

Skin Diseases of Agricultural Workers

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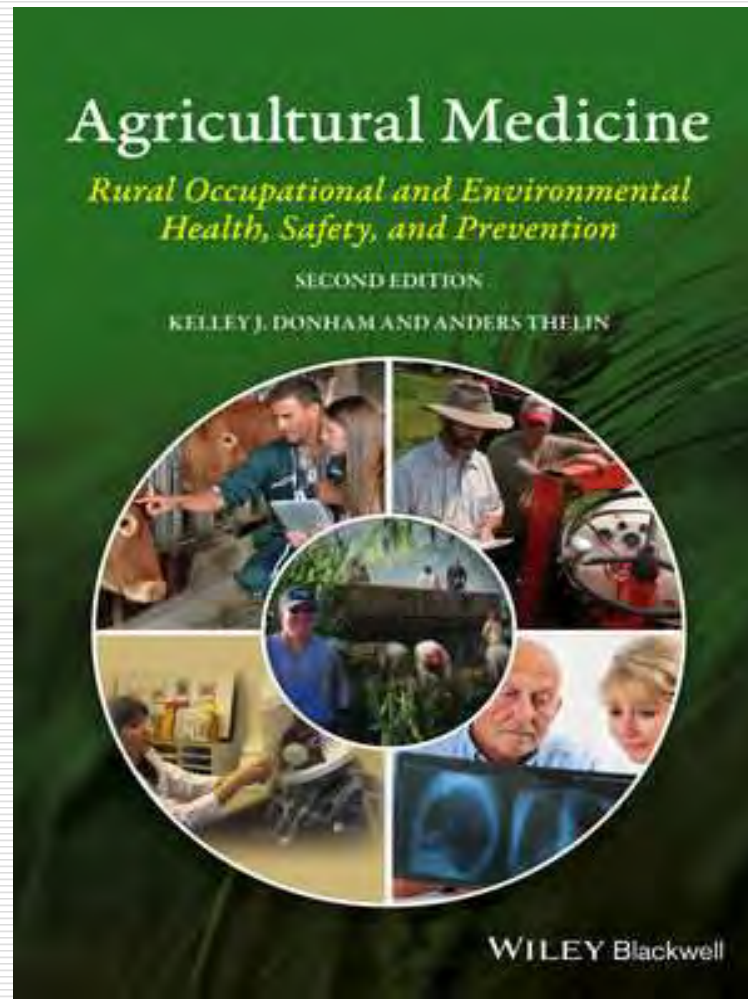
July 9 – 10, 2024

NE – CS-CASH Ag Med Core Course

General references for this presentation is Donham
and Thelin, Agricultural Medicine, 2016

Agricultural Medicine, 2016, Donham & Thelin

General Reference for all my lectures
(Additional references in slides following)



Ag Skin Conditions Topics Covered Today

- ☐ **Prevalence (56% of all reported Ag Illnesses) (NIOSH))**
- ☐ **Sources of exposure**
- ☐ **Symptoms/signs**
- ☐ **Treatment**
- ☐ **Prevention**



Contact Dermatitis: 3 Types

☐ Irritant

- ◆ Chronic
- ◆ Acute

☐ Allergic

- ◆ Chronic
- ◆ Acute

☐ Photo

- ◆ Photocontact
- ◆ Photoirritant

Irritant Contact Dermatitis:

Single exposure, strong irritant

Multiple exposures, weak irritant

Allergic Contact Dermatitis:

Re-exposure to antigen, cell-mediated immunity

May be an acute or delayed response

Photocontact:

Sunlight changes the chemical to an allergen (photoallergic), or an irritant (photoirritant)

Irritant Contact Dermatitis :

- ❑ **Acute:** Single exposure, strong irritant

(Dermatitis from gasoline)



- ❑ **Chronic:** Multiple exposures, weak irritant

(Rubber gloves used to handle pesticides)



Allergic Contact Dermatitis (acute and chronic forms)

Chlorinated Acetanilides
(e.g. Herbicides propachlor,
alachlor)

Maleic Hydrazide

Thiram

*(Note, it is difficult to
Tell Chronic Allergic
From Chronic irritant contact
Dermatitis)*



Acute



Chronic

Allergic Contact Dermatitis

Sensitizers on the farm (see complete list Donham & Thelin 2016)

