Occupational Skin Diseases

Presented by: Dr.Izadi

Introduction

- A skin disease that is caused by physical, biological or chemical factor in work.
- Also a worsening of pre-existing skin disease can be termed as occupational skin disease (Psoriasis , Acne)

Agents induced skin disorder

- **Chemicals**

Acids
Alkalis
Solvents
Oils
Detergents
Resins
Metals
Petroleum product
Plant & wood

- **Physicals**

Temperature
Ionizing radiation
Non ionizing radiation

- **Biologic**

Viruses (orf-wart-herpes)
Bacteria(anthrax-erisopeloid)
Fungi (candida-dermatophyte)
Parasites(scabies-schistosomiasis)

- **Mechanicals**

Pressure
Friction
Vibration

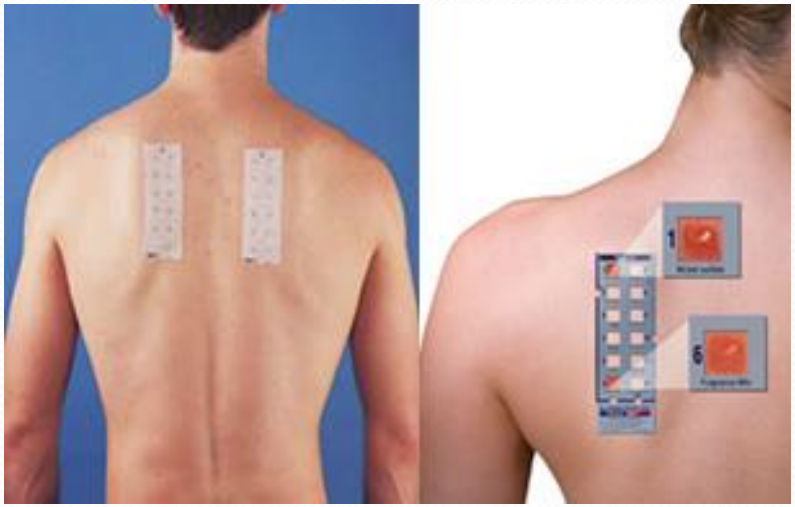
Causal occupations

- Machinery
  - Cutting oils
  - Solvents
- Metal products
  - Solvents
  - Metallic salts
- Electronic equipment
  - Solvents
  - Resin
- Food products
  - Fruits & vegetables
  - Soap & detergents
- Agriculture
  - Chemicals
  - Fruits
- Health services
  - Soap & detergents
  - Infectious agents

Diagnosis Of Occupational Skin Diseases

- History :occupational & personal history
- Physical examination
- Diagnostic techniques:

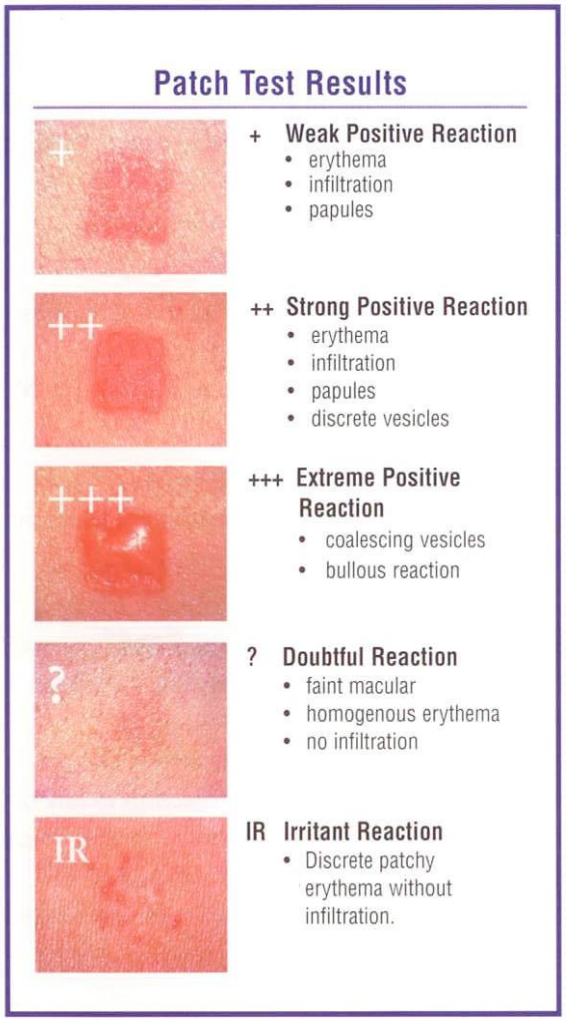
Patch test



Patch test

Patch Test Reading: Morphology Codes*

+/−	=	Macular erythema only
+	=	Weak (nonvesicular) reaction: erythema, infiltration, possibly papules
++	=	Strong (edematous or vesicular) reaction
+++	=	Extreme (spreading, bullous or ulcerative) reaction
IRR	=	Irritant morphologic appearance
−	=	Negative reaction
NT	=	Not tested



Contact urticaria test

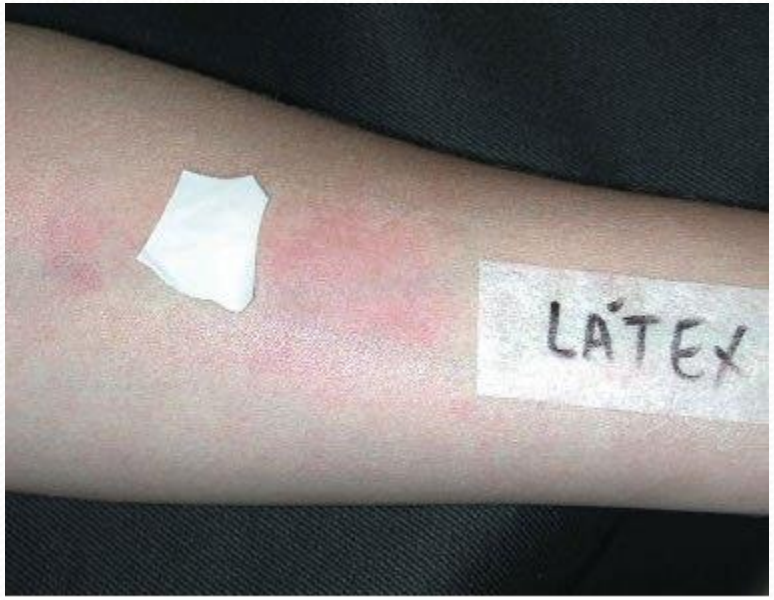


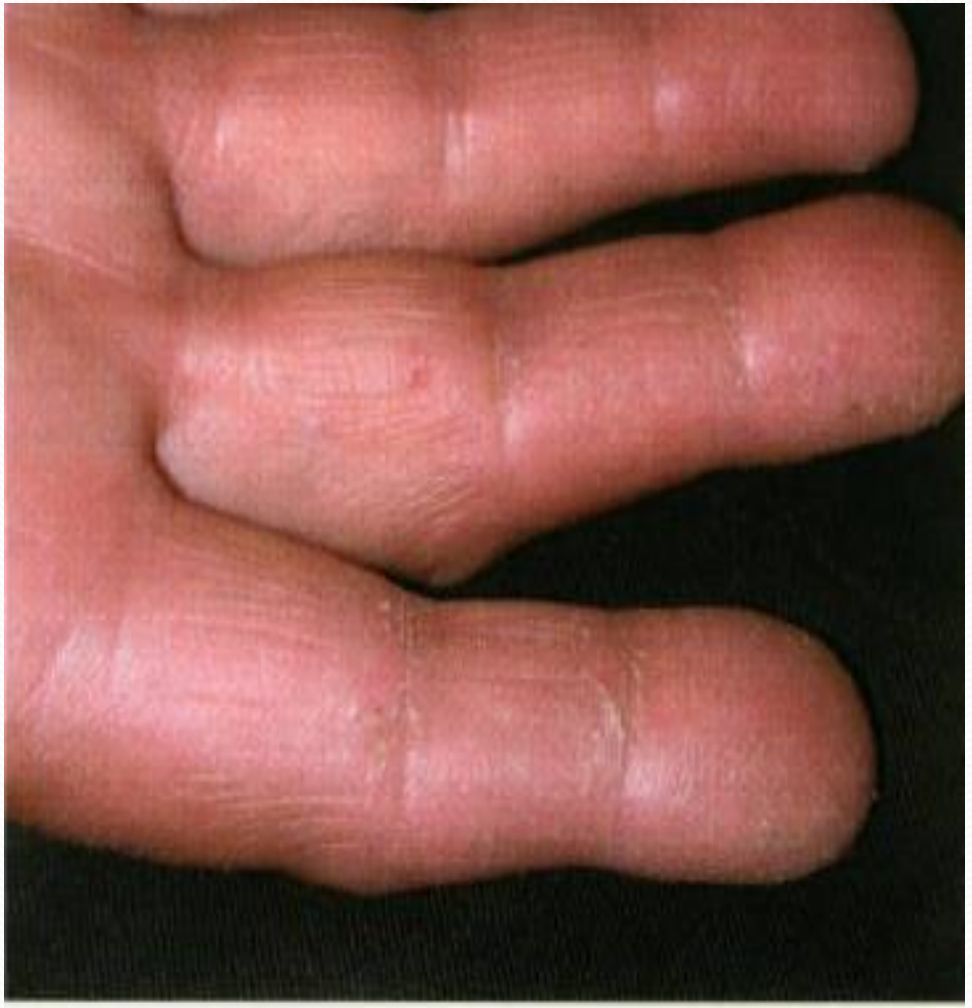
Photo patch test

Classification of Skin disease

- ***Occupational dermatitis***
- Occupational photosensitivity reactions
- Occupational phototoxicity reaction
- Occupational skin cancers
- Occupational contact urticaria
- Occupational acne
- Occupational skin infections
- Occupational pigmentary disorders

Erythema , dryness and itching on the right hand of a printer man

What is your diagnosis ?



Contact Dermatitis

- Occupational Contact dermatitis is an eczematous eruption caused by external agents:

1. Irritant substances that have a direct toxic effect on the skin (irritant contact dermatitis, ICD)

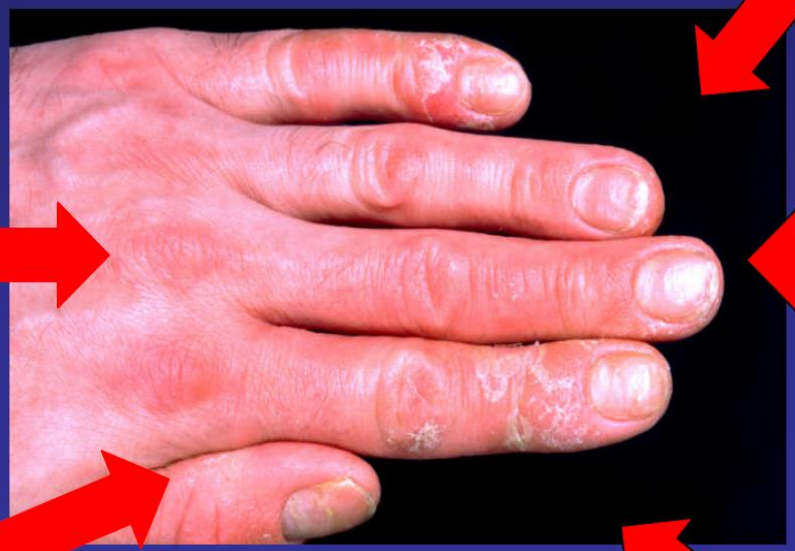
2. Allergic chemicals where immune delayed hypersensitivity reactions occur (allergic contact dermatitis, ACD).

Prognosis Of Occupational Dermatitis

- 25% complete recovery
- 25% refractory
- 50% remitting / relapsing

Influencing factors

- Constitutional factors
  - Atopic skin diathesis
  - History of:
  - Flexural eczema
  - Hand dermatitis
- Wet work
  - wet hands >2h/day
  - Occlusion by gloves
  - Frequent hand washing



