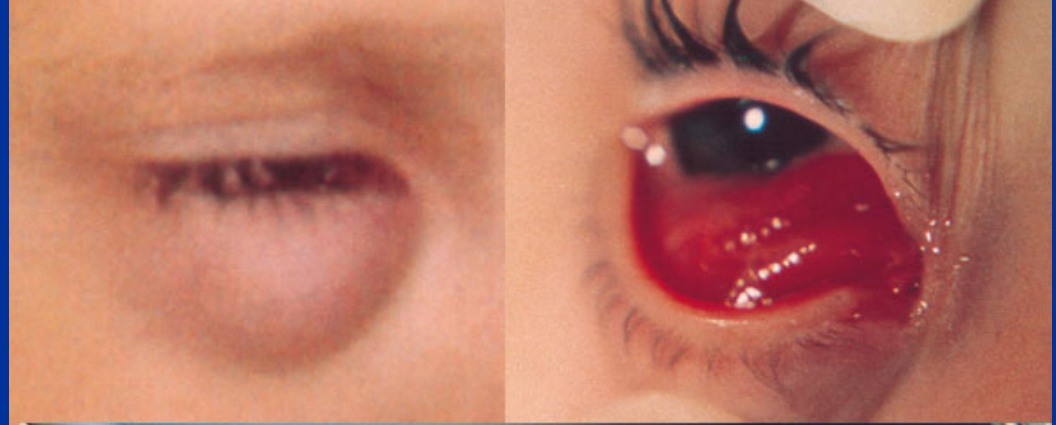
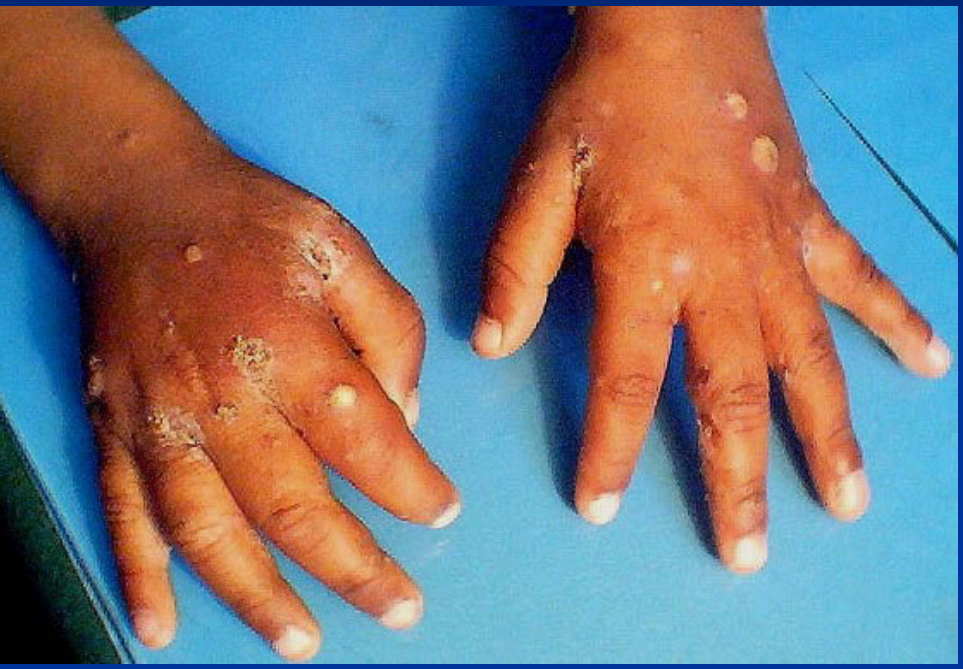
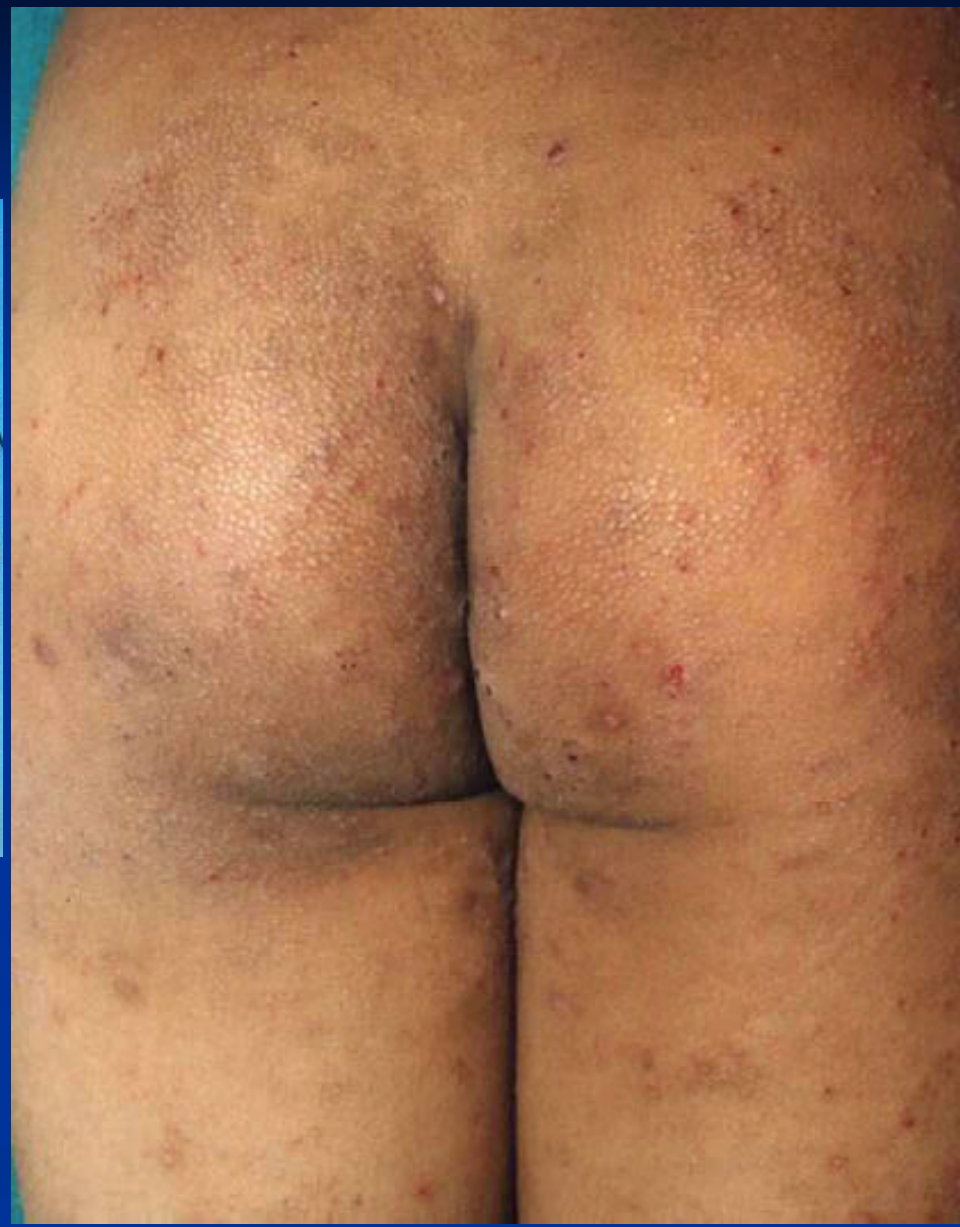