INSECTICIDES	Herbicides	Fungicides	Biocides & Fumigant	Antibiotics	Dusts, and animal Dander
Carbaryl (a carbamate)	Thiram Chlorinated acetanilids. Propachlor, alachlor	Thiram Captafol	Formaldehyde	Penicillin	Cattle Dander
Pyrethrum and pyrethroids	Maleic hydrazide	Imidazoles (e.g. imazapyr, imazapic, imazethapyr)	Iodine	Streptomycin	Grain Dust
Phenothiazine				Sulfa drugs	Hay Dust

Medicated Feed Mixes

Contain concentrated potential allergens

- Phenothiazine
- **Penicillin**
- Sulfa drugs
- Streptomycin



Plant – Induced Allergic Contact Dermatitis

[HTTP://WWW.ELSEVIER.PT/EN/REVISTAS/-/ARTIGO/ALLERGIC-CONTACT-DERMATITIS-TO-PLANTS-UNDERSTANDING-THE-CHEMISTRY](http://www.elsevier.pt/en/revistas/-/artigo/allergic-contact-dermatitis-to-plants-understanding-the-chemistry)

Rhus Plants = Urushiol



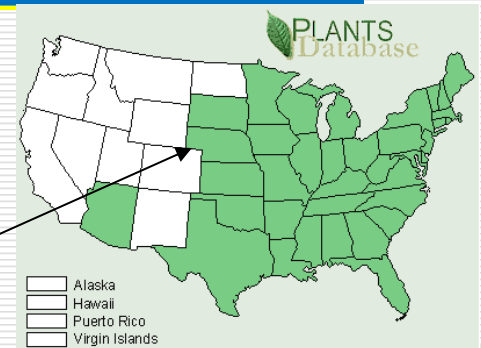
POISON IVY



POISON OAK



POISON SUMAC



The common Allergen from Rhus Plants = Urushiol



Urushiol absorbs/ **binds to skin within 30 minutes** of exposure ¹²

Chronic or Subacute Allergic Contact Dermatitis from Rhus Plants

- 75% of people react
- Eruption 12 – 72 hrs
- Extent of rx depends on amount of exposure and thinness of skin
- Note Linear lesions – Why?



Chronic Rhus Allergic Contact Dermatitis



What is it? How did it happen?





(CNN)



Rag Weed



Giant Rag Weed(Horseweed) ¹⁶

Ragweed

Oleoresin = Allergic
(Windborne) Contact
Dermatitis



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Protein (Pollen) = Allergic Rhinitis



Rhus Dermatitis Treatment

Minor – make it pink

If Severe – Need more than pink

**Topical and or Systemic Corticosteroids
(30-80 mg prednisone)**

**Compresses, colloidal baths, Calamine lotion (zinc oxide
(ZnO) with about 0.5% iron(III) oxide (Fe_2O_3)).**



Prevention

Eliminate, reduce exposure, and protect the skin

- ☐ **Protective clothing**
- ☐ **Changing clothes**
- ☐ **Washing skin and clothes**
 - ☐ Soap and water.
 - ☐ Alcohol or vinegar may help
 - ☐ Octylphenoxy-Polyethoxyethanol, mixed fatty acid soap
 - ☐ Must wash skin within 30 minutes of exposure
- ☐ **Skin barriers, e.g. Ivy Block (Bentoquantum, 5% Rx)**
- ☐ **Immunization (oral or injection)**
 - ☐ not very effective



**To
eliminate...**



**Grubbing/
Herbicides**

Other Plant Dermatoses

(See Table 4.3, p162, Donham 2016)



Phototoxic Dermatitis Harvested Carrots, Celery, Parsnip (Ubelliferae = Furocumarins)



Wild Parsnip (*Pastinaca sativa*)



Other plants with Furocumarins

□ Other Umbelliferae

- Common Hog Weed
- Giant Hog weed

□ Plants of Family Rutaceae

- Lemon
- Lime
- Bergamont



Liliacea – “Bulb Plants”



Bulb Finger

Allergic or chronic contact dermatitis
Allergen/irritant = Butyrolactone



Heat Induced Dermatitis

Heat + Moisture + bacteria = inflamed, pugged sweat ducts =
Miliaria Rubra



Prevention = Ventilation, Hygiene (bathing), talcum powder

Treatment = topical Antibiotics + Steroid

Arthropod Dermatoses: in Rural and Agricultural Health



Beekeepers (Kelley with his Bees)





Hymenoptera (Stinging Arthropods)

- ❑ Stings, pain and first, swelling, purities for up to 2 weeks
- ❑ Toxins similar in **all** hymenoptera venons
- ❑ Histamines, proteinases, melittin
- ❑ Treatment
 - None
 - Remove stinger (honey bees only)
 - Antibiotic, antihistamine + Steroid
- ❑ Allergic condition
 - 5% of population allergic
 - Epinephrine + antihistamine (epi pen)
 - Ant sensitivity treatment