Age, sex

High /low temperature

Chemical irritation

Mechanical irritation

How exposure can occur

Direct handling

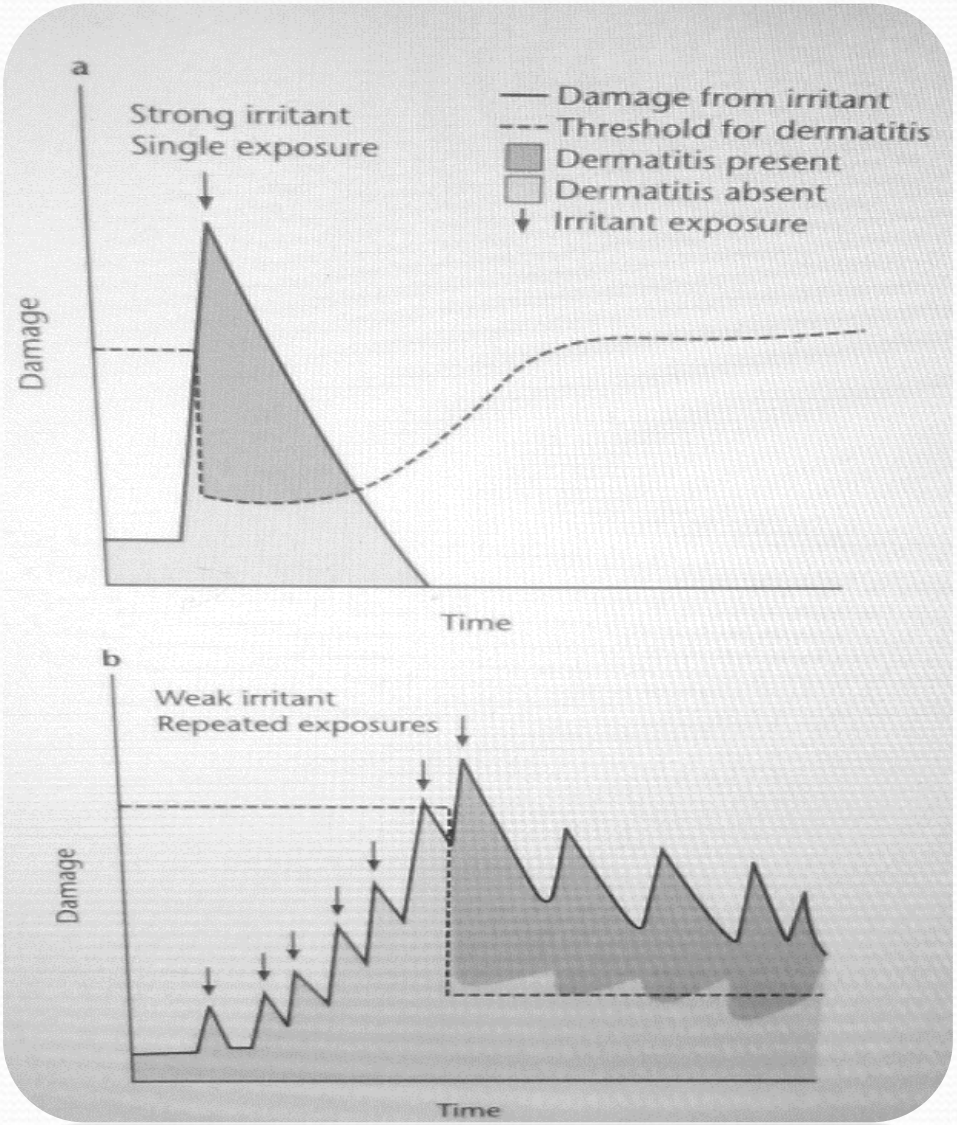
Contaminated surfaces

Splashing

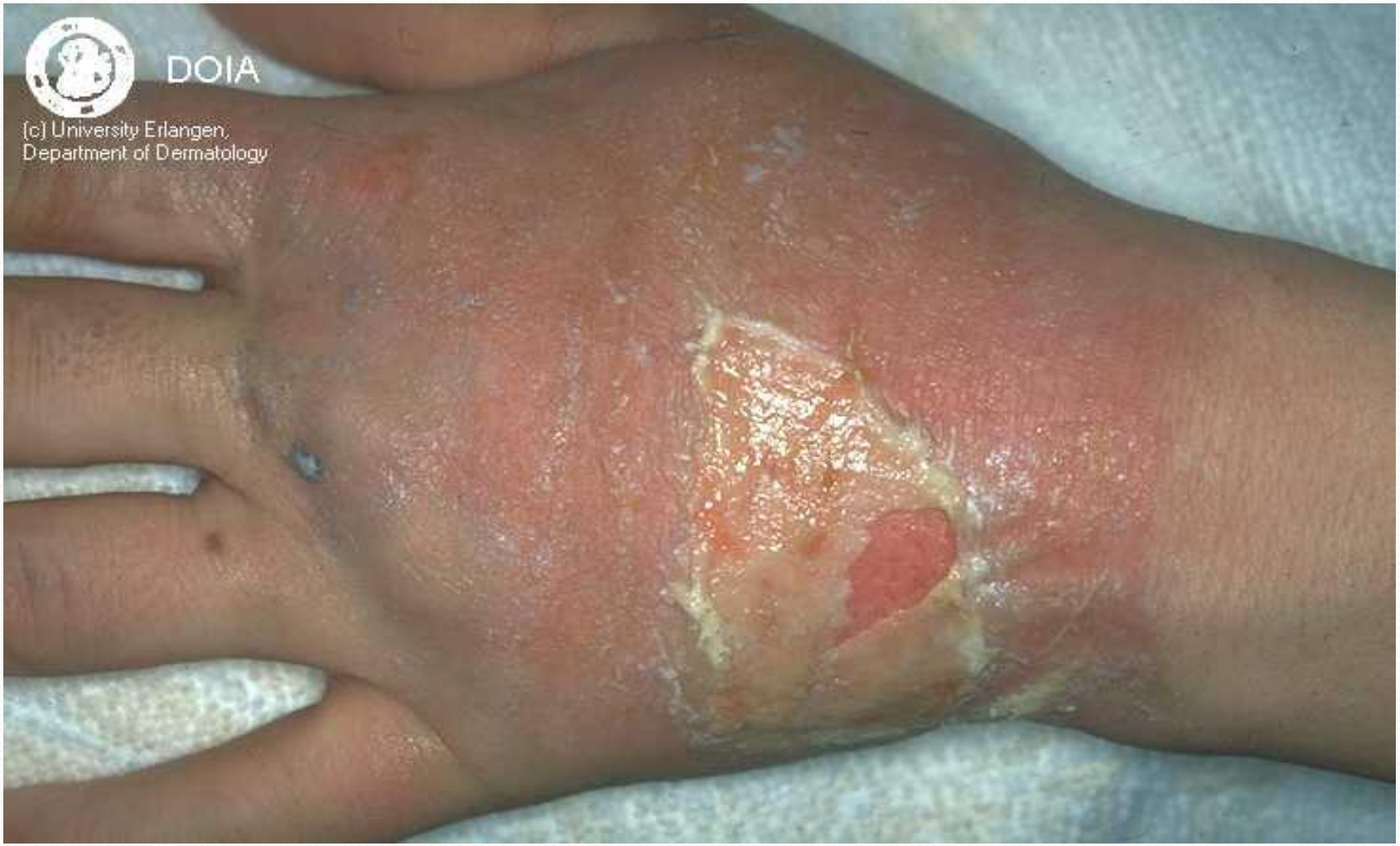
Immersion

Deposition

Pathogenesis



Acute Irritant Contact Dermatitis



Management of Acute ICD

1- Irrigation with water

2- Debridement of necrotic tissues

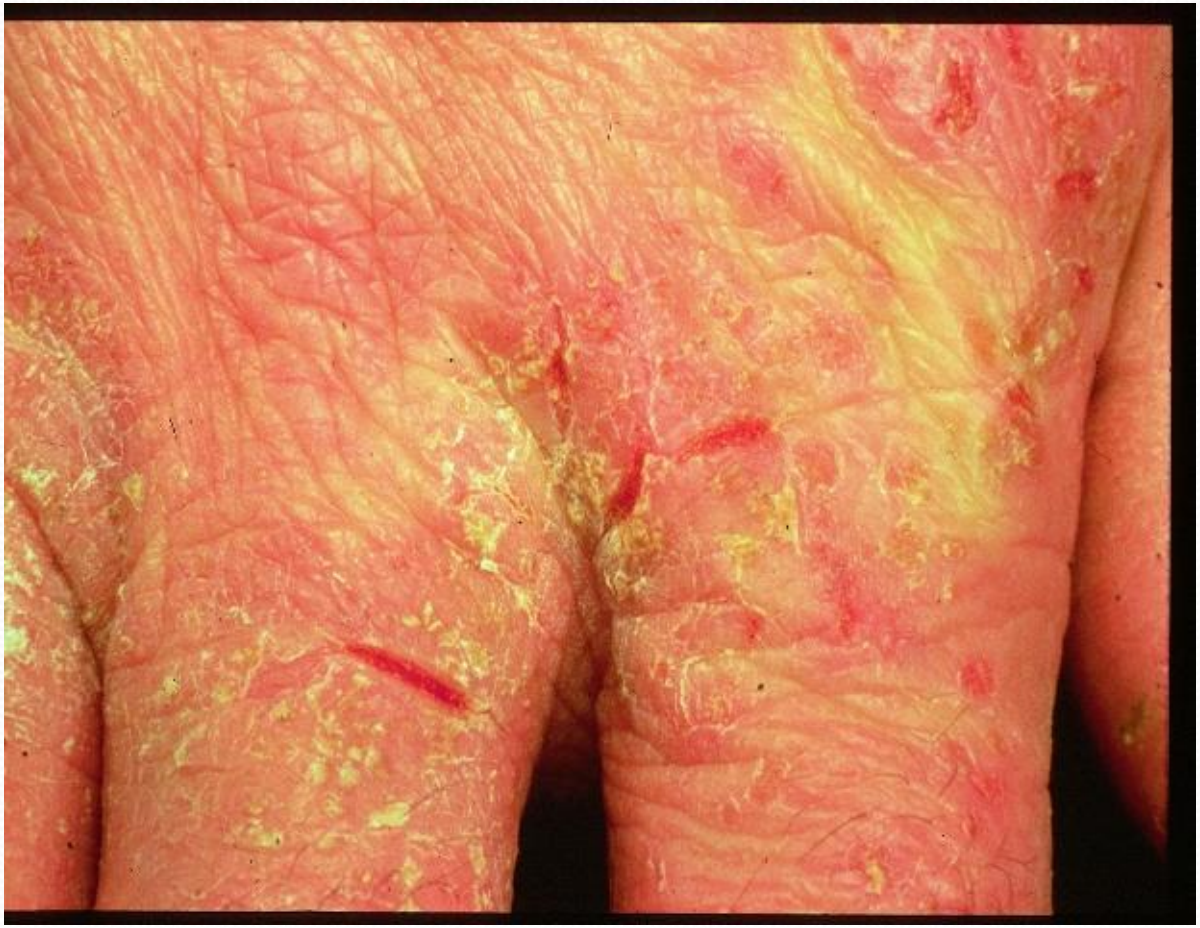
3- Deroofing of blisters

4-Oral antibiotic

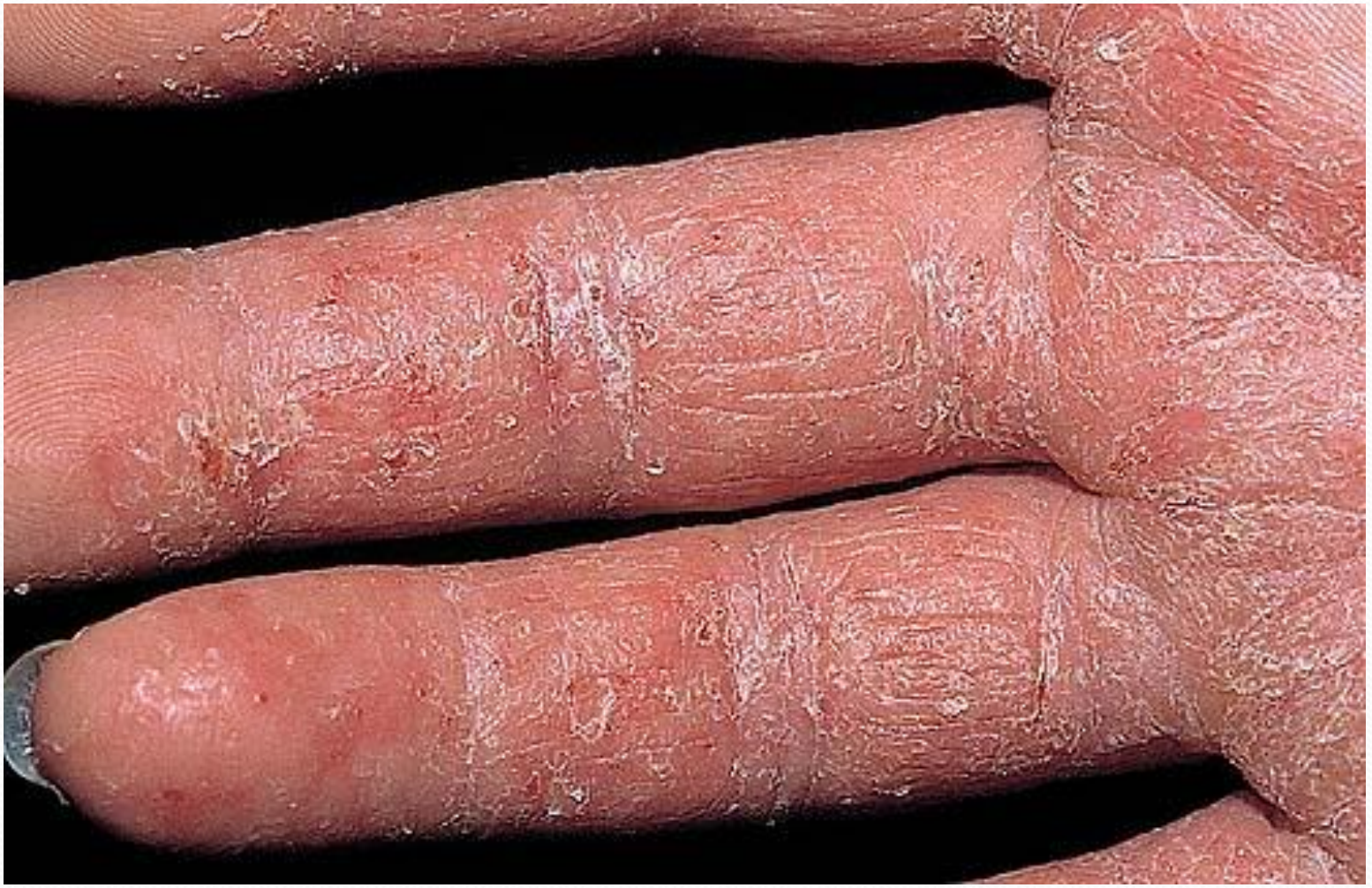
5- specific irrigation in some chemicals

- **Polyethylene glycol --- phenol**
- **Ascorbic acid 10% --- chromium**
- **CaNa2EDTA solution --- Cr & zinc chloride**
- **Sodium thiosulfate --- selenium**
- **Magnesium sulfate --- HF**
- **Sodium bicarbonate --- phosphorus**

Chronic Irritant Contact Dermatitis



Chronic Irritant Contact Dermatitis



Clinical Features Of contact Dermatitis

- Location
  - Skin disease **starts** on the area of contact.
    - Dorsal aspects of hands and finger
    - Volar aspects of arms
    - Interdigital webs
    - Medial aspect of thighs
    - Dorsal aspects of feet
  - May in face (forehead, eyelids, ears, neck) and arms due to airborne & volatile irritant chemicals.