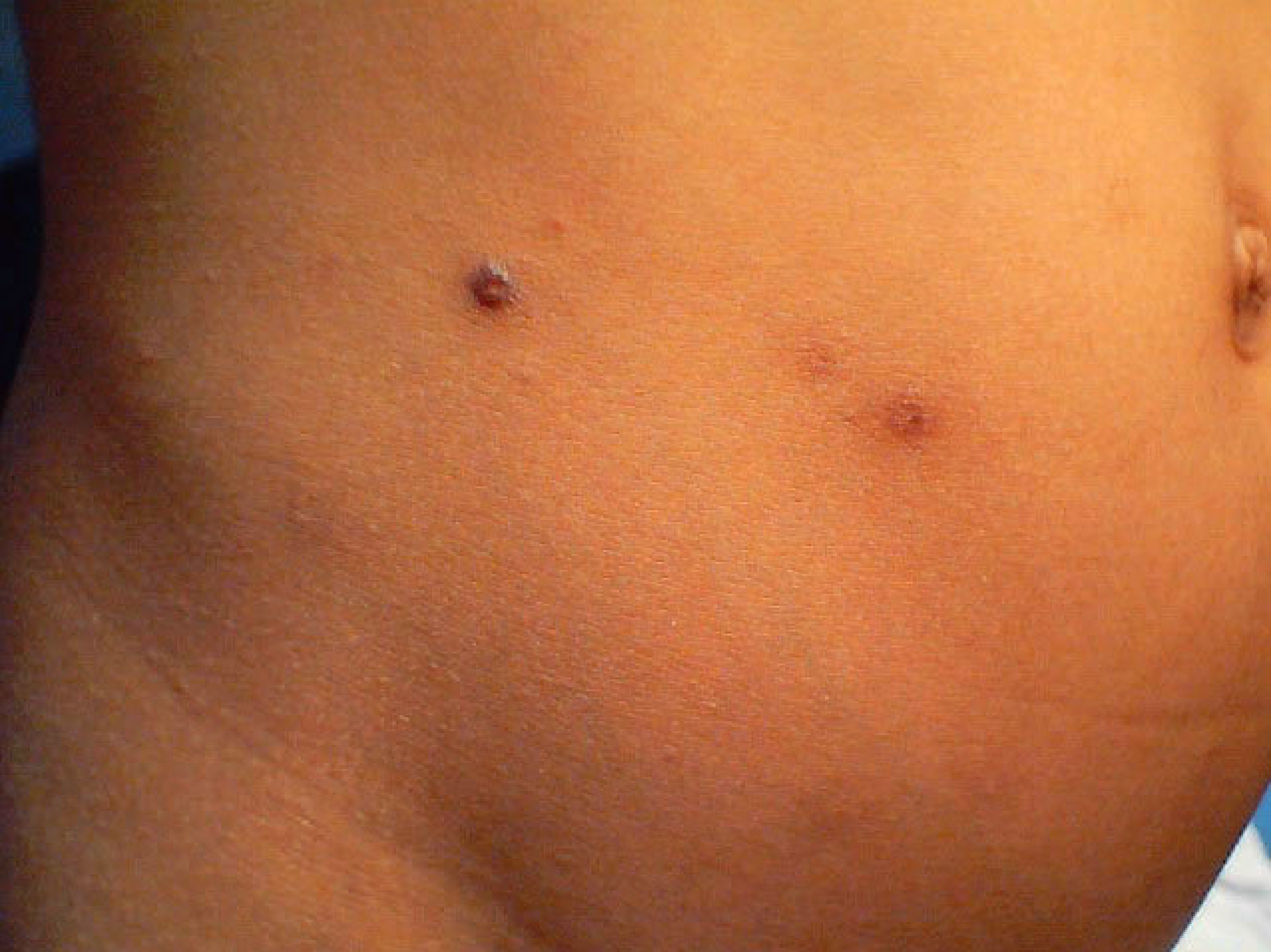

mm

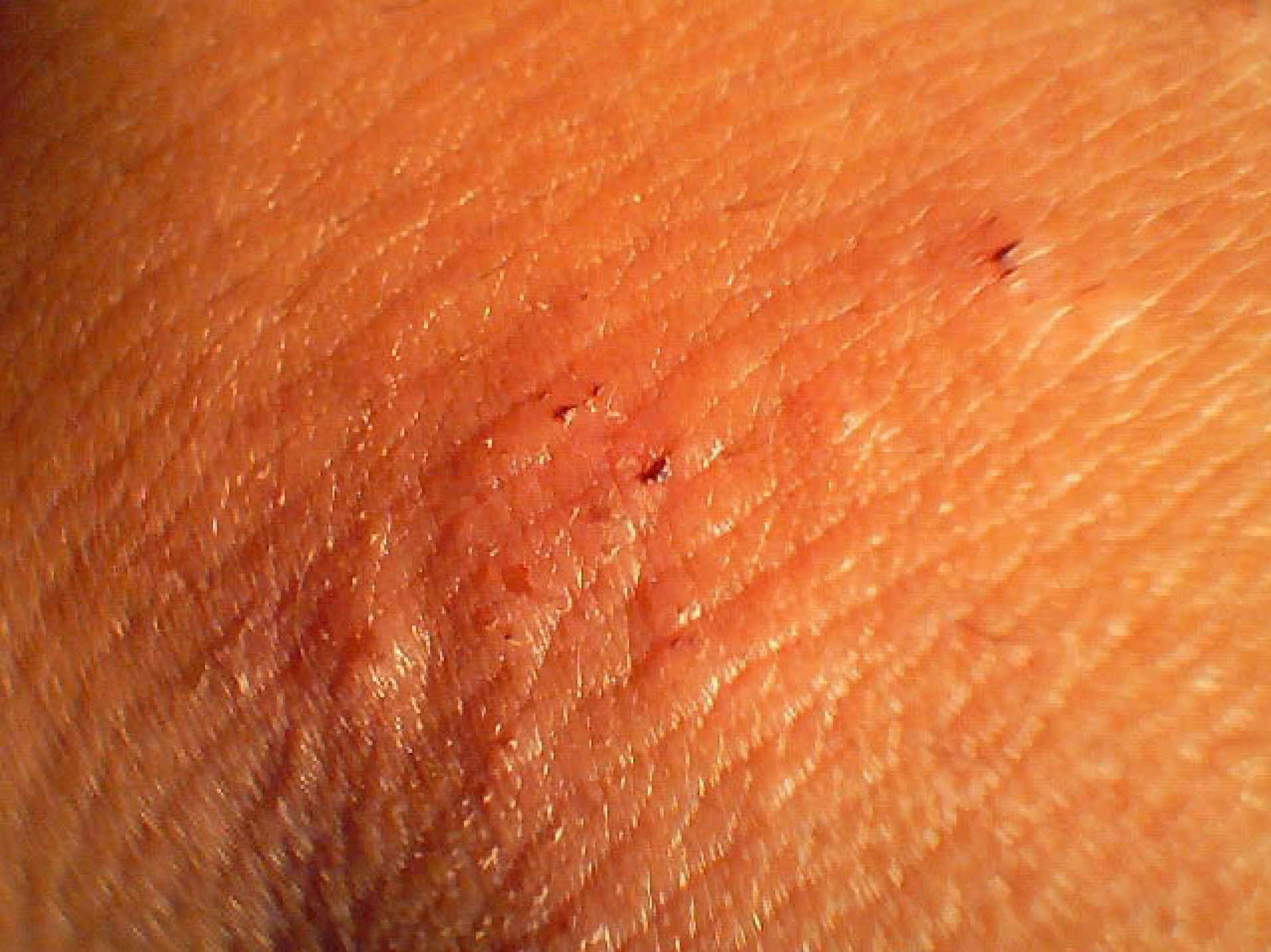
Skin Infections… More than a bug bite!