MITES



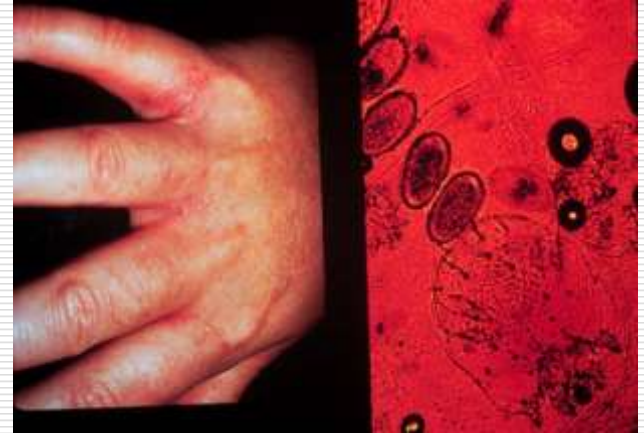
Sarcoptic Mites

(animal host dependent):

- Species Specific

Human *Sarcoptes Scabiei*

Will reproduce on people



- Animal** specific mites

– Sarcoptic and Demodex spp.

Animal mites **Won't**
reproduce on humans (only
temporary inflammation)



Free Living mites

(don't live on animals)

- Temporary Inflammation, not infection
 - Grass (chiggers)
 - Grain mites
 - Straw
 - Oak trees

“Chiggers” (aka *trombicula alfreddugesi*)