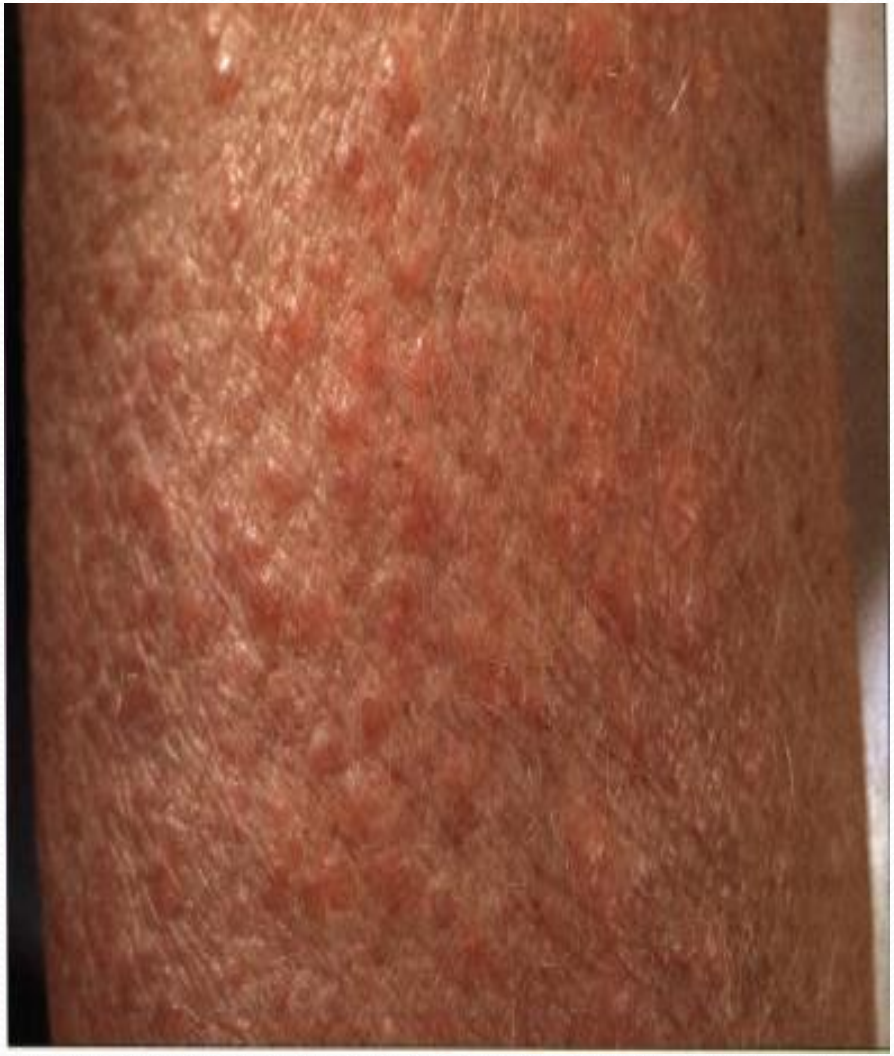
Management of chronic ICD

- Removal from exposure in active lesion
- Treating the active case
  - Topical corticosteroids, Emollients
- Second line (for steroid resistant cases):
  - Topical PUVA, Azathioprine, Cyclosporin

Protective cloths

A worker with itchy papules on his forearm

What is your diagnosis?



Fiber glass dermatitis

- Mechanism of skin injury is via direct penetration
- Pruritus and tingling are the usual initial symptoms
- erythematous papules develop on exposed areas when there is airborne exposure or on the forearms when there is contamination of a work surface.
- Paronychia is common and airborne exposure may also cause burning eyes, sore throat and cough

Diagnosis :

- Clinical findings
- Confirmed by finding the fibers on tape stripping (KOH 20%).

Course:

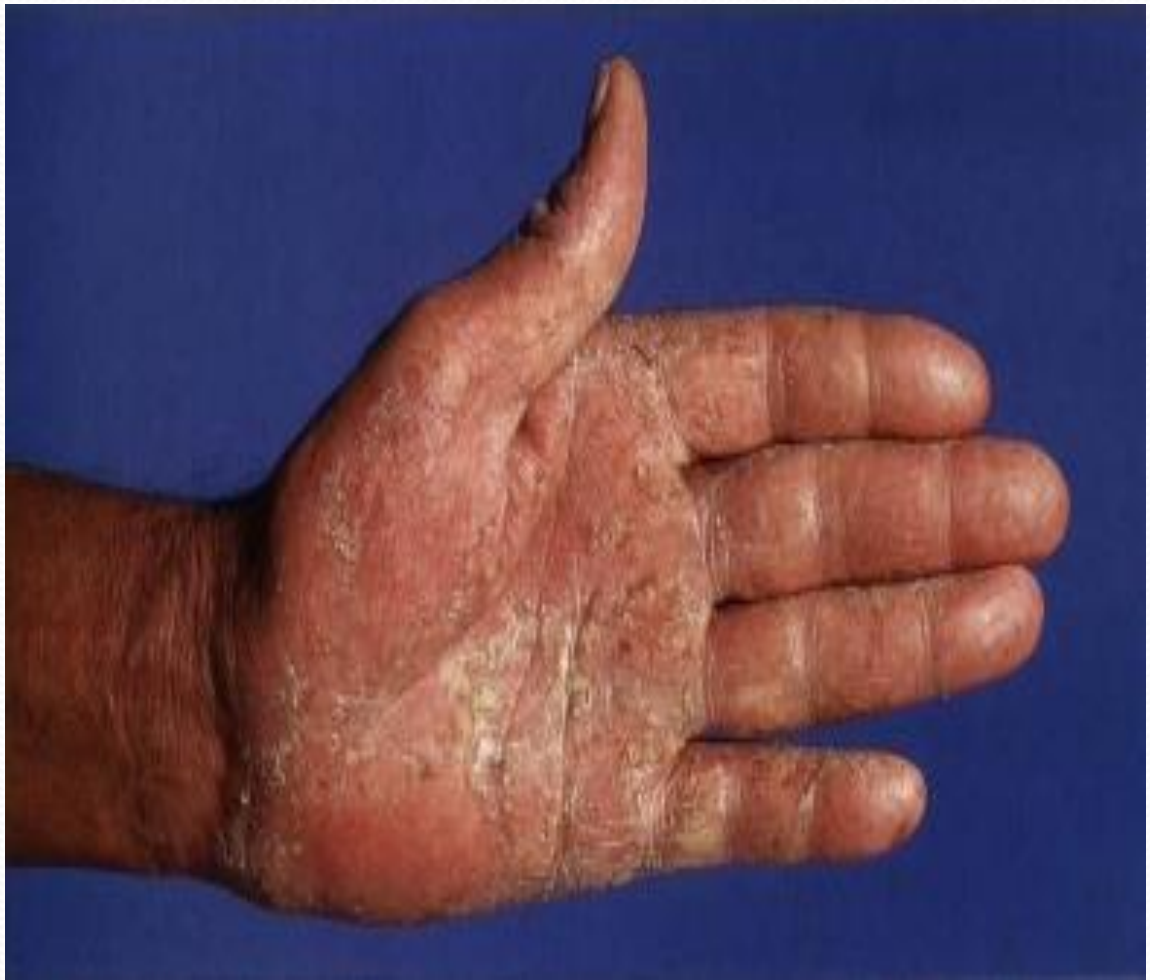
- Resolves rapidly after cessation of exposure.
- gentle washing of exposed sites with nonabrasive soap and water.

Prevention

- loose clothing with long sleeves and pants
- avoid rubbing the skin
- wash work clothes separately
- Careful skin cleaning after working with fiberglass use of skin emollients

A builder man presented with erythema , scaling and pruritus on his hands

What is your diagnosis ?



Allergic Contact Dermatitis

- classical Type IV reaction
- Classification:
- Acute
- chronic

Allergic contact dermatitis

- **The most common causes of an occupational allergic contact dermatitis are:**

1- rubber (23.4%)
2- nickel (18.2%)
3- epoxy and other resins (15.6%)
4- aromatic amines (8.6%)
5- chromate (8.1%)
6- cosmetics (8.0%)
7- preservatives (7.3%)
8-fragrances

Clinical Features (Acute)

- Rash appears in areas exposed to the sensitizing agent, usually asymmetric or unilateral.
- Id-reaction , autho sensitization
- The rash is characterized by erythema, vesicles & sever edema.
- 1-2 days after exposure & recover till 2 weeks.

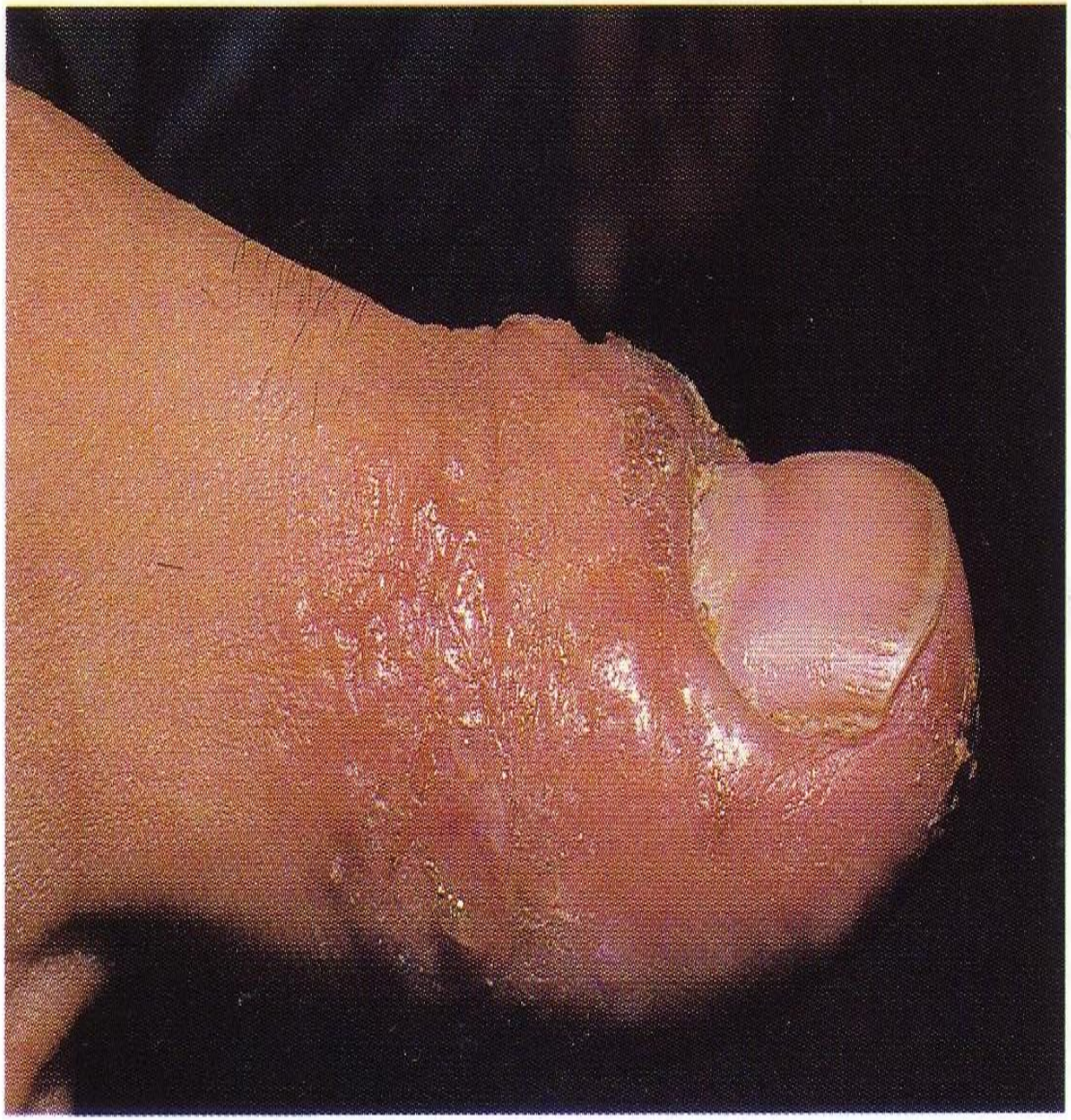


Figure 1.3 *Allergic:* This is a classic example of allergic contact dermatitis, showing typical clinical lesions, with vesicles, blisters and exudation.