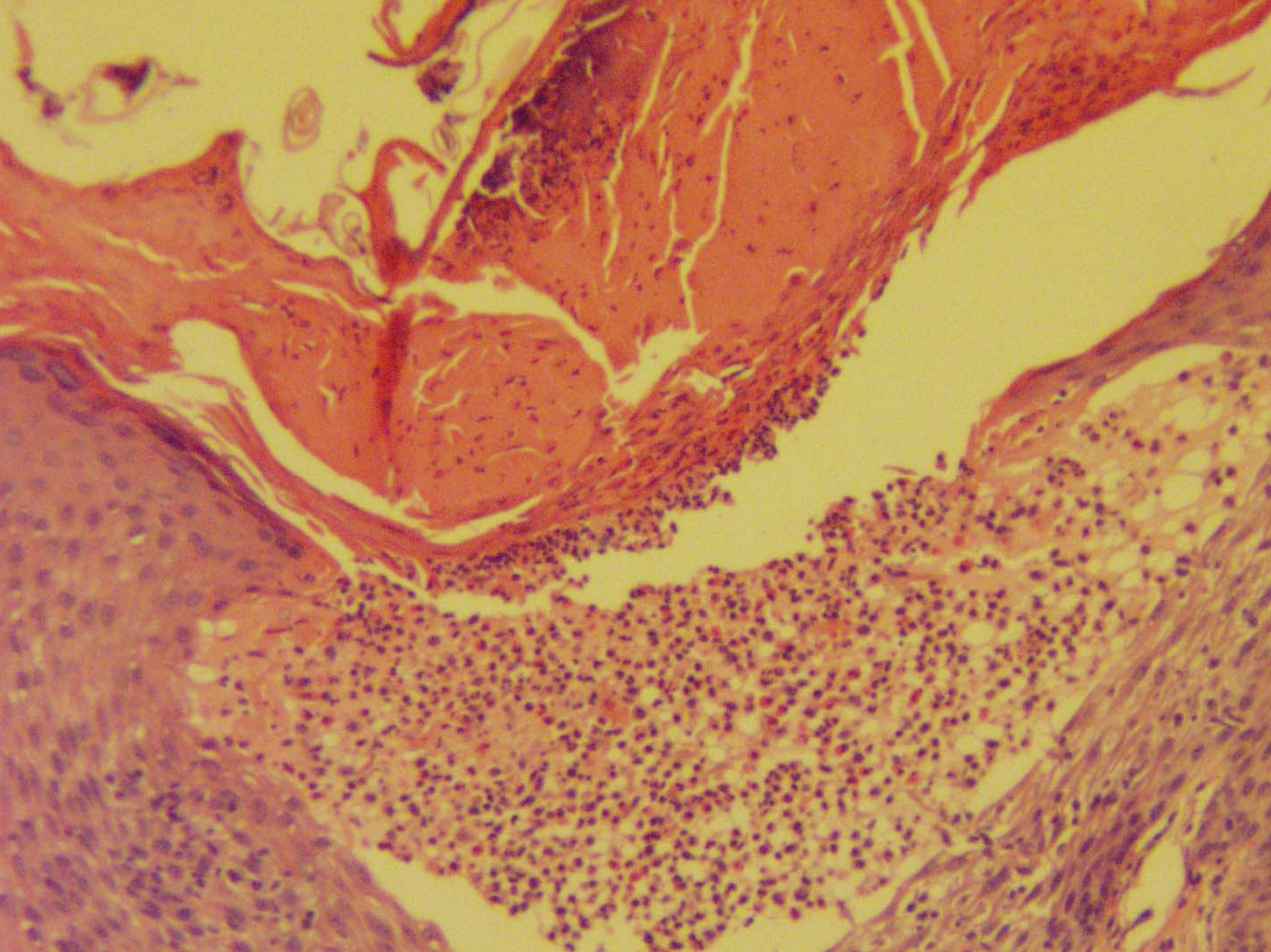
Paul K. Shitabata, M.D.
Dermatopathologist
Pathology Inc.