Oak Mites

Most Cases Reported in KS, NE

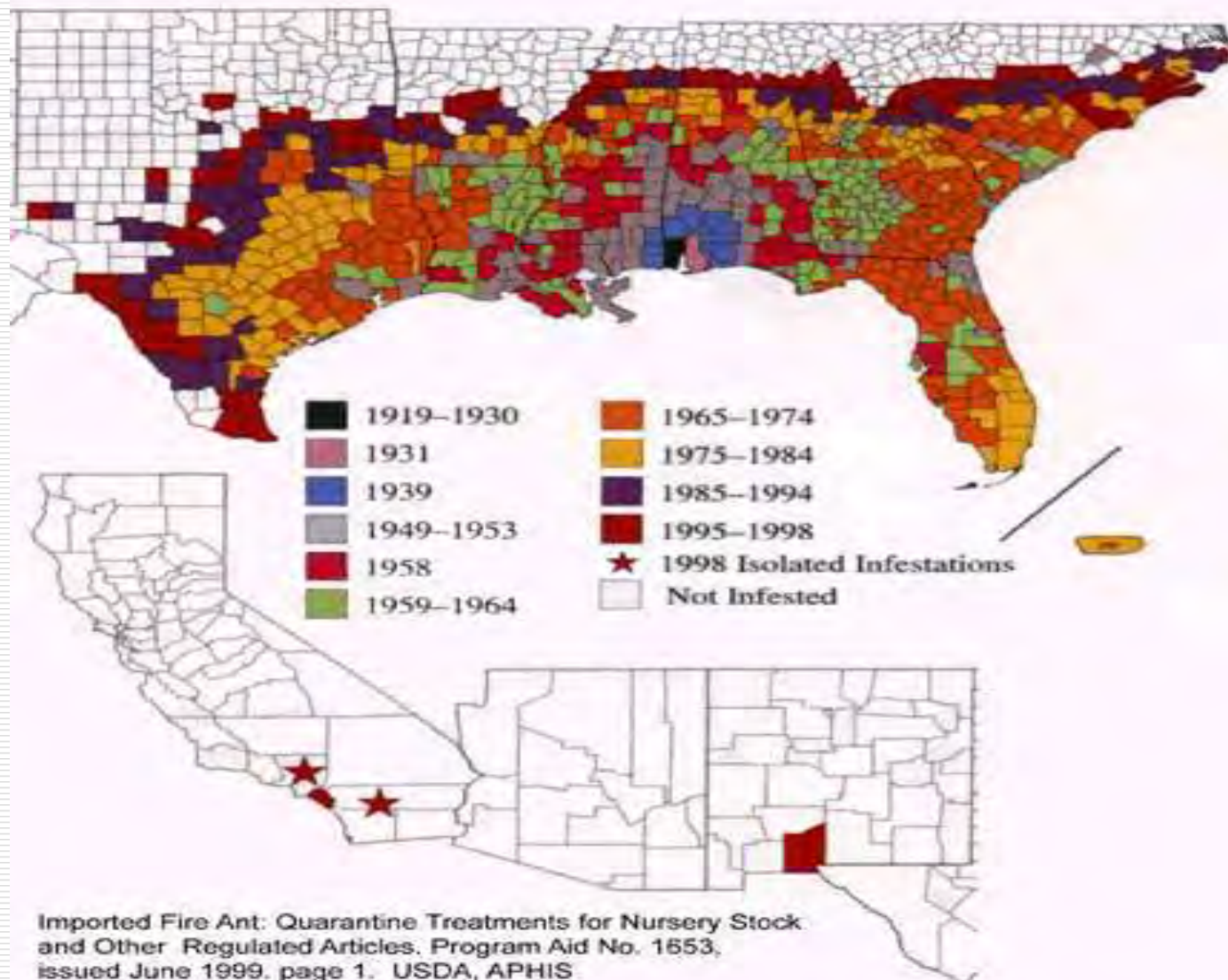


**Primary host is larvae of midge fly
which parasitizes oak leaves**

FIRE ANTS (a southern thing)



Range Expansion of IFA From 1918–1998



Prevention

- ☐ Light-colored, non-flowery clothing
- ☐ Non-scented preparations
- ☐ Avoidance