Clinical Features (Chronic)

- Erythematous, fissured, lichenified skin with scaling
- The most common sites:
  - Dorsal aspect of hands
  - Eyelids
  - periorbital

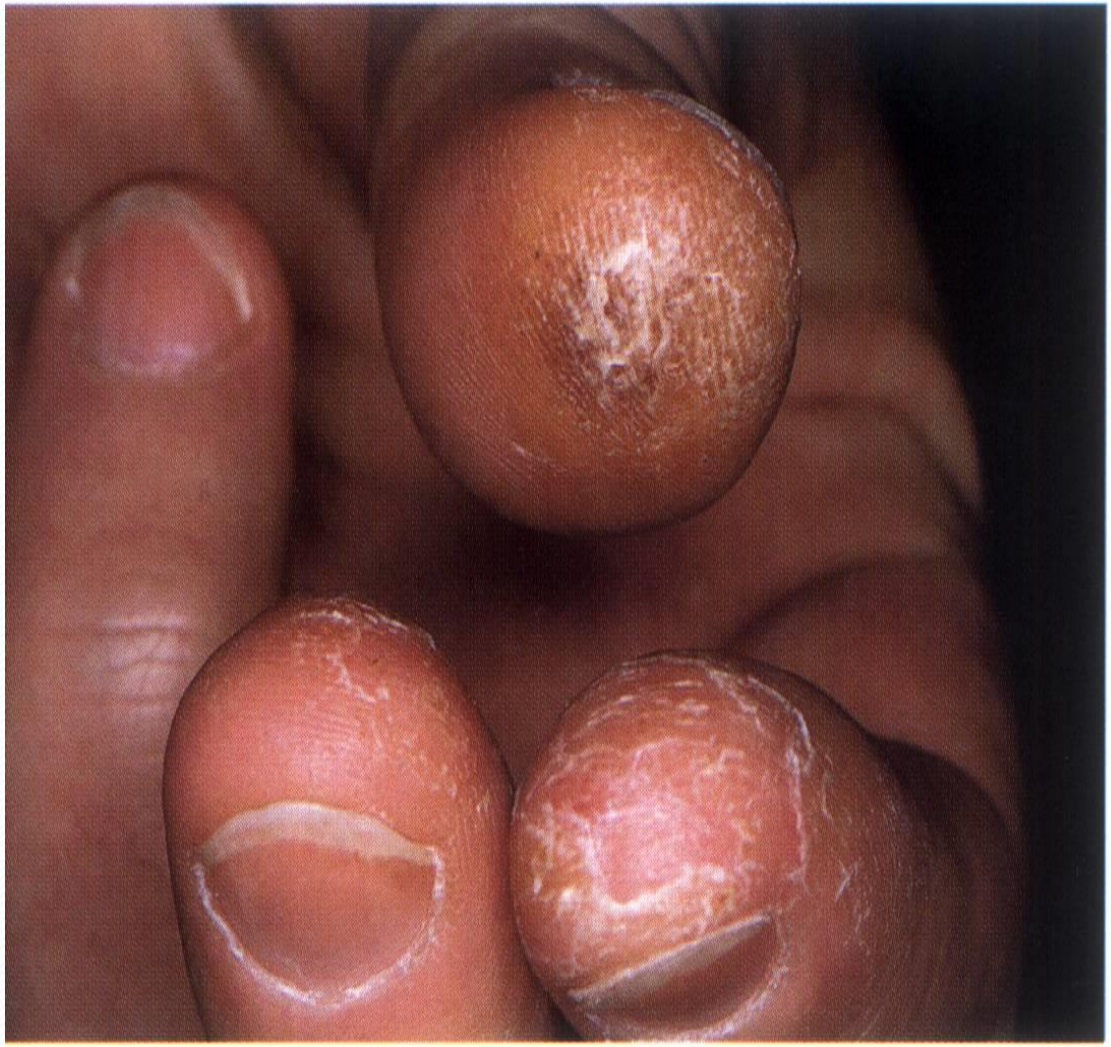


Figure 4.66 The tips of the fingers can be the exclusive site of allergic contact dermatitis, as seen in this dentist because of the nature of his exposure to acrylates. Florists may develop a nearly identical fingertip eruption from *Alstroemeria* plants (van Ketel et al, 1975). Working with tulip bulbs can likewise cause a fingertip eruption, and both garlic and onion can also produce this picture (Sinha et al, 1977). (See also Figures 7.92–7.95.)

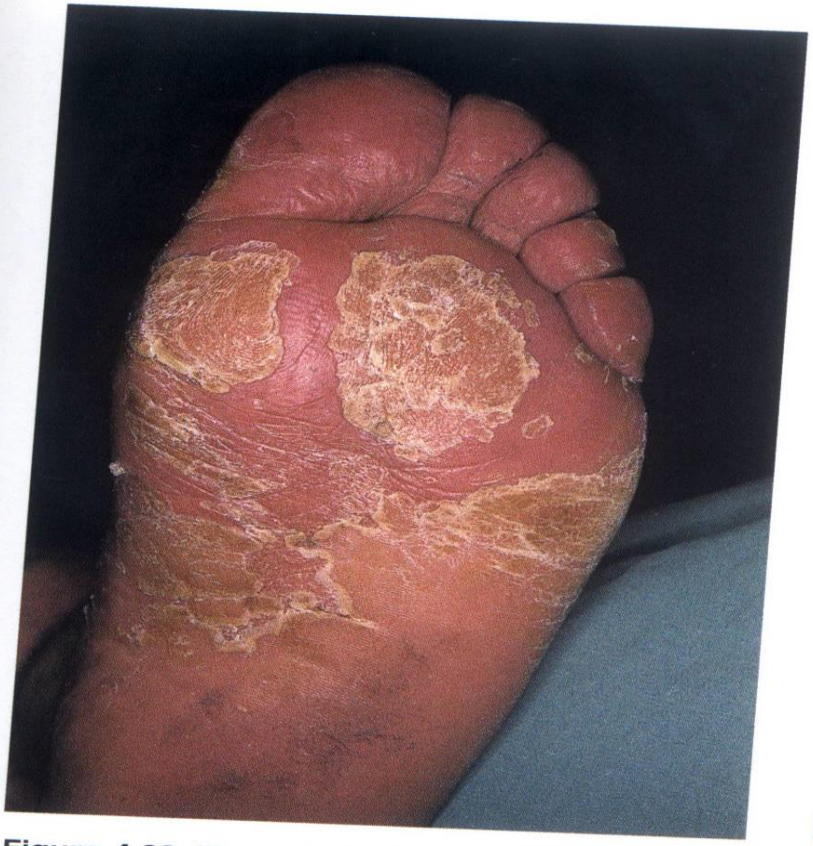


Figure 4.99 The rubber insole of the black rubber boots worn by a construction worker was responsible for this plantar dermatitis. The allergens proved to be the antioxidants added to the insole: *N*-isopropyl-*N*′-phenyl-*p*-phenylene-diamine (IPPD) and cyclohexyl-phenyl-paraphenylenediamine (CPPD).

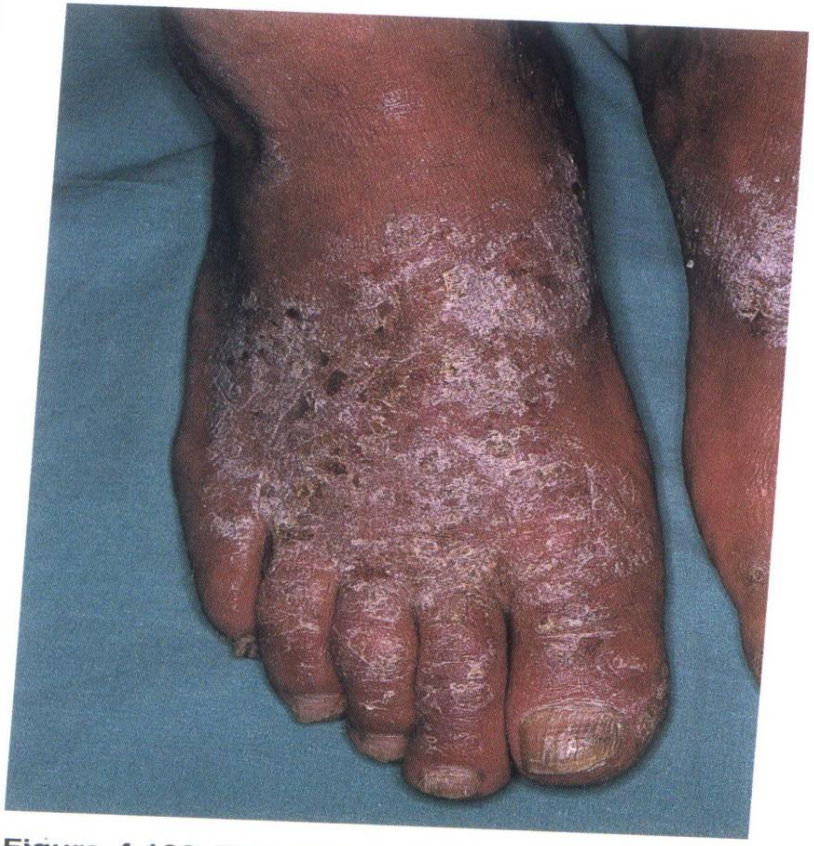


Figure 4.100 This chronic dermatitis on the dorsum of the foot was caused by chromate contained in the leather of Spanish-manufactured footware.

Diagnosis

- Complete history
  - Occupational
  - Non-occupational
- Physical examination
- Patch test

Prevention

Screening patch tests ?

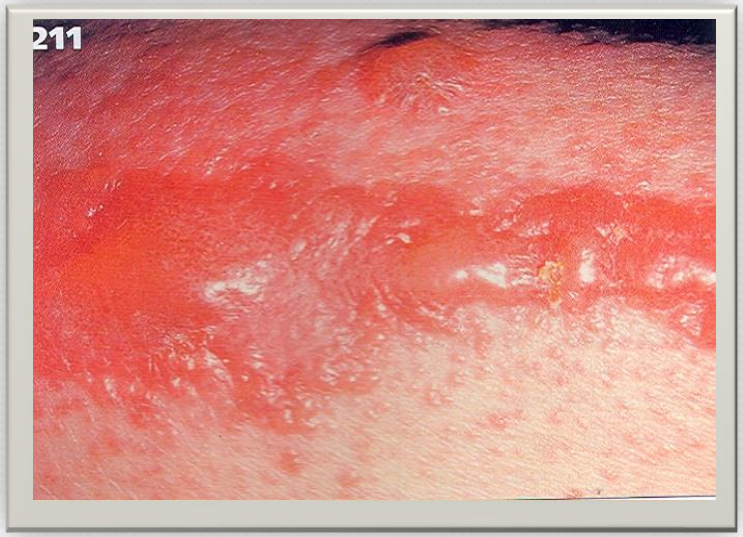
- An allergy may develop later
- There is a risk of sensitizing the individual to the substance

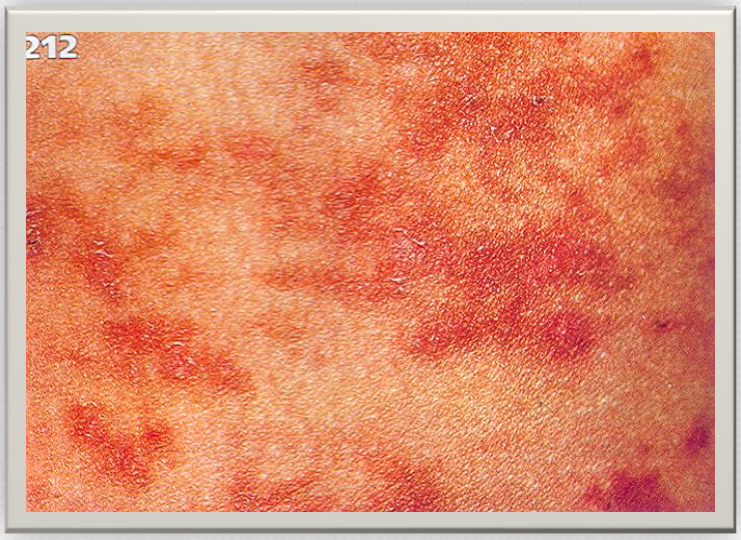
- Protective clothing can be useful in minimizing skin contact with an allergen if:

  the clothing (such as gloves) is properly worn

Erythematous bullous reaction on the elbow of a gardener and hyperpigmentation after resolving this eruption.

What is your diagnosis?





Contact photo dermatitis

- Some chemicals may cause CD only in the presence of light.

- Sunlight or artificial light sources that emit specific wavelengths.
- 2 categories:

  -phototoxic

  -photo allergic

Photo toxic

- Coal-tar
- Dyes (Eosin)
- Drug
  -phenothiazine
  -sulfonamides
- Plants derivative
  -lemon

Photo allergic

- Antifungal agents
- Fragrances
- Phenothiazine
- Sunscreens
- Whiteners

Clinical course

- Phototoxic:

  - painful , exaggerated sunburn that may develop bullae and pigmentation

  -by avoiding the agent, dermatitis usually disappears promptly.

- Photo-allergic:

  - many of the features of ACD (itching , vesicles)

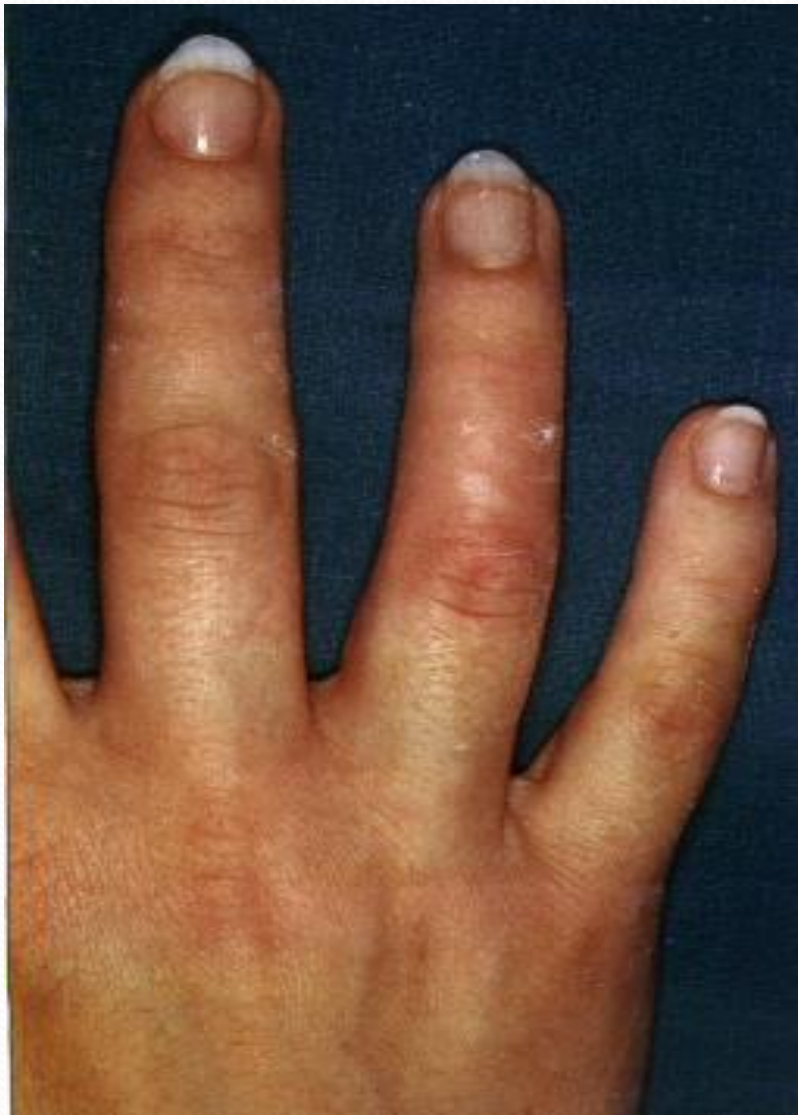
Where involved ?