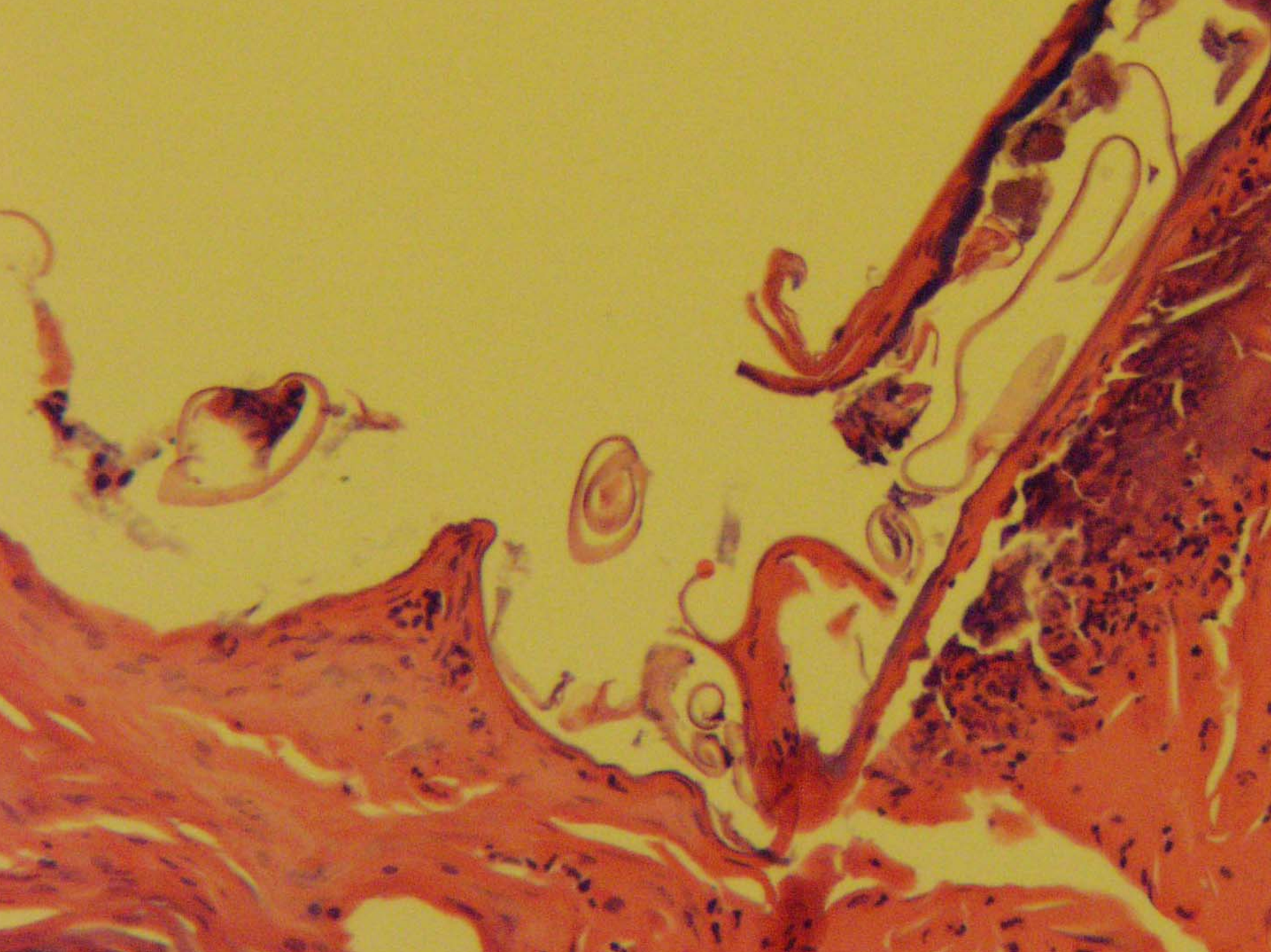


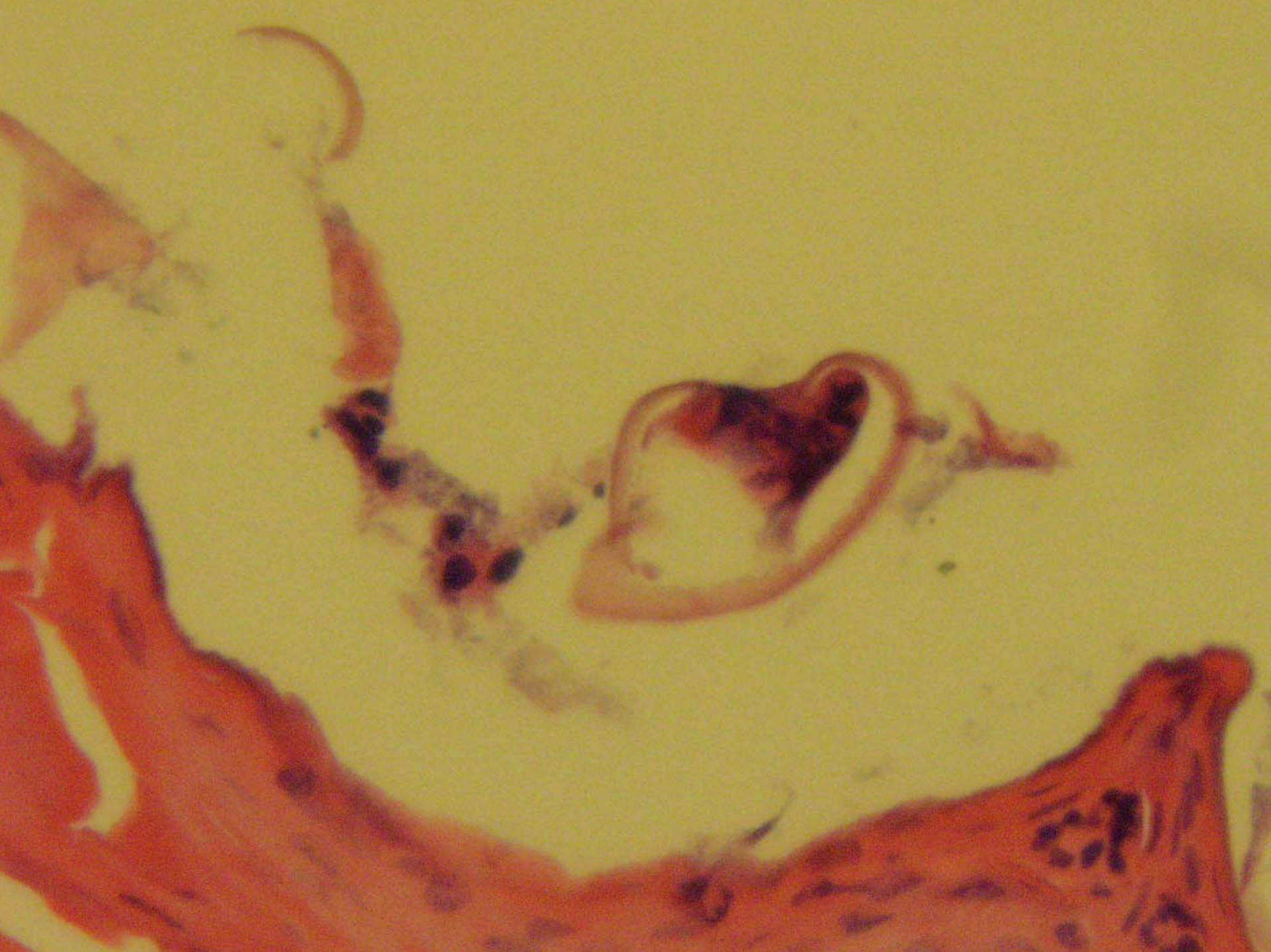


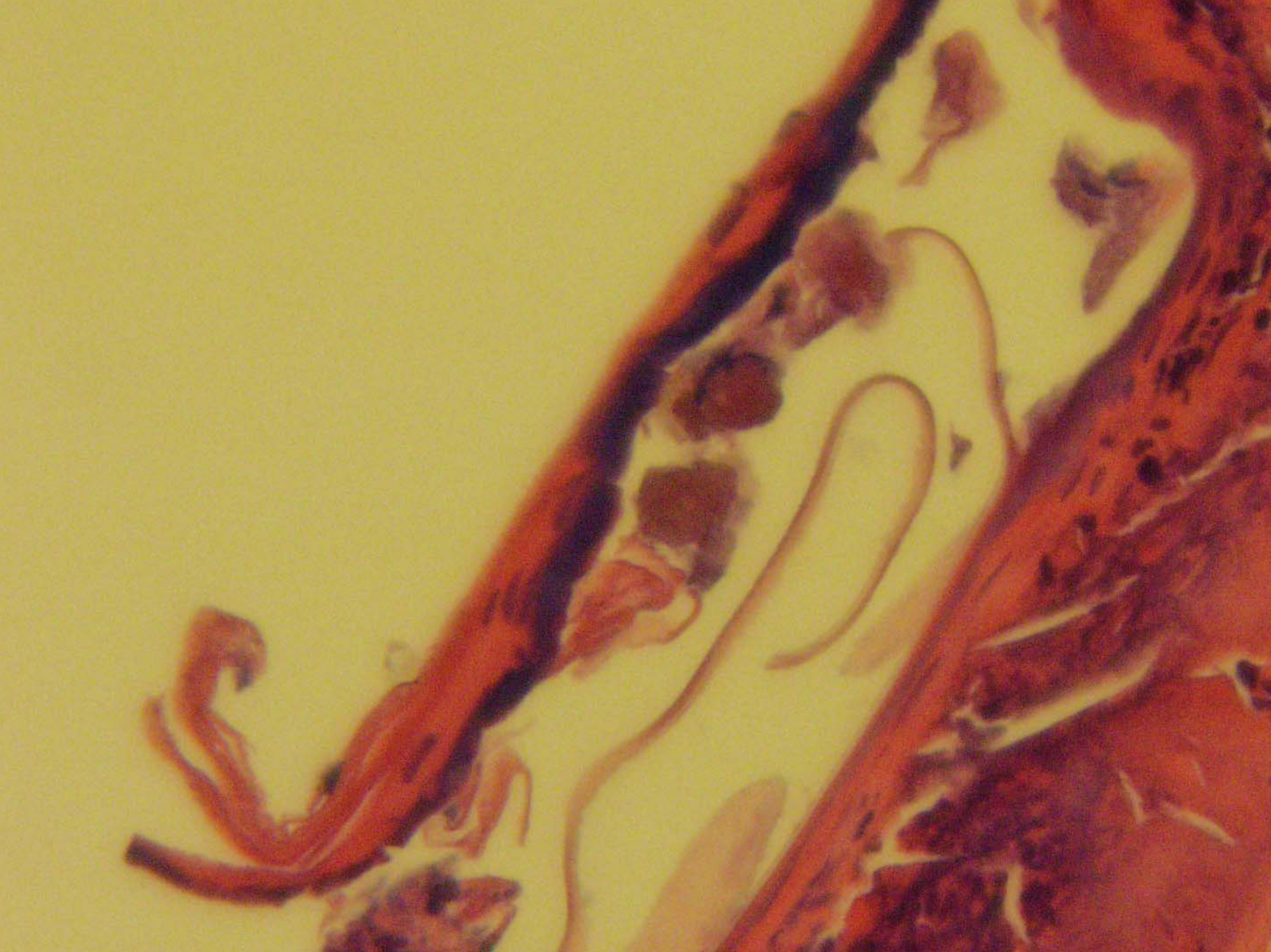






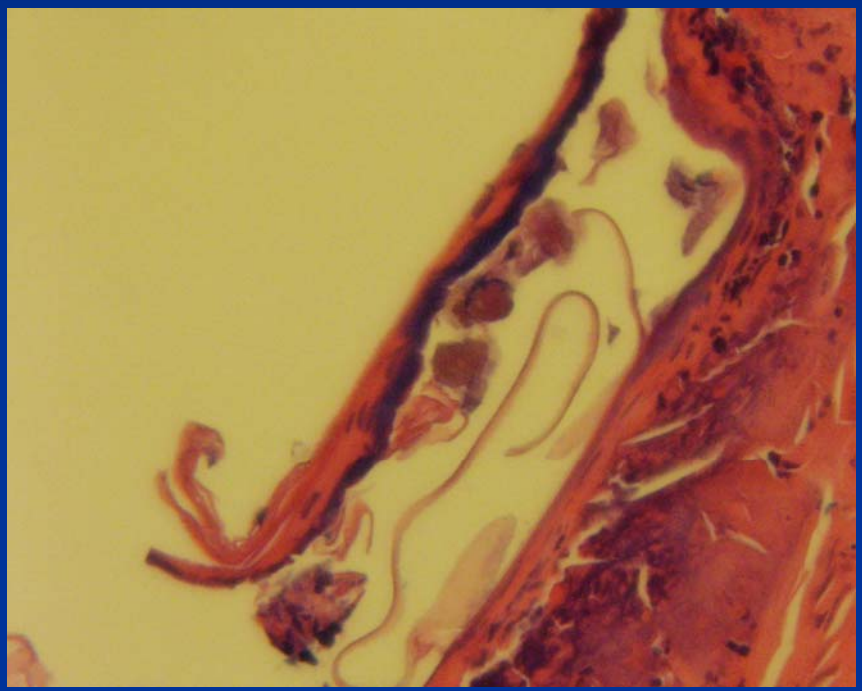




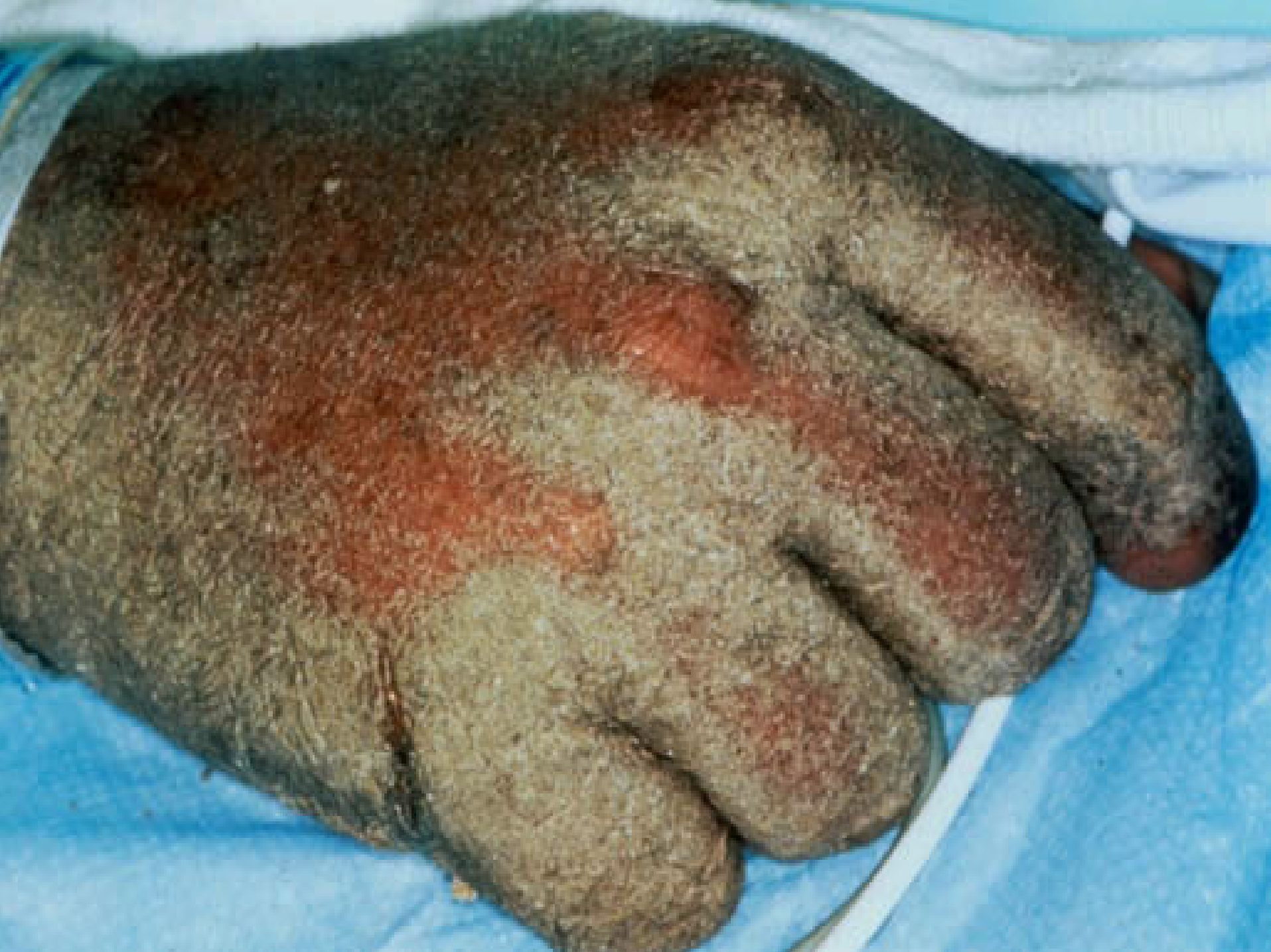