- ☐ Insecticide
- ☐ Diethyltoluamide

Infectious Dermatoses

Infection by Dermatophytes

Orf

Milker's Nodule

Dermatophytic Infections

Trychophyton verrucosum

(Cattle)

Most common animal fungal infection in farmers

&

Microsporum, spp.

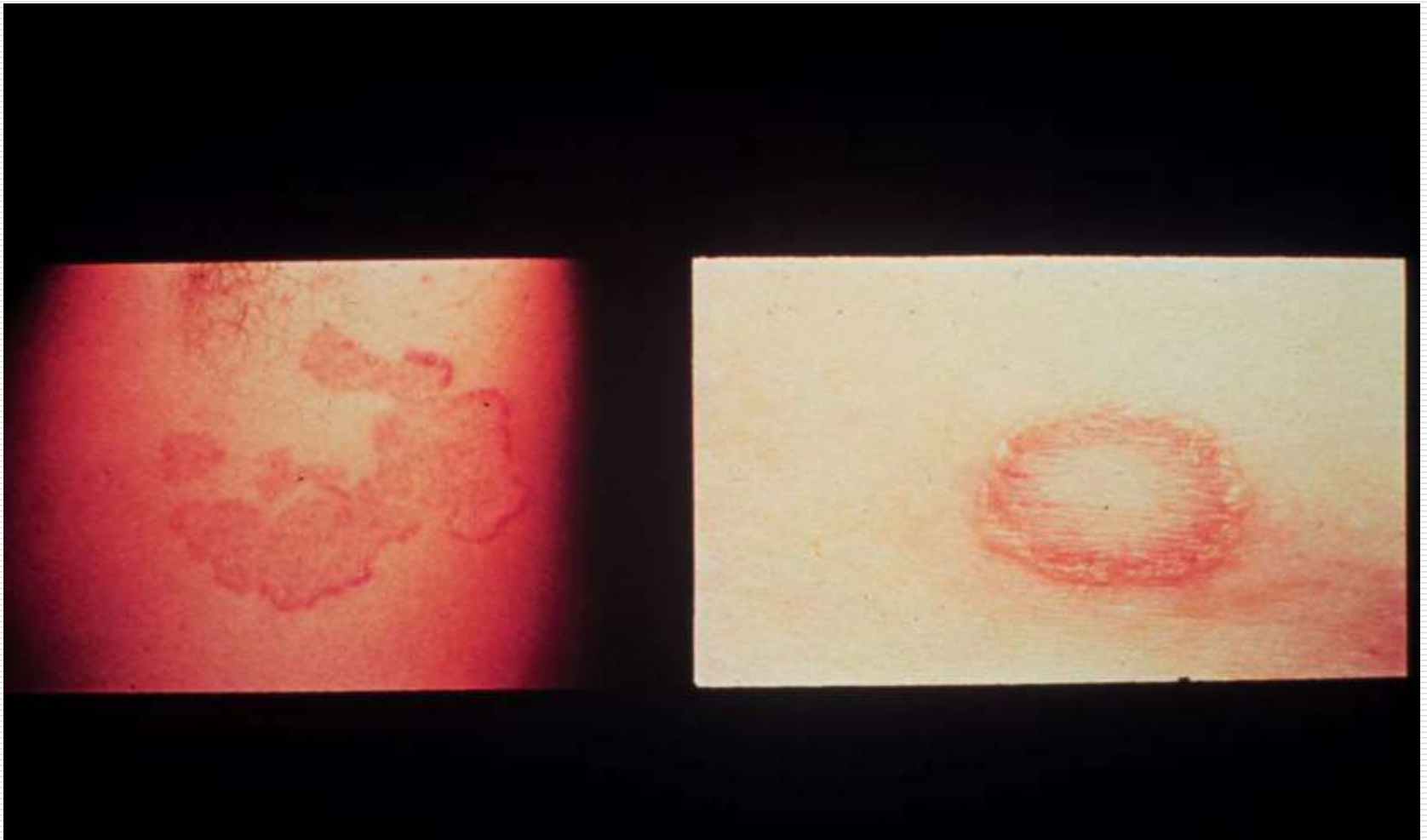
(horses, pigs, dogs, cats & more)

