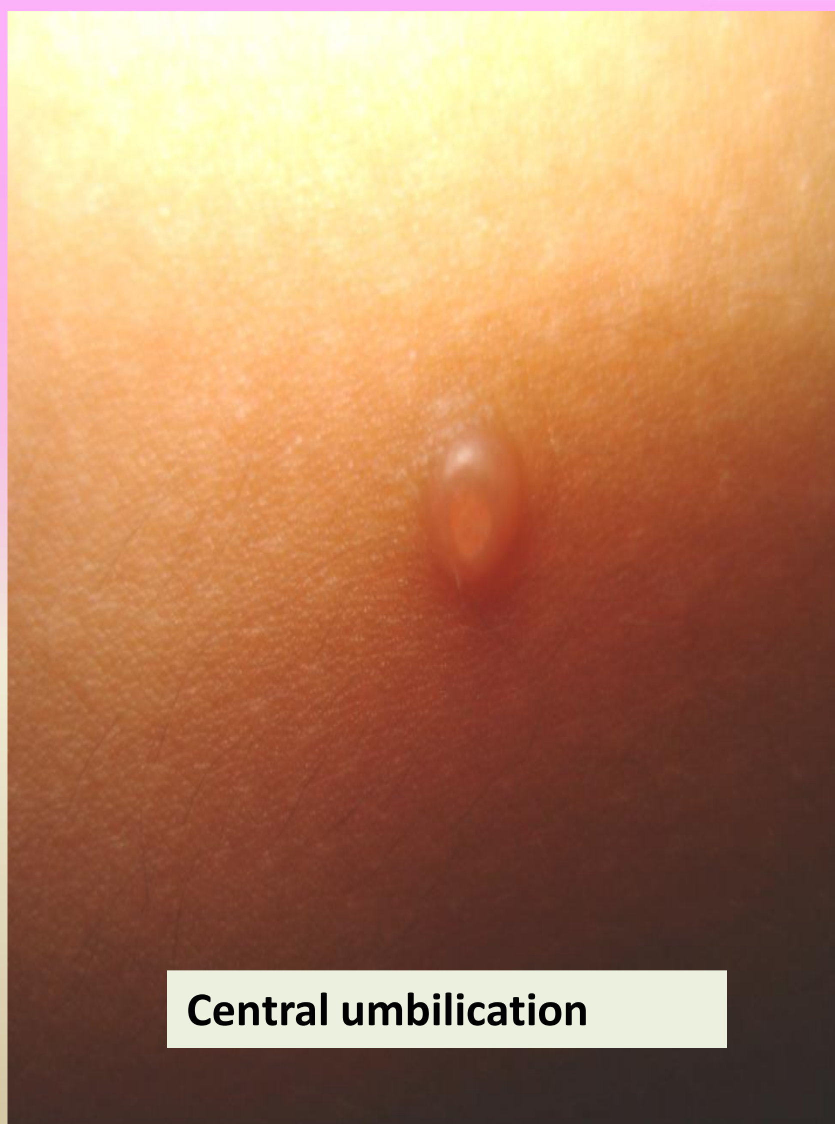
Flesh colored papules

Central umbilication

Not inflamed as a rule



Flesh colored papules



Molluscum contagious: Recognition

- Flesh colored to pinkish to pearly white discrete papules with central umbilication
- Most common areas: axillae, lateral trunk, lower abdomen, thighs, face
- May have a dermatitis in 10% of cases
- Etiologic agent: Molluscipox virus

Molluscum contagiosum: Management

- "Benign neglect": spontaneous resolution in 6-9 months
- May have a more persistent, progressive course

**Tx options:

1. Curettage
2. topical Cantharidin
3. Tretinoin cream
4. Imiquimod cream

Molluscum contagiosum: What can the Pediatrician do?

- Recognize
- Refer
- Please do not give topical steroids
- May try:
    1. Tretinoin or Imiquimod
    2. nail polish??!!

DERMATOLOGICAL INFECTIONS

BACTERIAL

- IMPETIGO/SSS
- FOLLICULITIS, FURUNCULOSIS

FUNGAL

- TINEA VERSICOLOR
- DERMATOPHYTOSIS
- CANDIDA

VIRAL

- HAND FOOT and MOUTH DISEASE
- MOLLUSCUM CONTAGIOSUM

THANK YOU FOR YOUR KIND ATTENTION