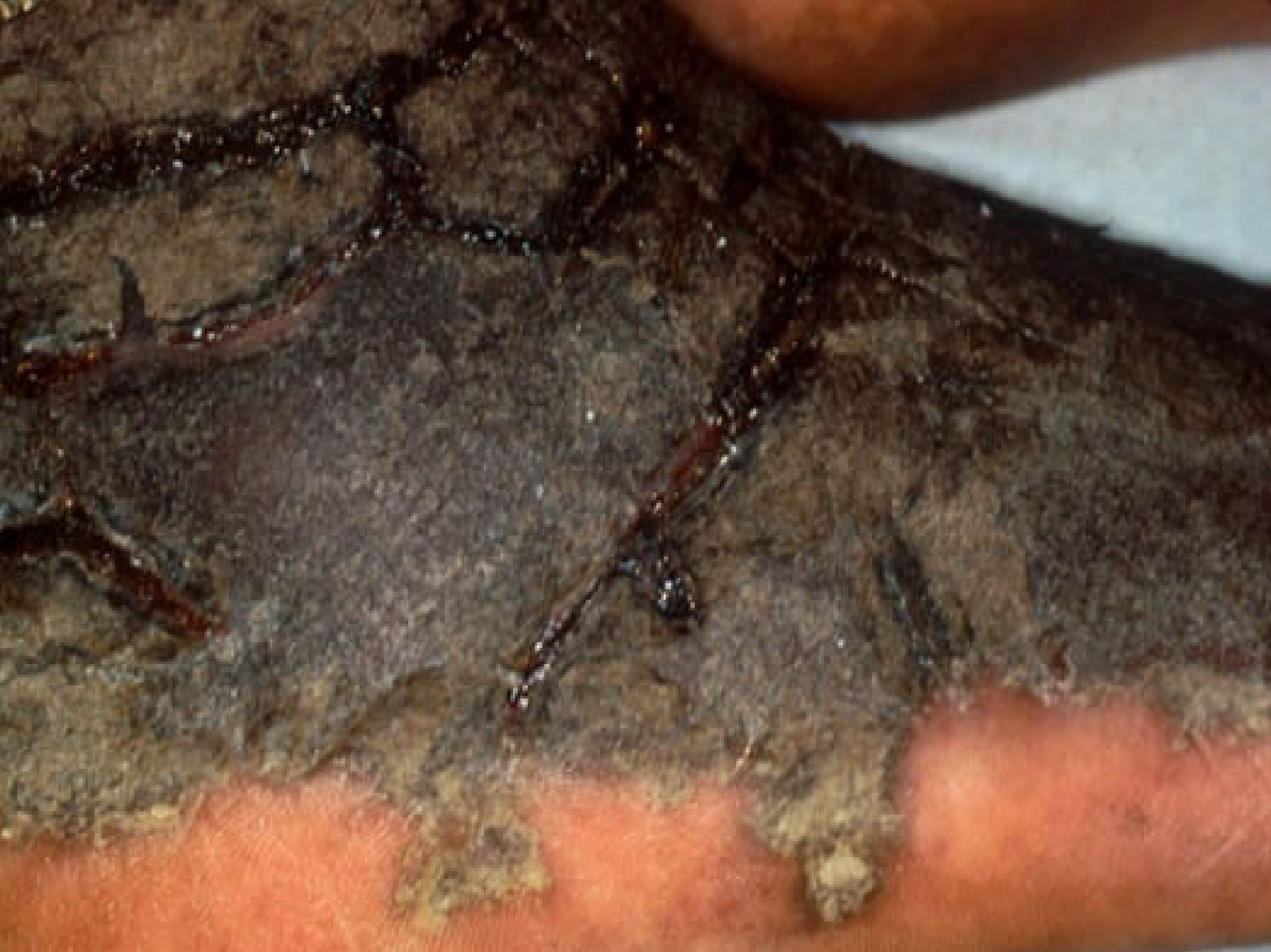
Scabies

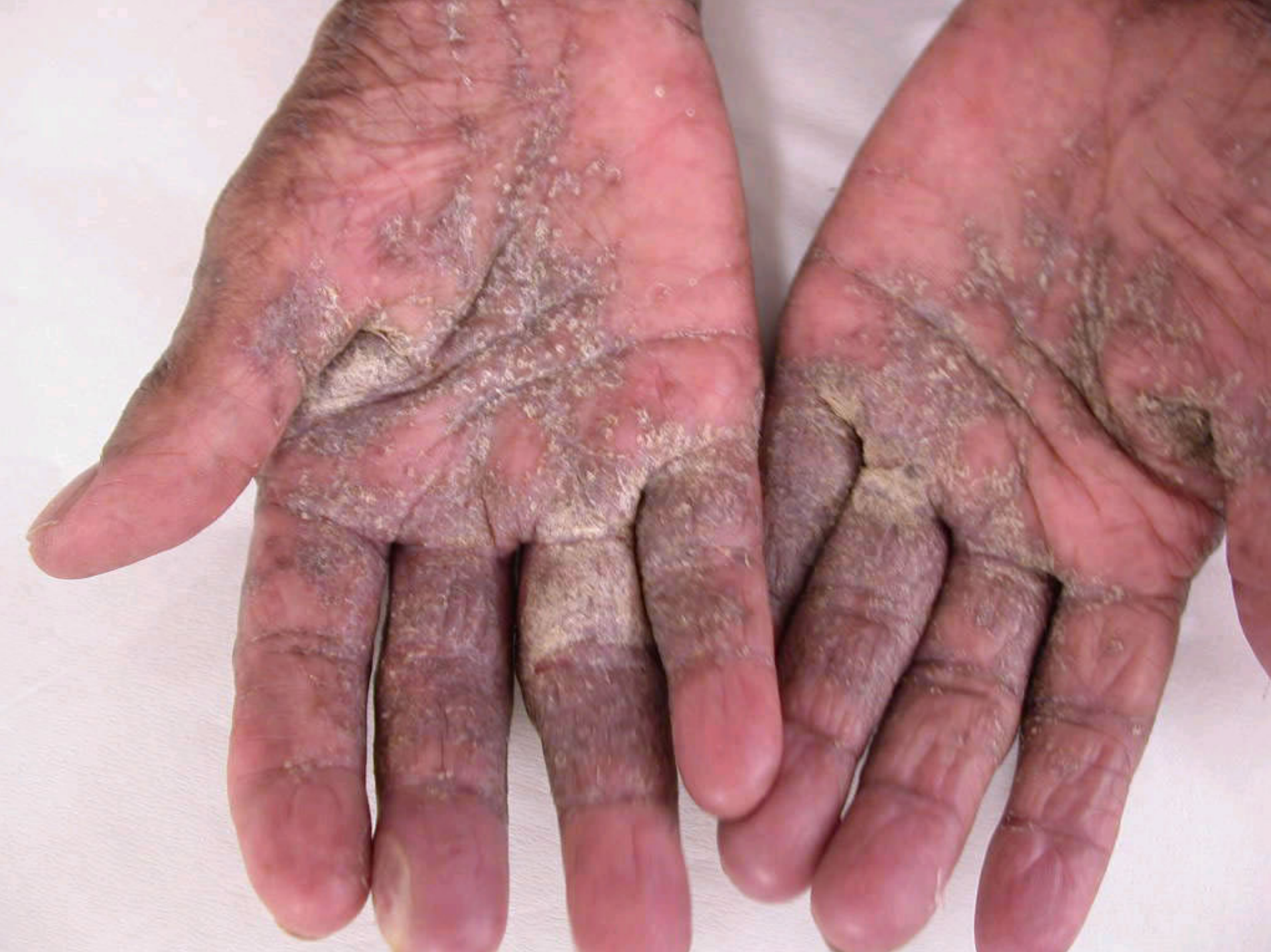
Clinical



- Female mite
- Larvae, or newly hatched mites, travel to the skin surface,
- Mite is scratched off the skin, it can live in bedding up to 24 hours
- May be up to a month before a newly infested person will notice the itching, especially in people with good hygiene and who bathe regularly