- Exposed areas:
- face, ant. V of the neck, back of the hand, uncovered sites on the arm & leg

- Hairy areas, upper eyelids, and below the chin may be spared

Erythematous patches with tingling on the fingers of a health worker

What is your diagnosis ?



Contact urticaria (due to latex)

- Develop a few to 60 min & resolves within 24 hr
- Pruritus and wheal-and-flare reaction
- Allergic(IgE): latex
- Non allergic: vasoactive

Occupational Causes

- Latex allergy
- Formaldehyde
- Food industry
  - Plants
  - Vegetables
  - Animal products
- Pharmaceutical industry
  - Streptomycin

Management of contact urticaria

Dx:

- **Use test**
- **Skin Prick test**

- ✓ Avoidance
- ✓ Systemic antihistamines & epinephrine
- ✓ use of personal protective equipment
- ✓ use of powder-free gloves ,latex desensitization

Occupational Acne

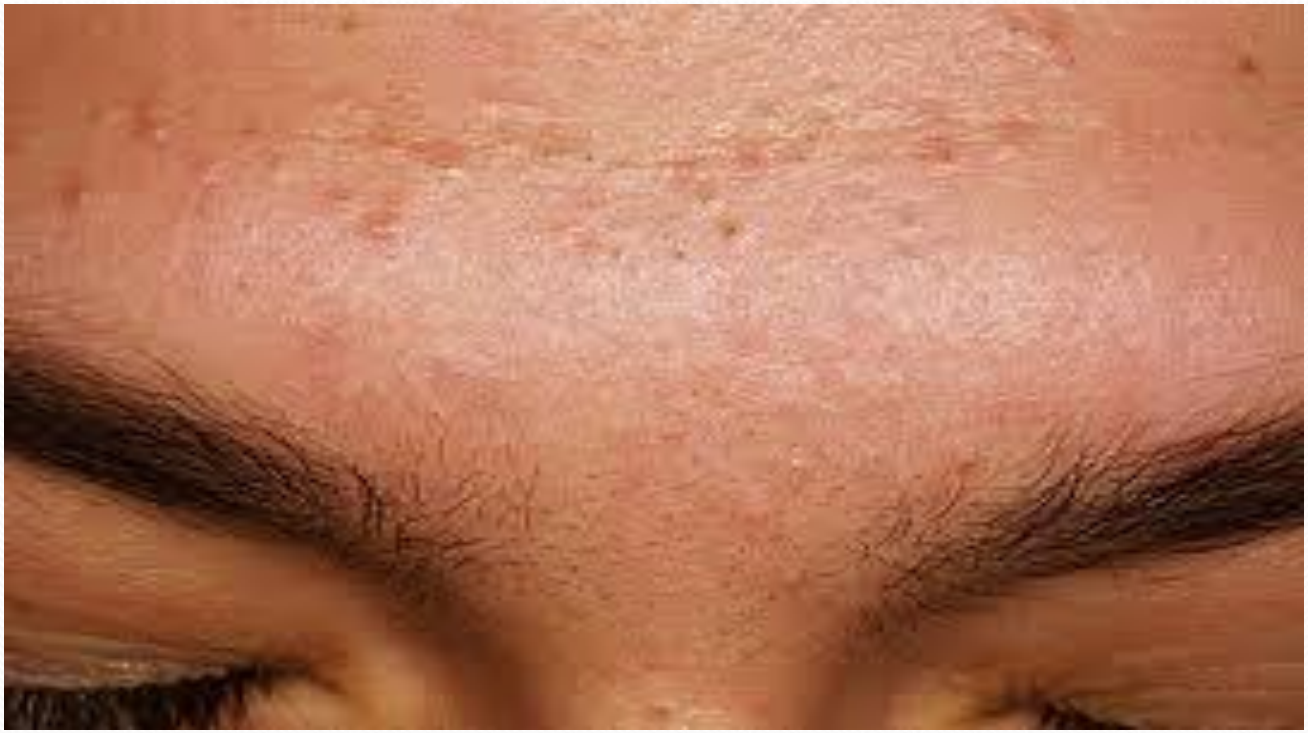
Environmental Acne

- Preexisting acne vulgaris may be aggravated by various occupational stress

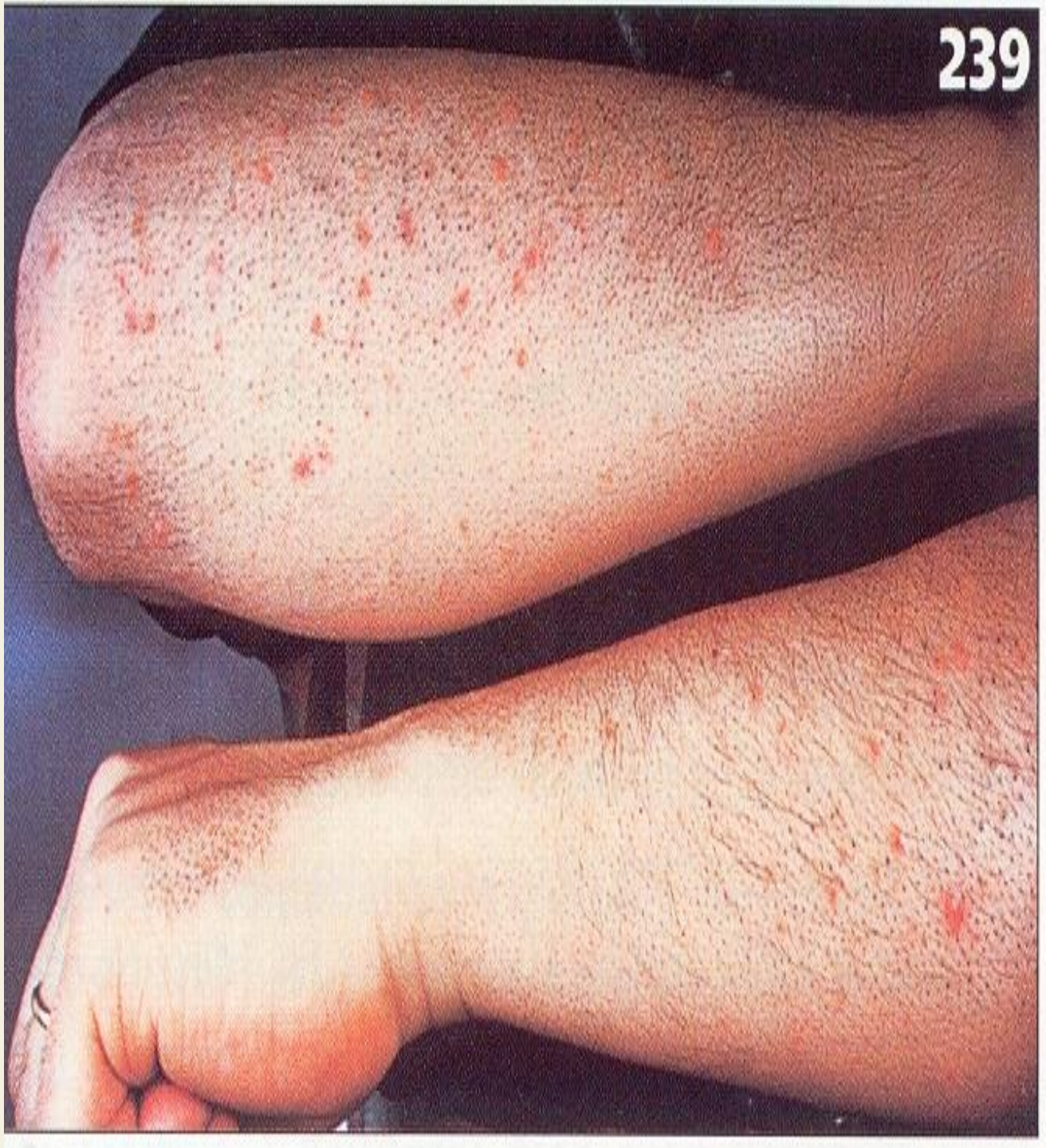
1-Tropical acne: acne prone individuals employed in tropical climates

2-Acne mechanica: tight fitting work clothing ,pressure from seat belt

Acne vulgaris



Oil acne



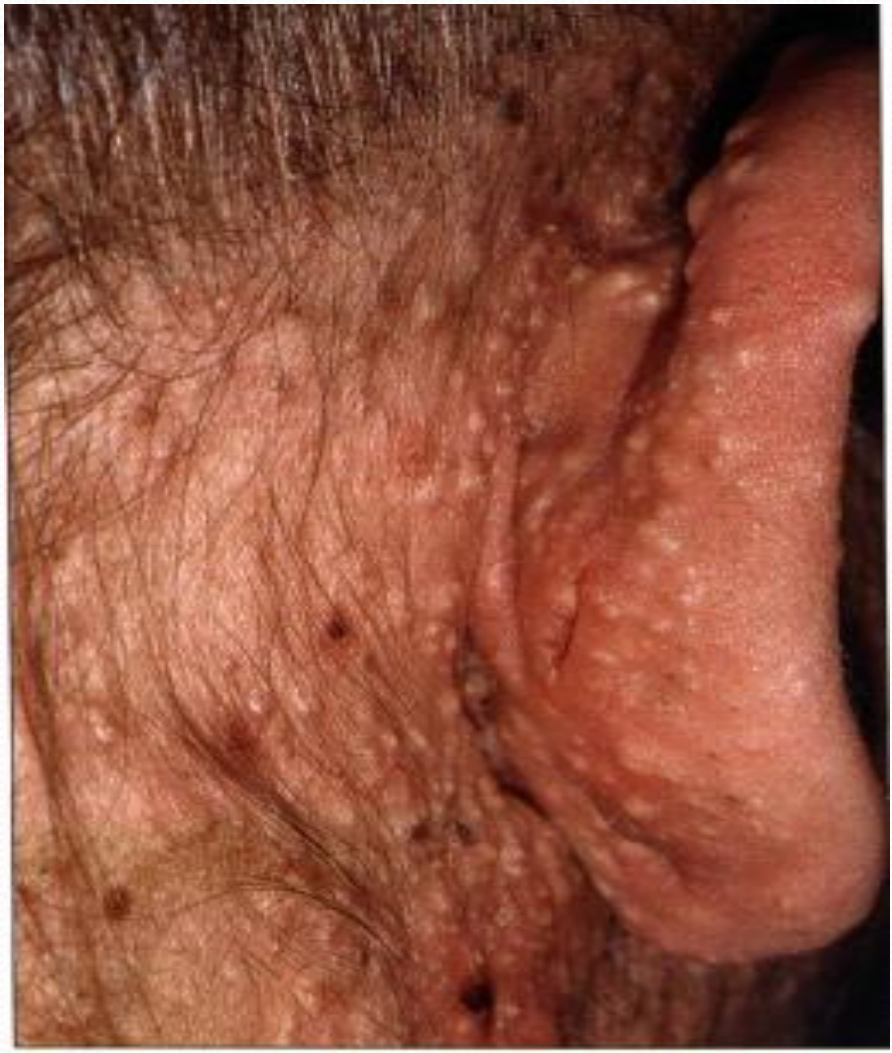
Oil Acne

Occupation at risk

- Machinist
- Oil field worker
- Rubber worker
- Roofers
- Road maintenance workers

A worker man with numerous retroauricular comedones and cysts

What is your diagnosis?



Chloracne

- Caused by polychlorinated or poly brominated aromatic hydrocarbons (halogen acne)

- Noninflammatory comedones and cysts in malar crescents and posterior auricular folds.