(rare in rural/farm populations)

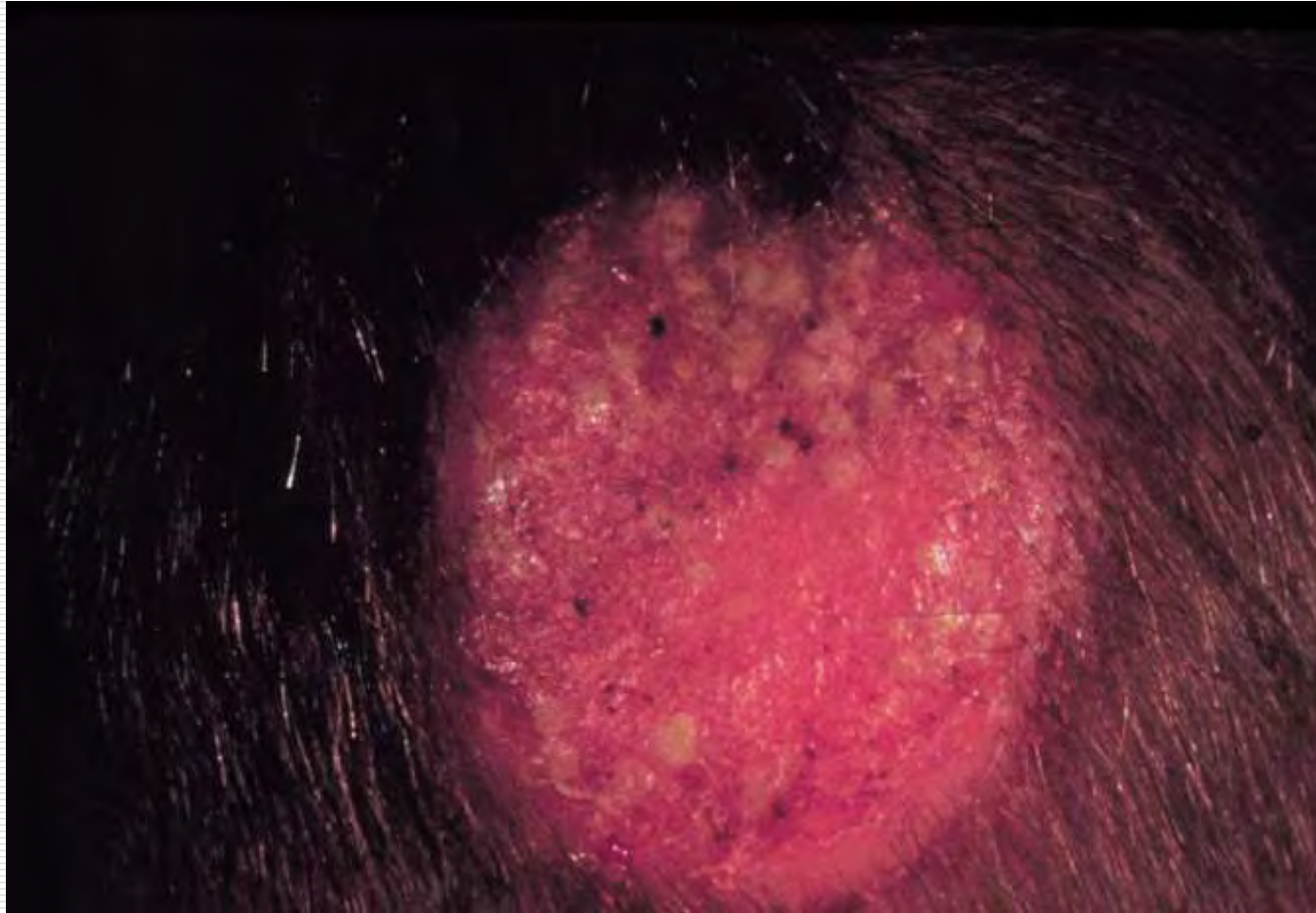
Zoonotic dermatophytes

Trychophyton verrucosum

From Cattle

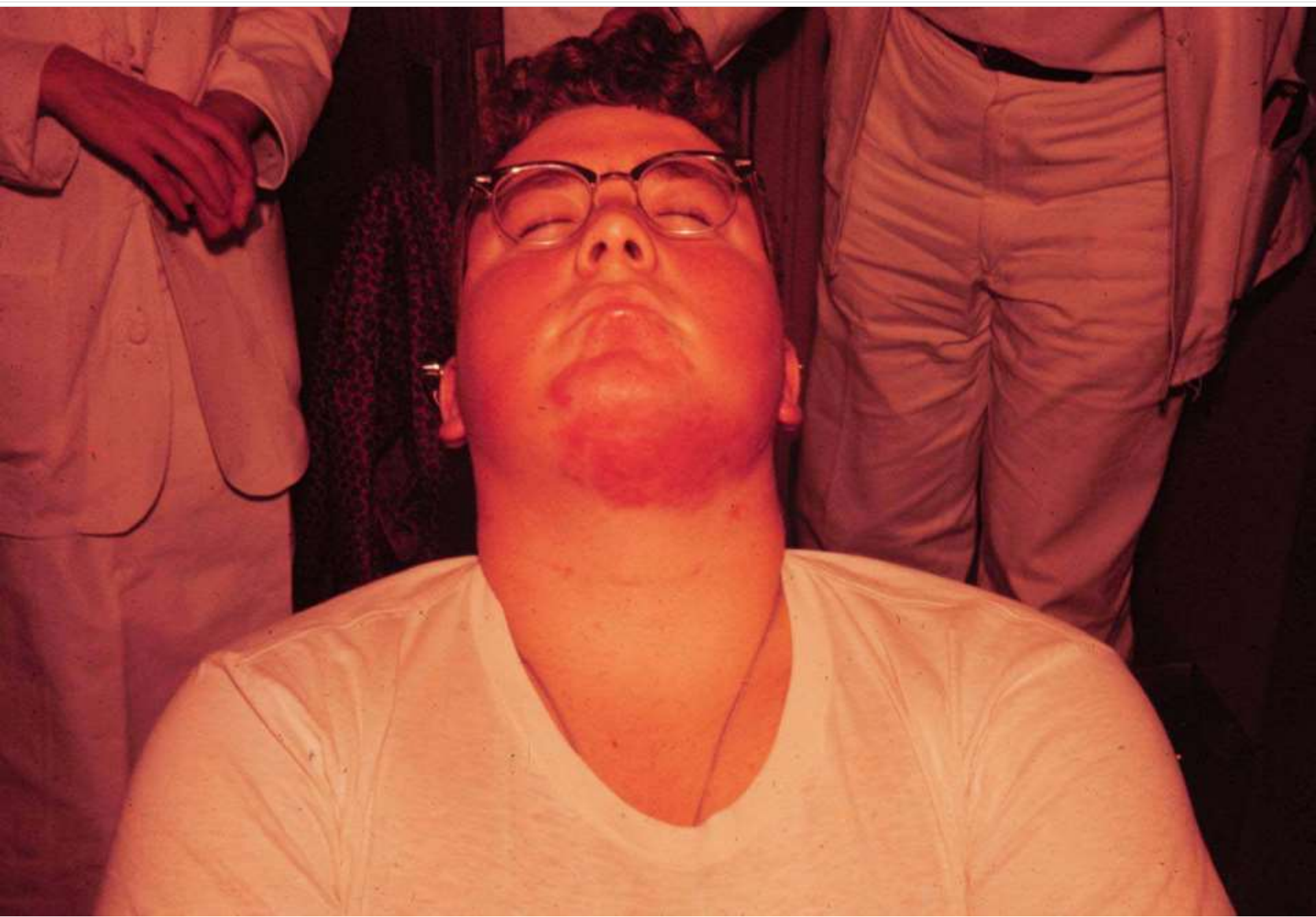


10-Year-old dairy farm boy. A family affair



Treatment for these deep hair follicle infections = Systemic e.g., Amphotericin, ketoconazole, fluconazole etc.