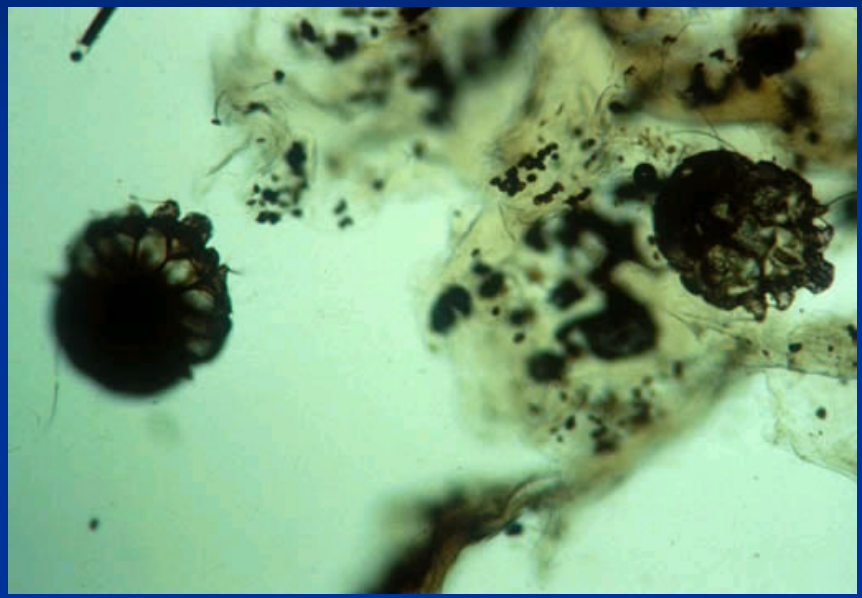






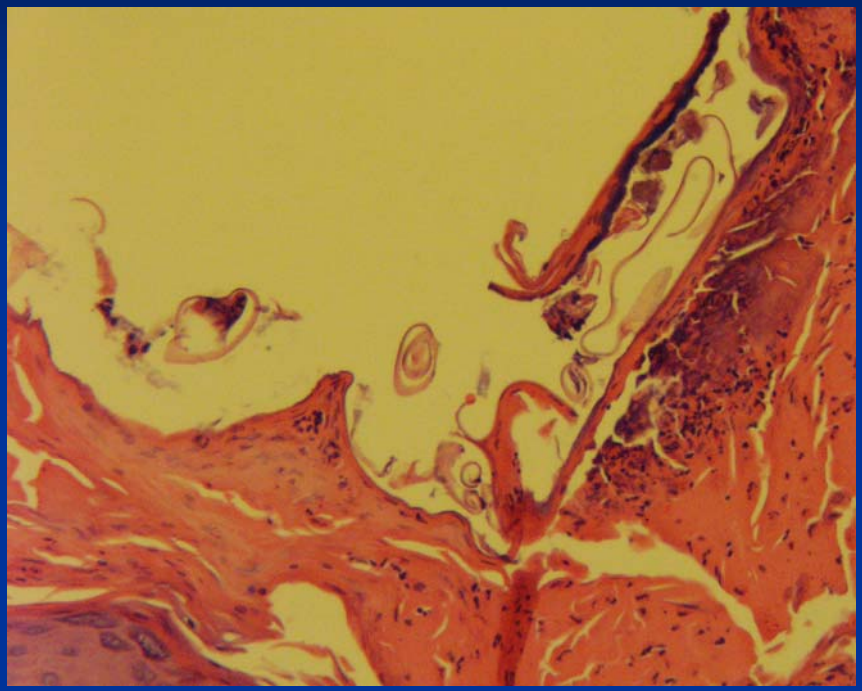
Norwegian Scabies

Scabies Prep

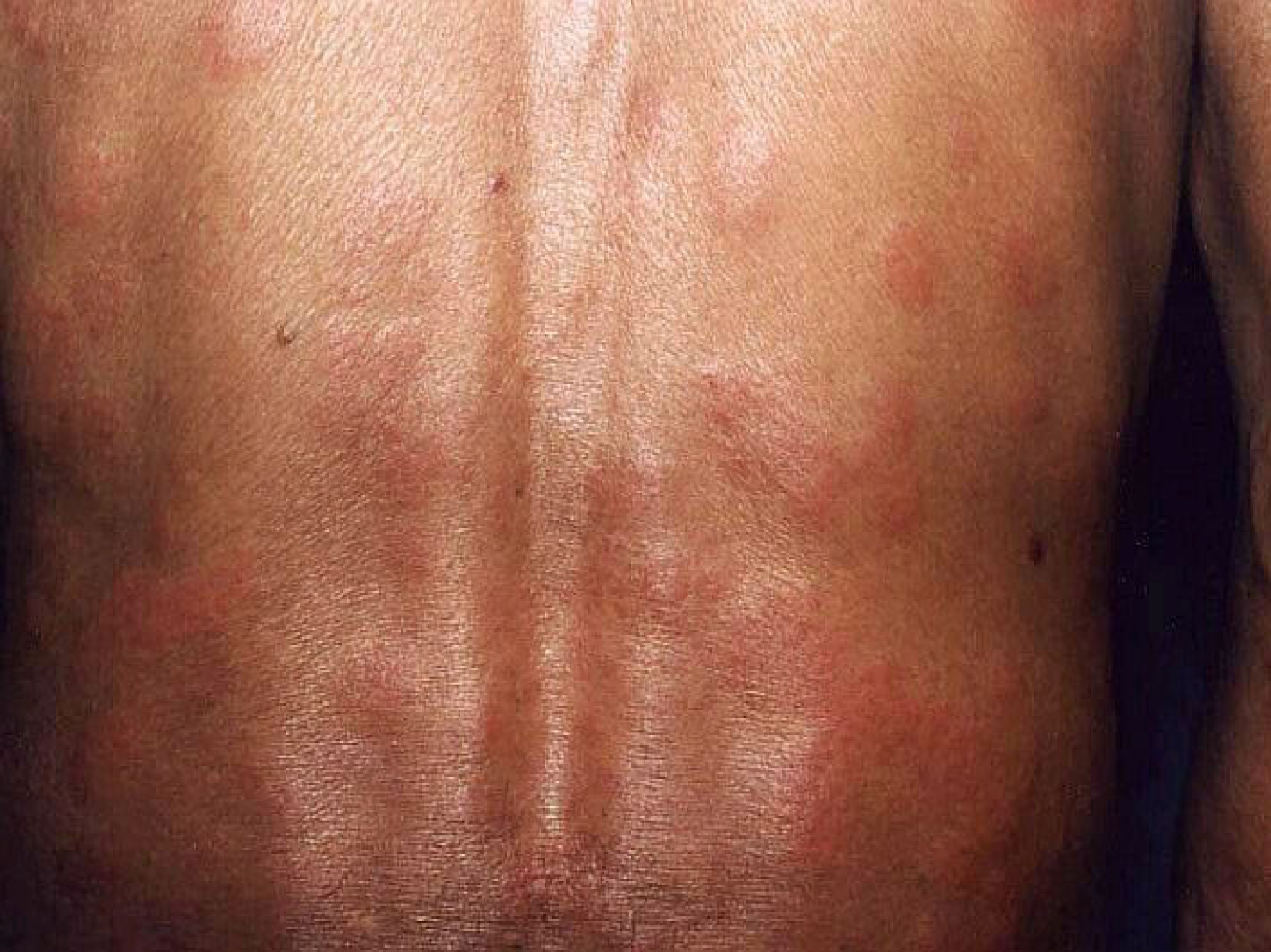


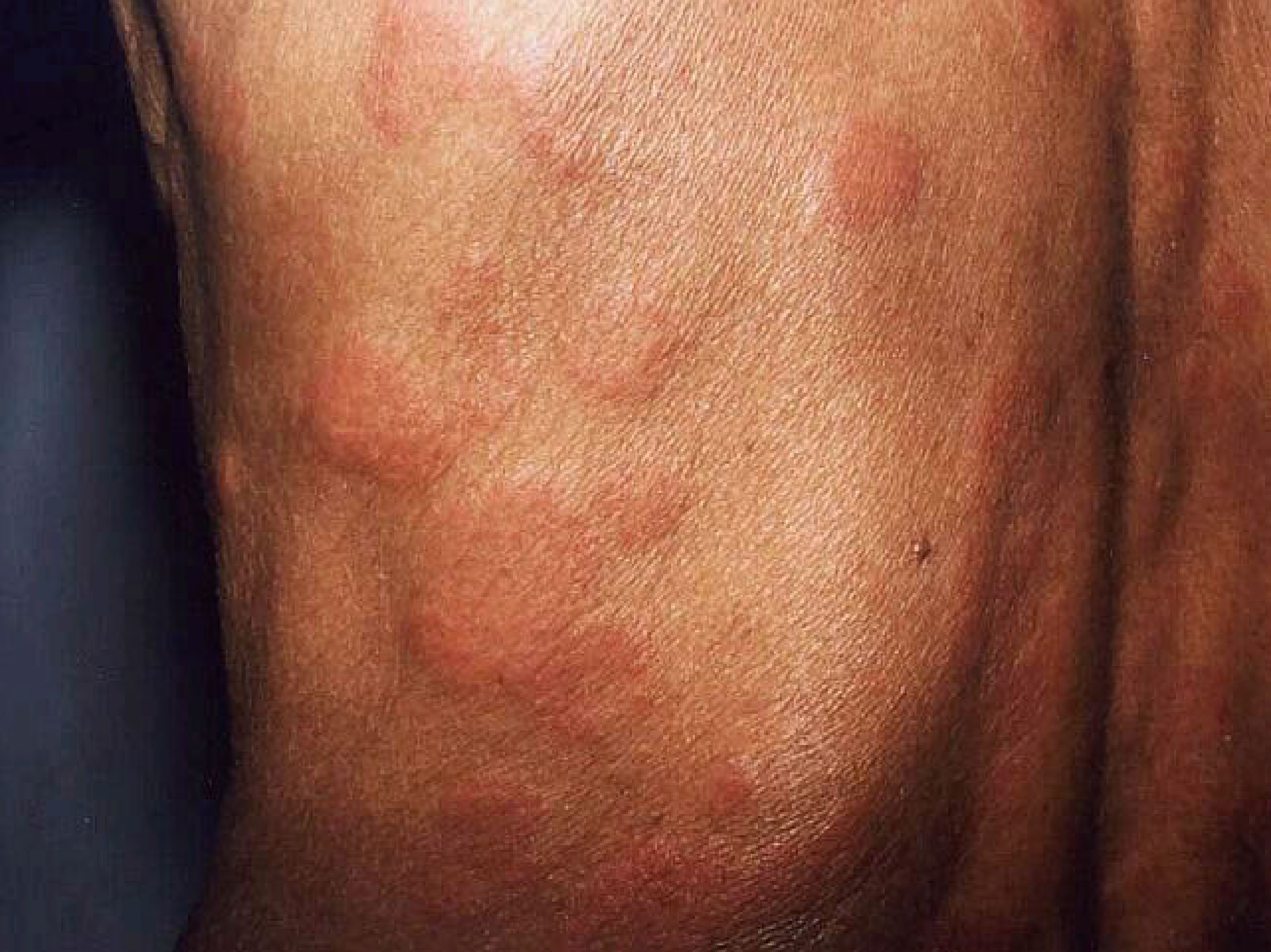
- Scabies prep
- Scybula