Chloracne

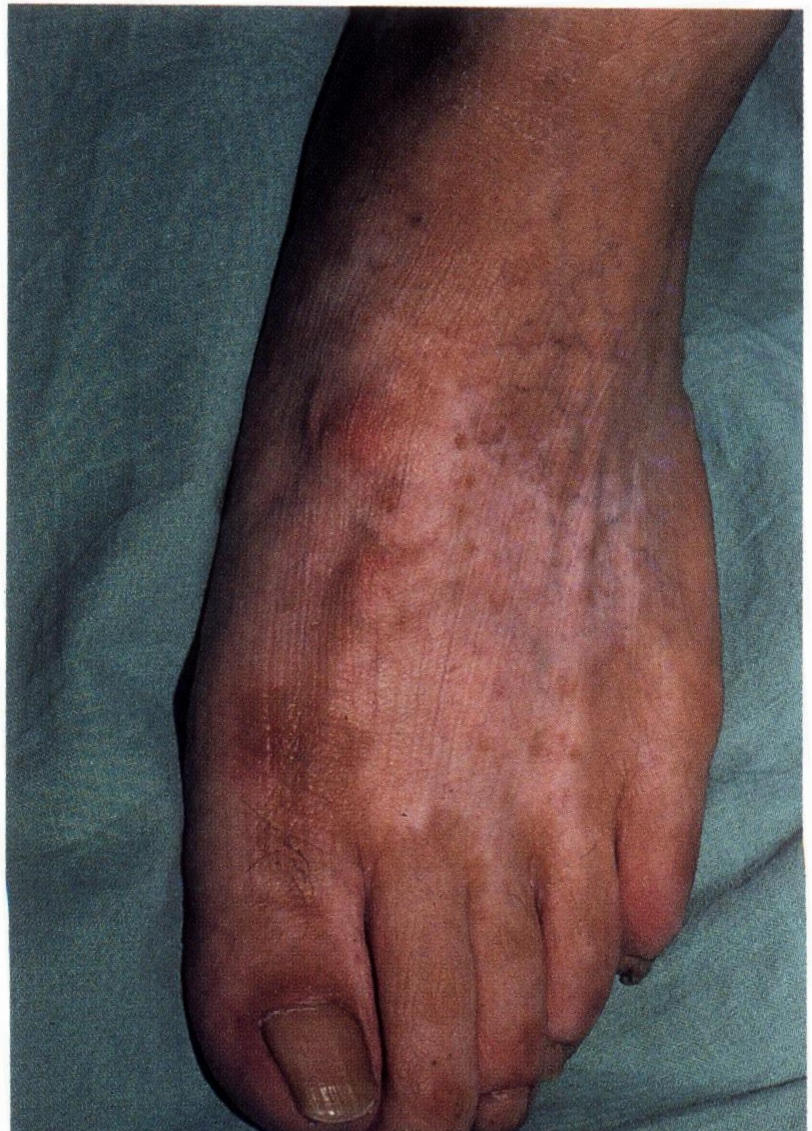
- Occupation at risk
  - Workers in production of pesticides, herbicides
  - Electrical workers exposed to PCB (transformer oil)

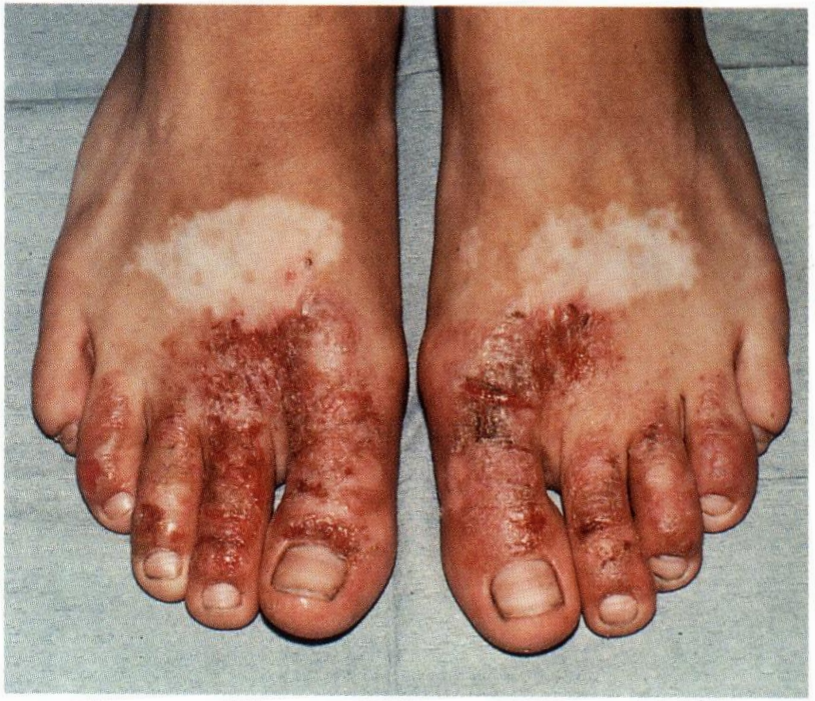
Differential Features of Acne

	Age	Distribution	Clinical feature	Associated condition
Oil acne	**Any age**	**Exposed area**	**Open comedones, Postules**	**None**
Acne vulgaris	**11-20yr**	**Face ,Neck Chest**	**Open & closed Comedones Papules, Postules Cysts, Scar**	**None**
Chloracne	**Any age**	**Malar Crescent Auricular Creases, Axillae, Groin** Nose spared	**Open & closed Comedones, Straw Colored Cysts**	**Xerosis, Conjunctivitis, Pheripheral Neuritis, Liver Abnormalities**

Pigmentary disorder

Leukoderma

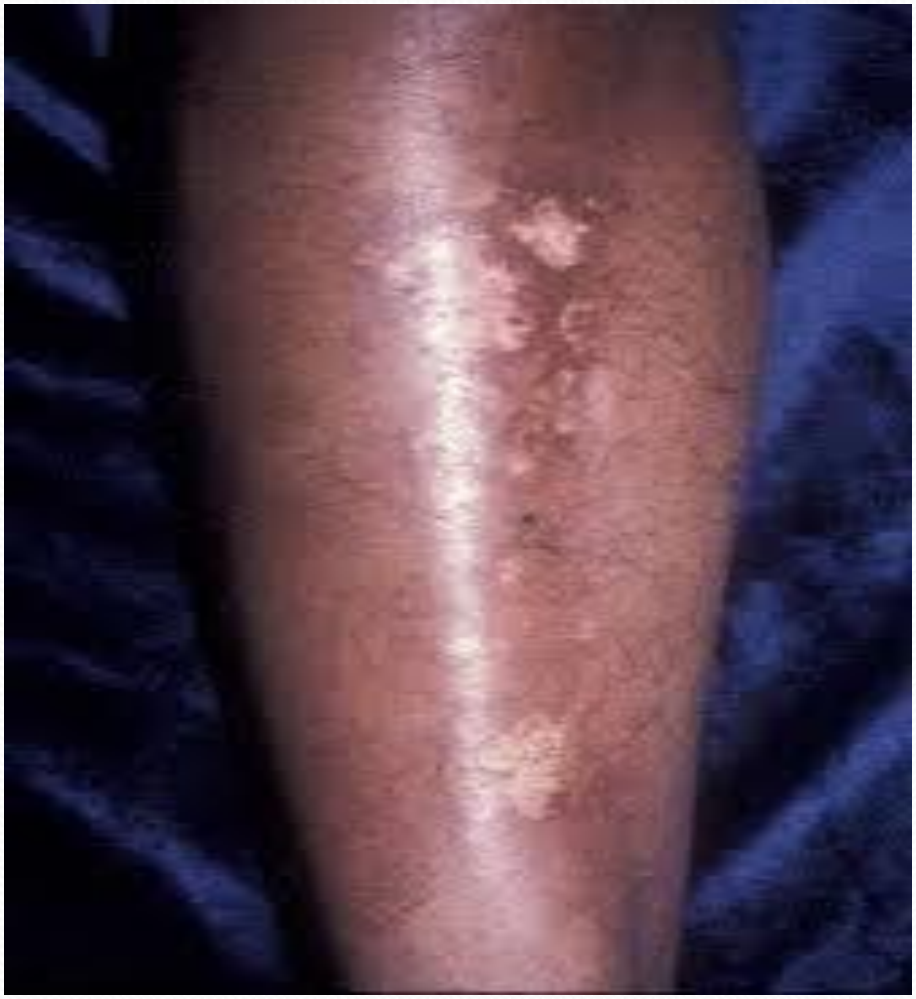




(b)

Figure 4.101 (a) The cause of the loss of pigment on the dorsum of the foot was an adhesive that contained *p-tert*-butylphenol–formaldehyde resin. The depigmentation was not post-inflammatory. This type of depigmentation does not require antecedent dermatitis, and is seen in industrial exposures to this same class of

Post inflammatory hypopigmentation



Hyperpigmentation

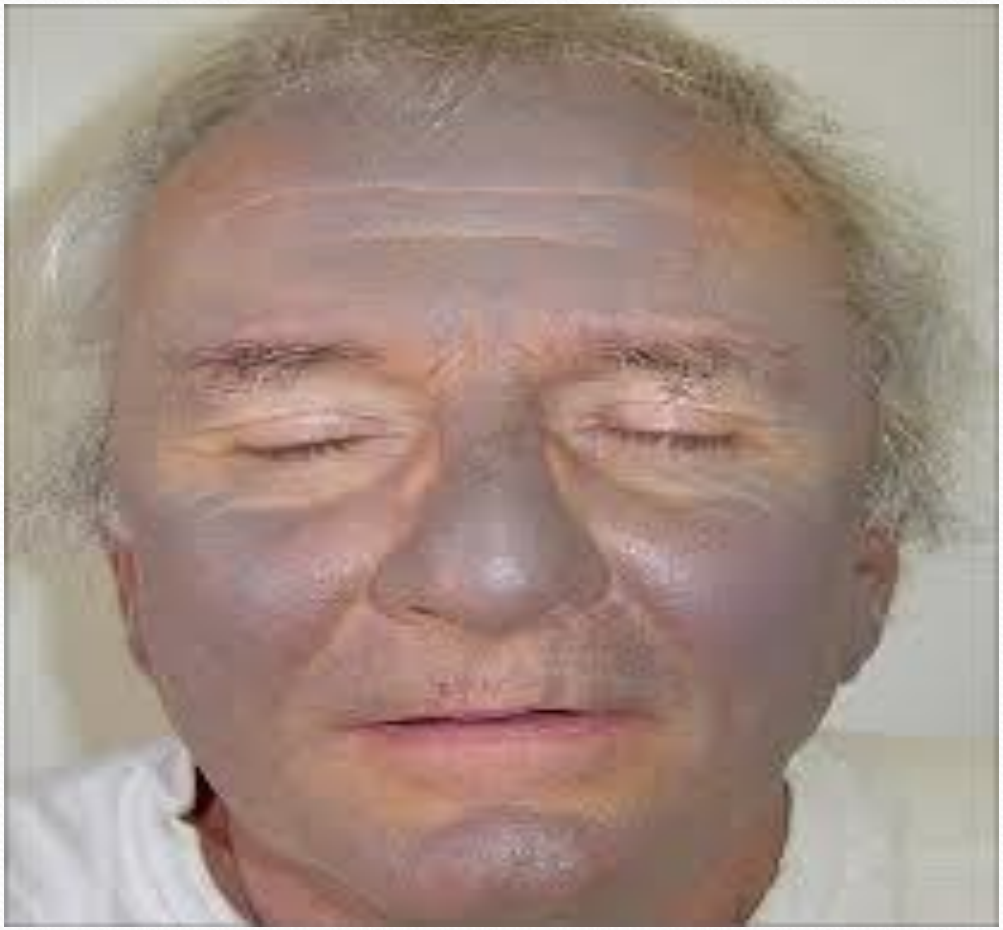
(1) exogenous pigment deposition

(2) deposition in skin systemically

(3) Photoeruption: thermal burns, UV

(4) Post inflammatory

Argyria



SEQUELAE OF CONTACT DERMATITIS

Figure 1.14 This 31-year-old woman with post-inflammatory hyperpigmentation had an antecedent nickel dermatitis due to a jeans button.

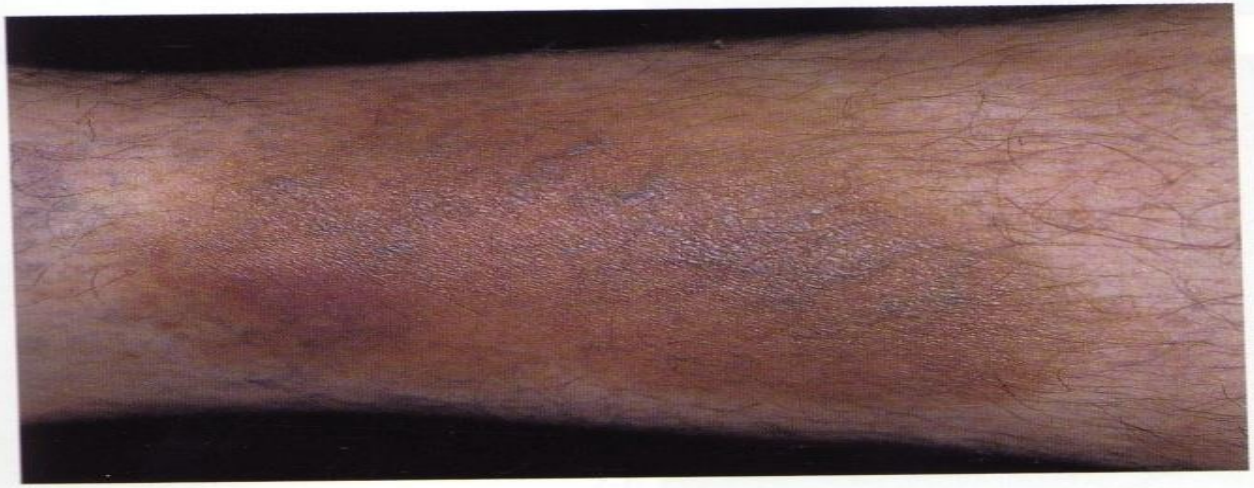


Figure 1.15
Hyperpigmentation may be the sequela of many forms of dermatitis; in this example the initial eruption was stasis dermatitis.

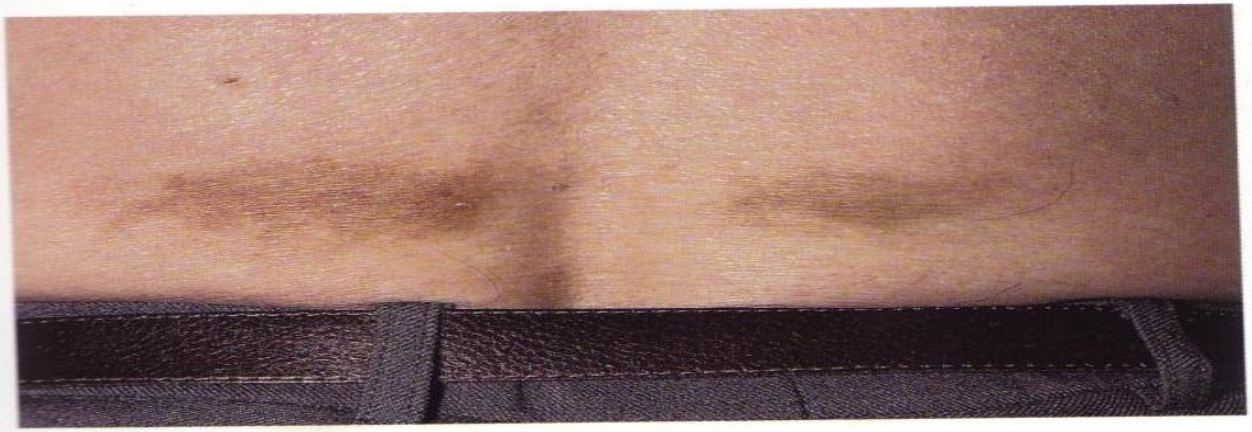


Figure 1.16 This is a 76-year-old man with post-inflammatory hyperpigmentation following mechanical dermatitis from his belt.