Steroid added in this case to reduce inflammation









Zoonotic Viral Infections of the Skin

- ☐ Pseudo cow pox
- ☐ Contagious Ecthyma “Orf”

Pseudo cow pox





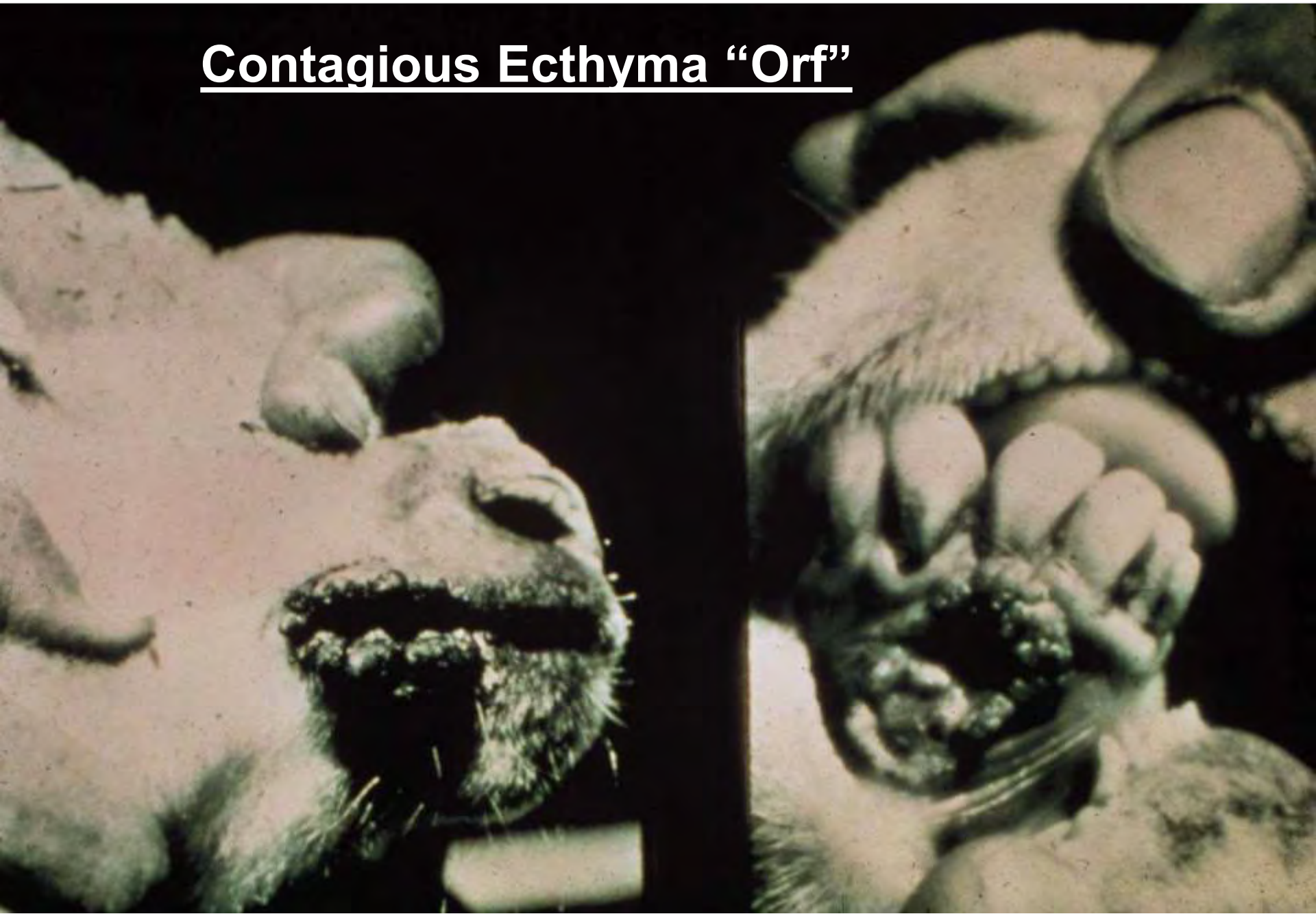




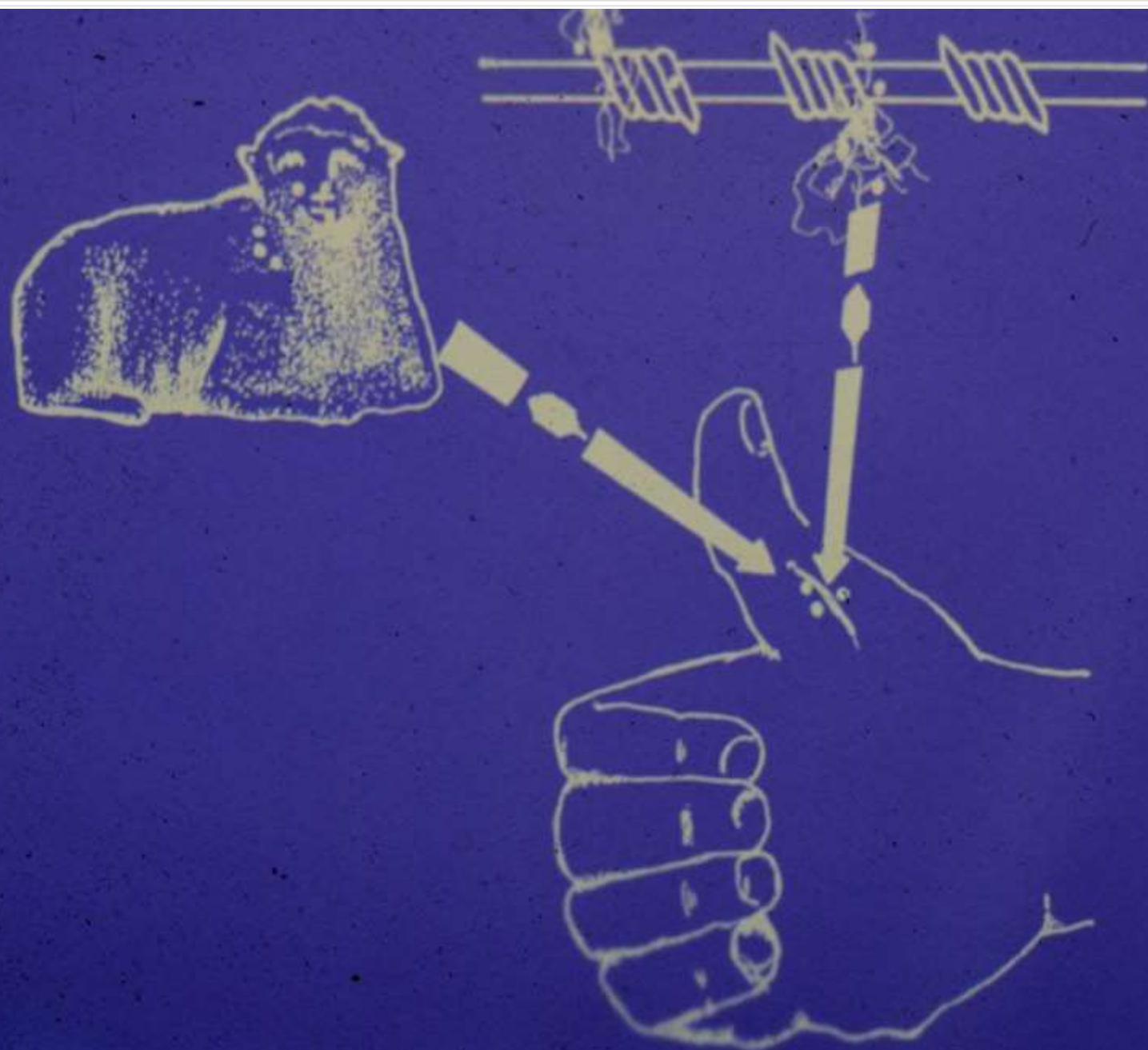
Figure 11: Umbilicated lesion and presence of inflammation in the ungual folds.



Contagious Ecthyma “Orf”



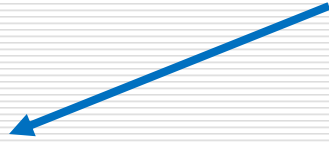




Live Vaccines

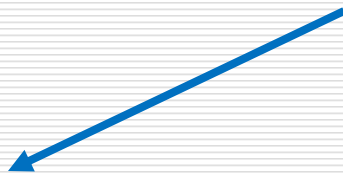


Dairy Zoonoses



- ☐ Dermatophytic Infections
- ☐ Milker's Nodule

Sheep Zoonoses



- ☐ Orf

Treatment

Dermatophytes

**Systemic Griseofulvin, Ketoconazole,
Fluconazole etc.**

Milker's Nodules and Orf

**topical antibiotics to prevent secondary
bacterial infections**