Occupational Skin Cancer

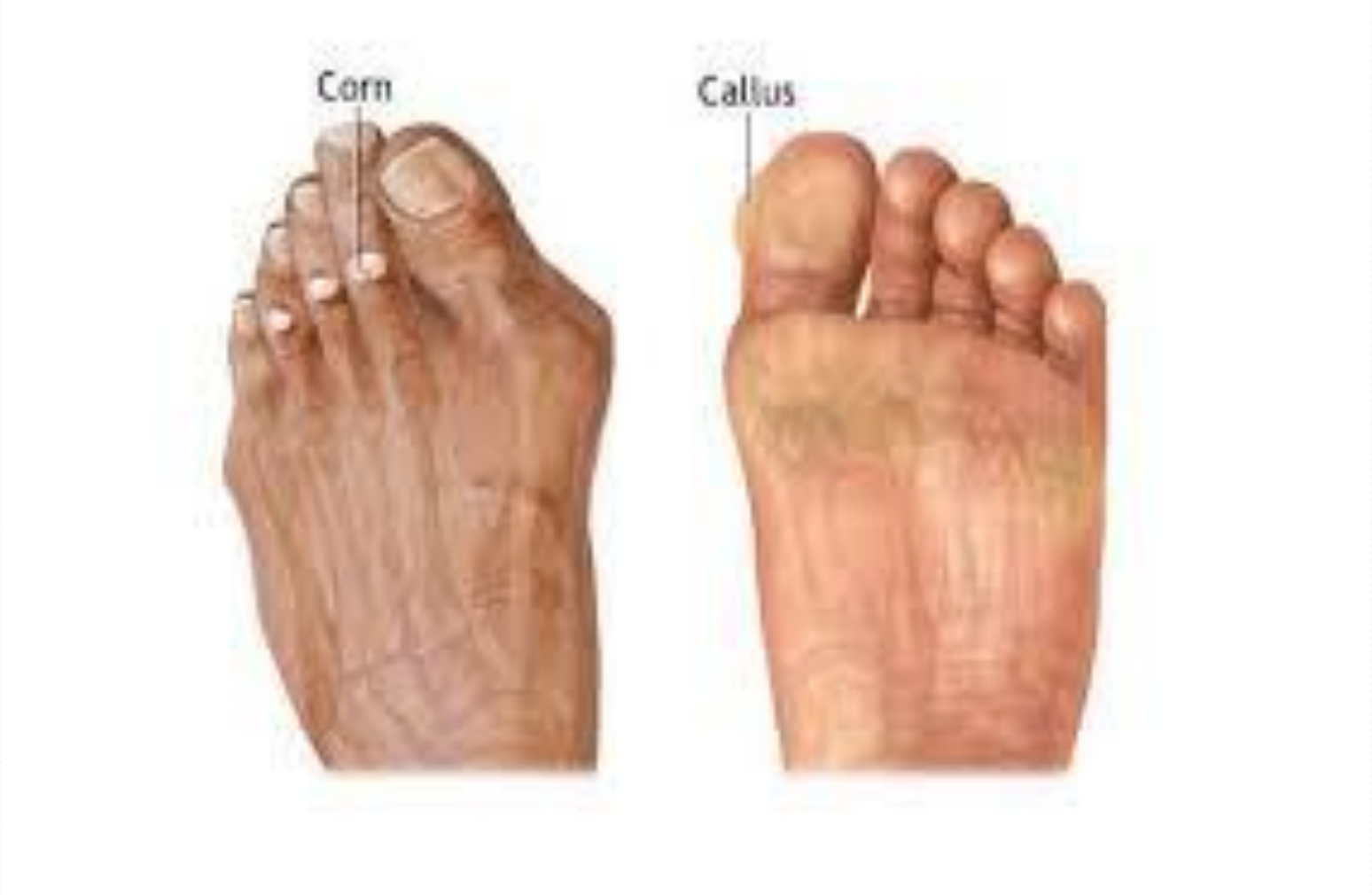
- Ultraviolet light
- Poly cyclic aromatic hydrocarbones
- Arsenic
- Ionizing radiation
- Trauma


With thanks

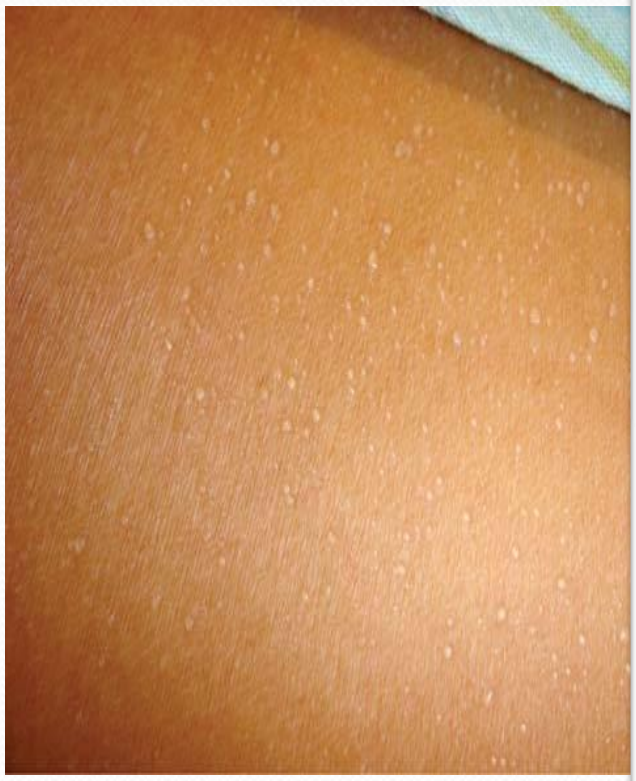
Physical cause of occupational skin disorders

- Mechanical trauma:callus,corn, lichenfication
- Permanent callus leading to early retirement
- Callus with painful fissure become infected

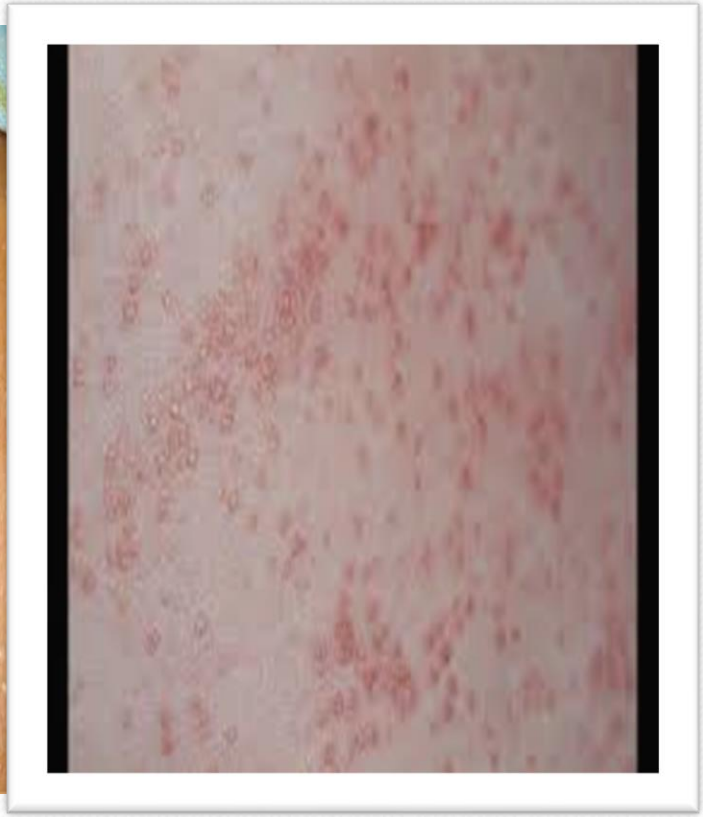
Mechanical



Heat

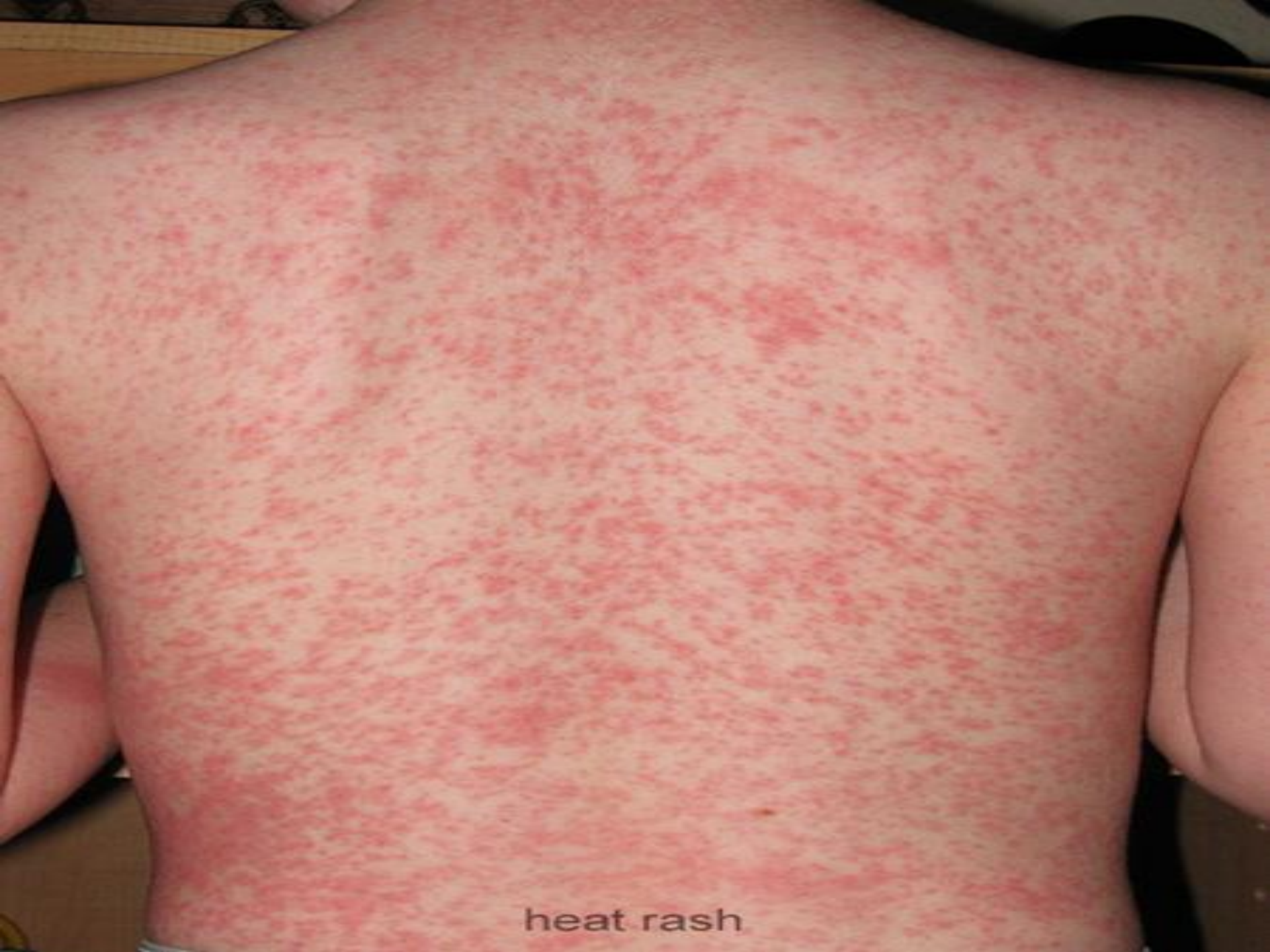


Miliara crystallina

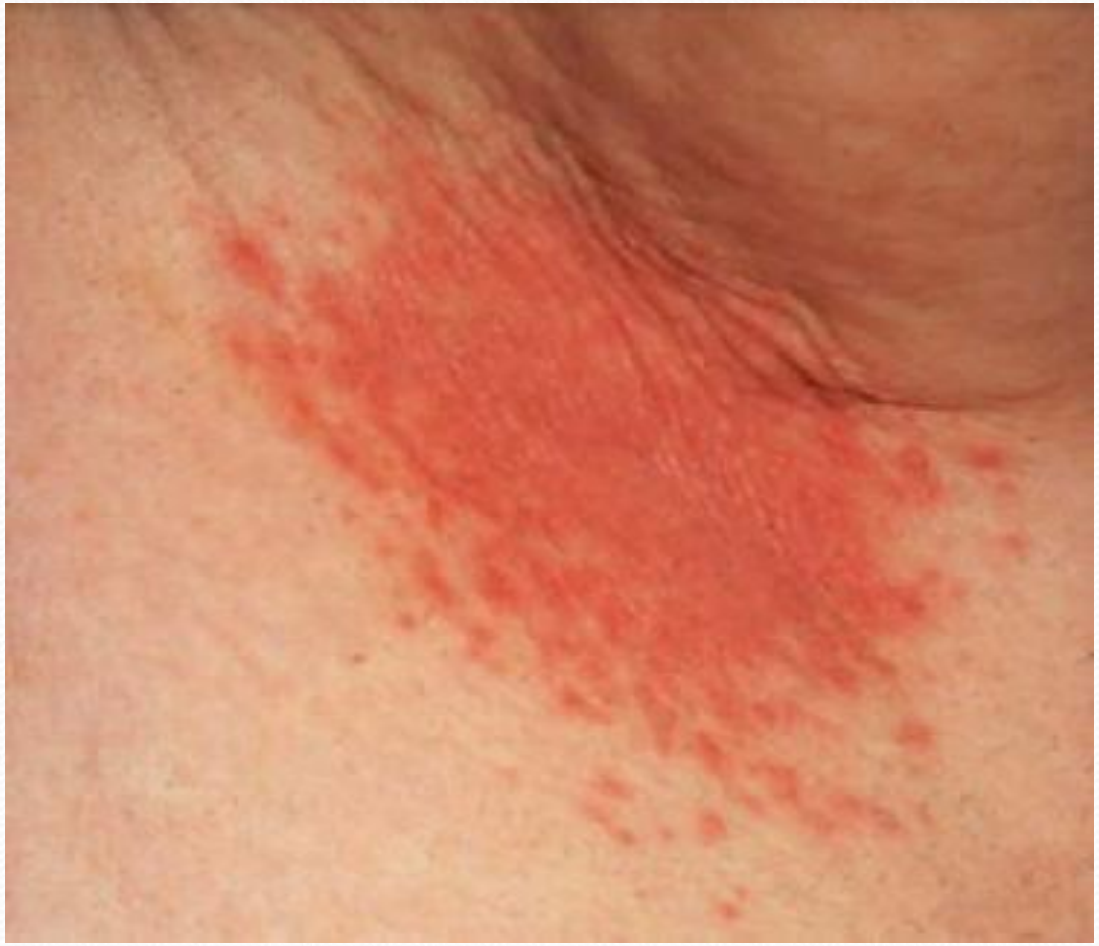


Miliara Rubra

Miliara Profounda

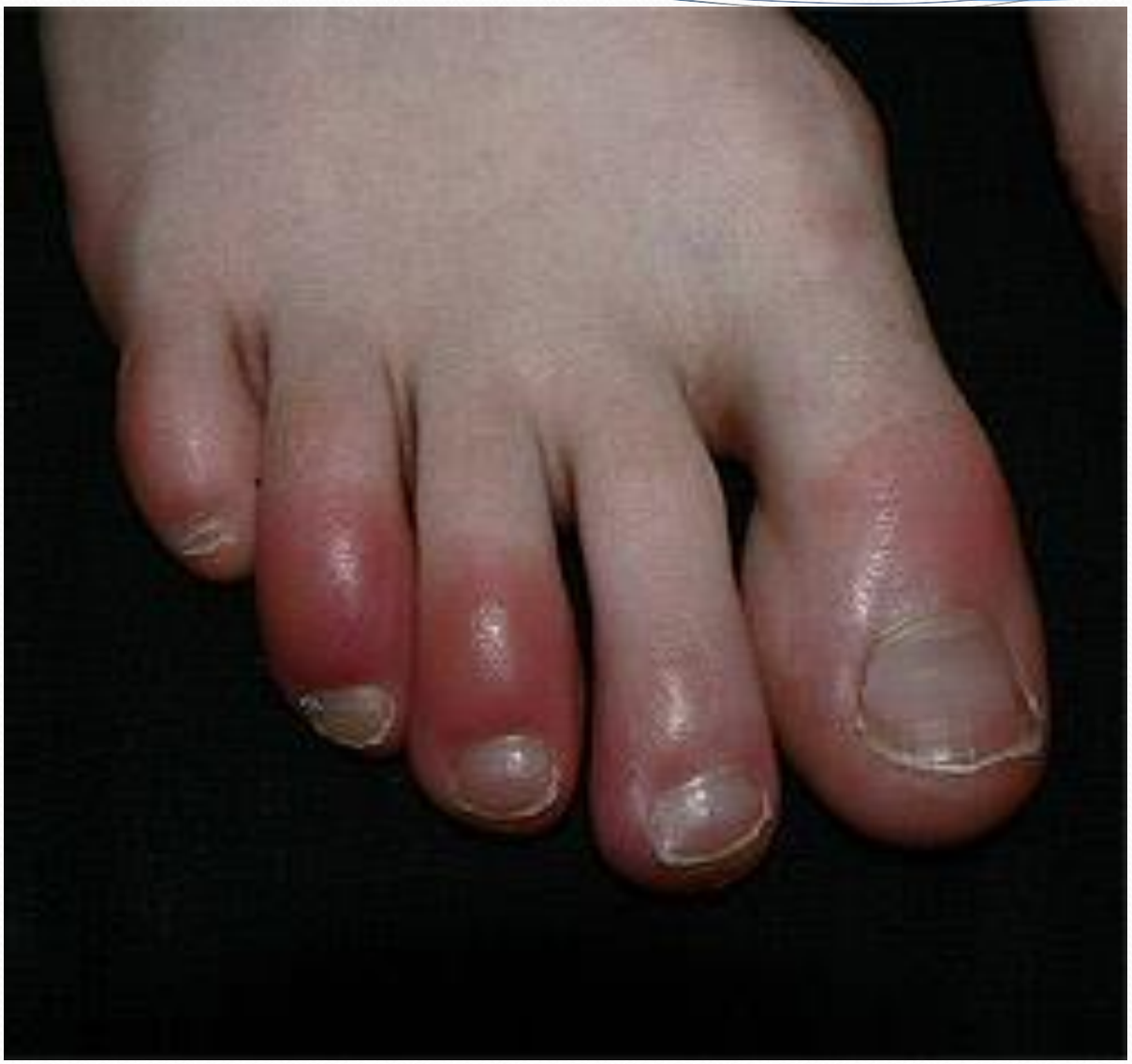

heat rash

Intertrigo



cold

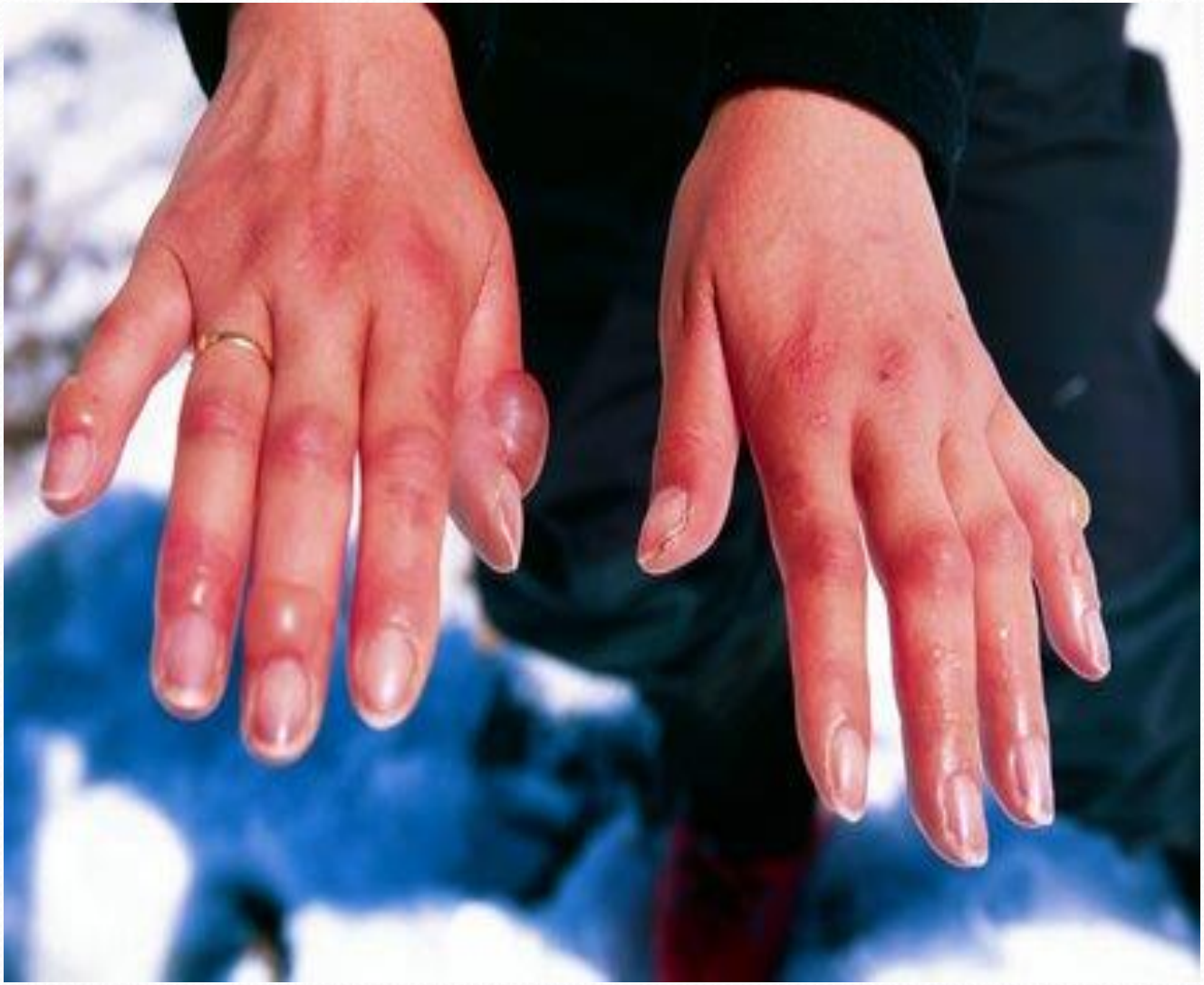
- Chilblain:mild form of cold injury
- Reddish,blue,swollen,boggy discoloration with bulla and ulceration
- Finger,toe,heel,nose,ear are effected
- Genetic is important back ground

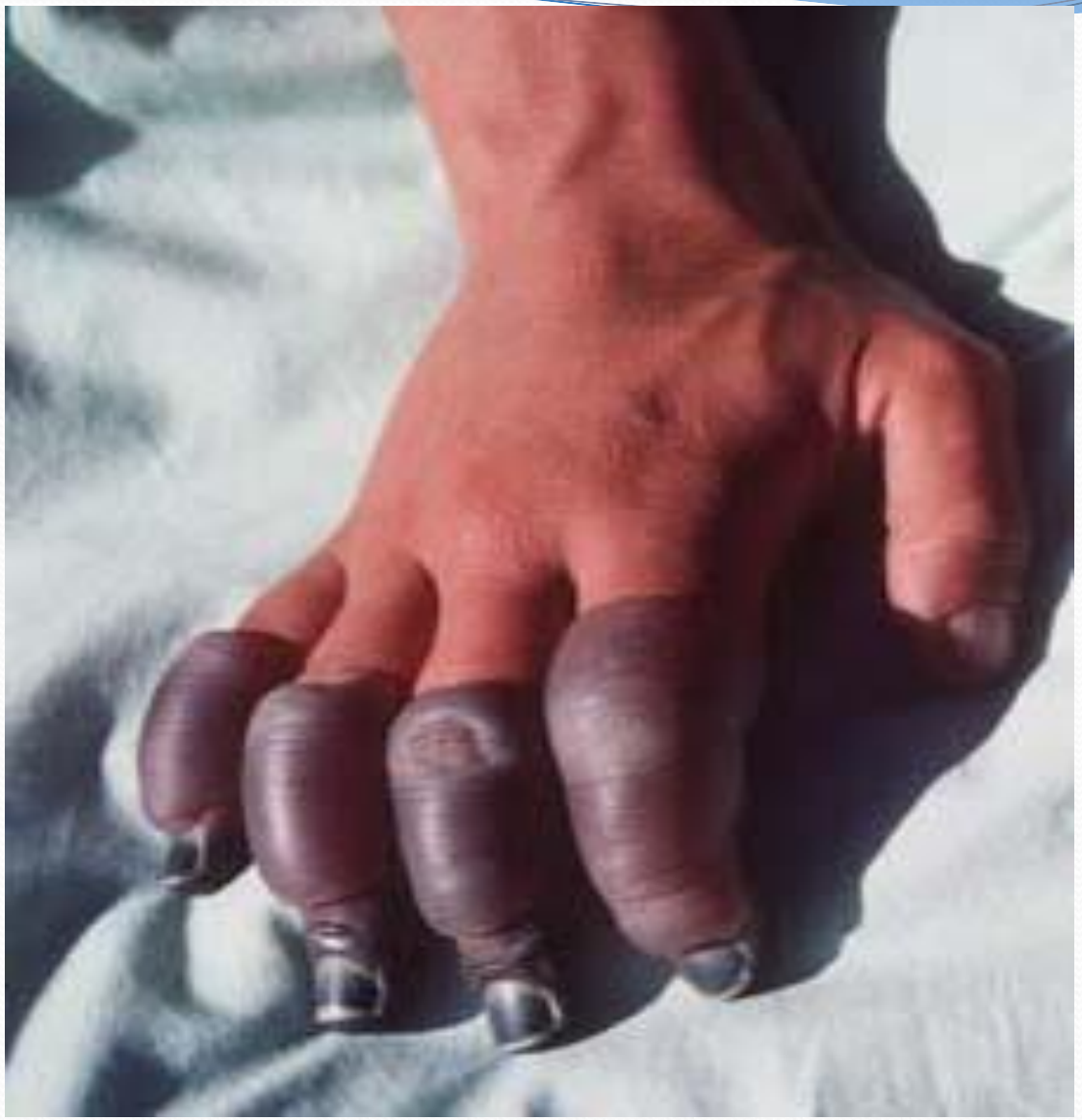


cold

- Frosbite

- progressive vasoconstriction cause impairment circulation
- Clinical symptom in mild form: redness, transient anesthesia, superficial bullae →Initial redness replace by white waxy appearance → blistering & later necrosis





Vibration syndrome

- Vibration tool in cold weather produce vasocostriction of digital arteries.(30-300)
- pallor, cyanosis, erythem of finger named raynaud phenomen
- Papular name : dead or white finger.

- Tingling,numbness,blanching of the tip of finger occurred
- Asymmetry is diagnostic
- Prevention: designe of tools, insulation, protection of hands from cold weahter.