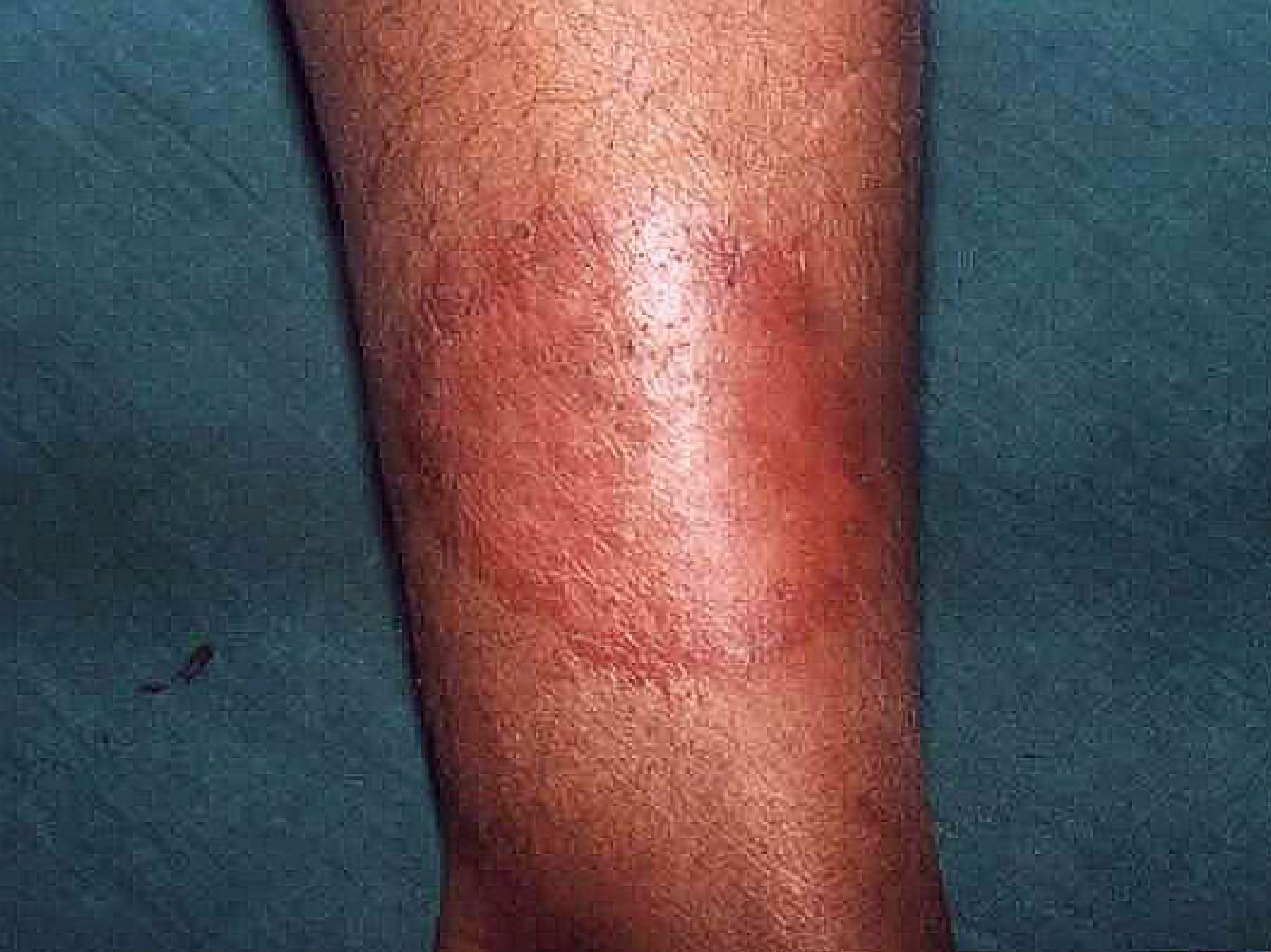
Histopathology

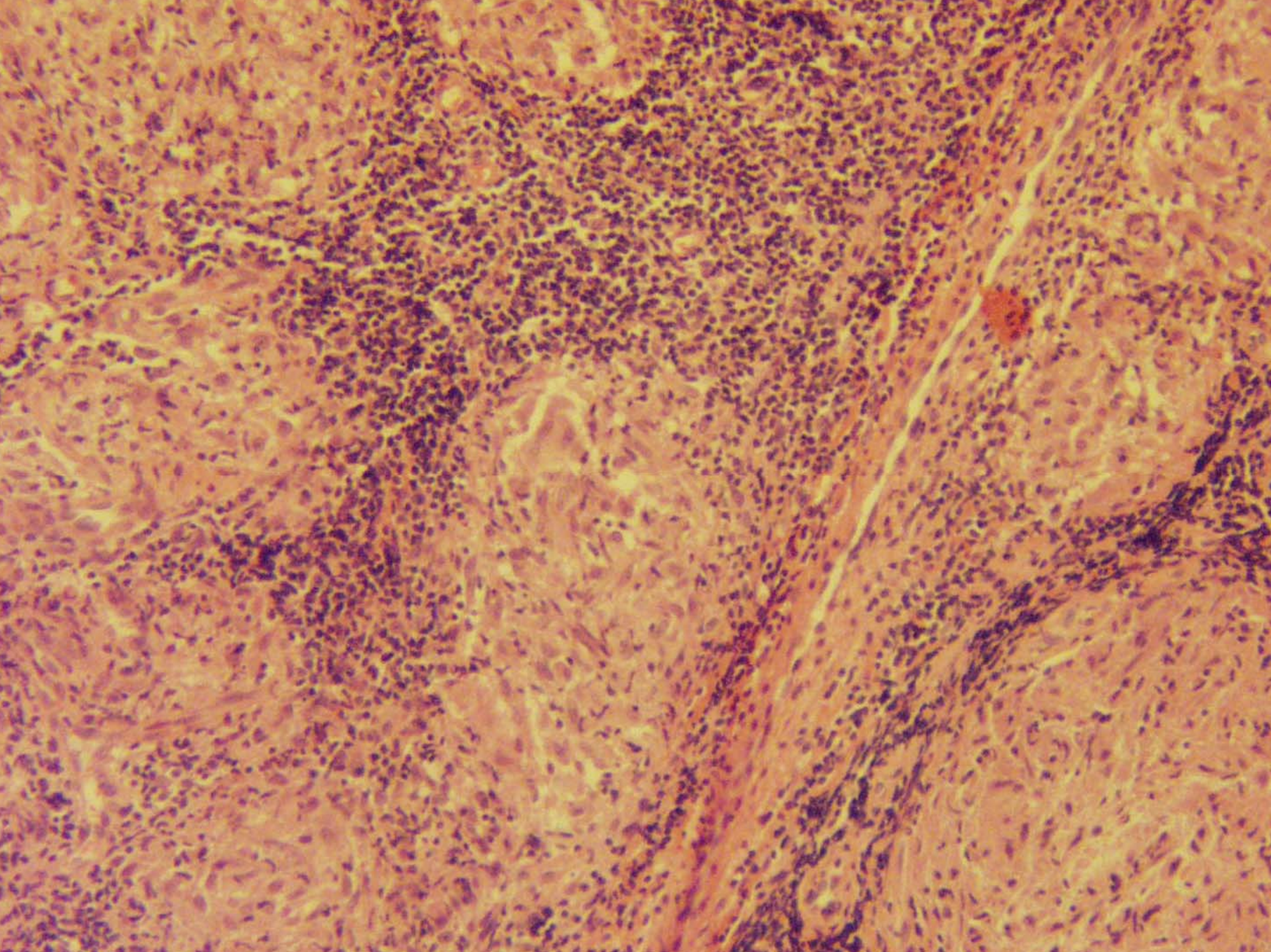


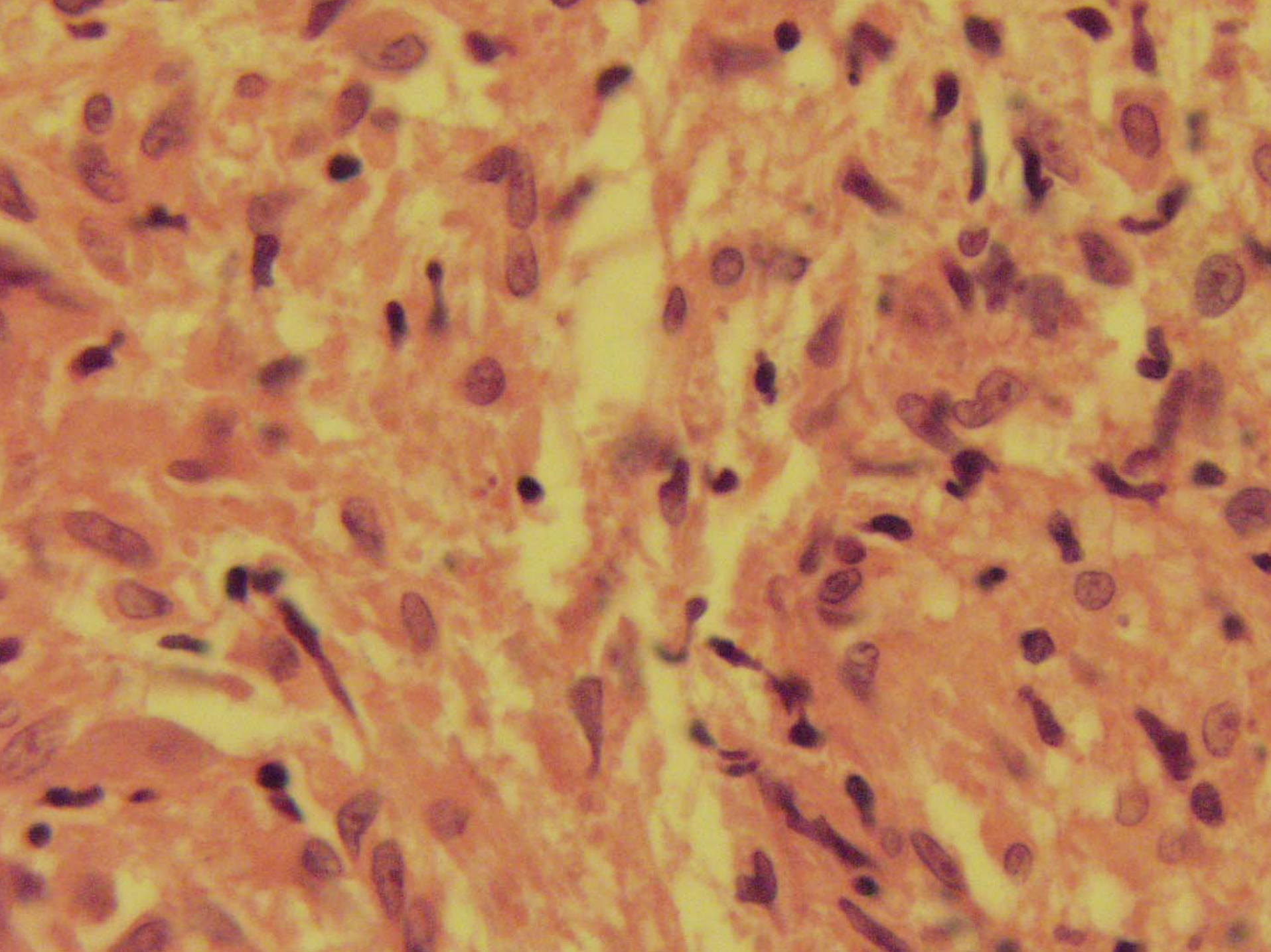
- Mite or scybula limited to stratum corneum
- Dermal eosinophilia
- Nodular aggregates in childhood
- DDX: Scabid, id

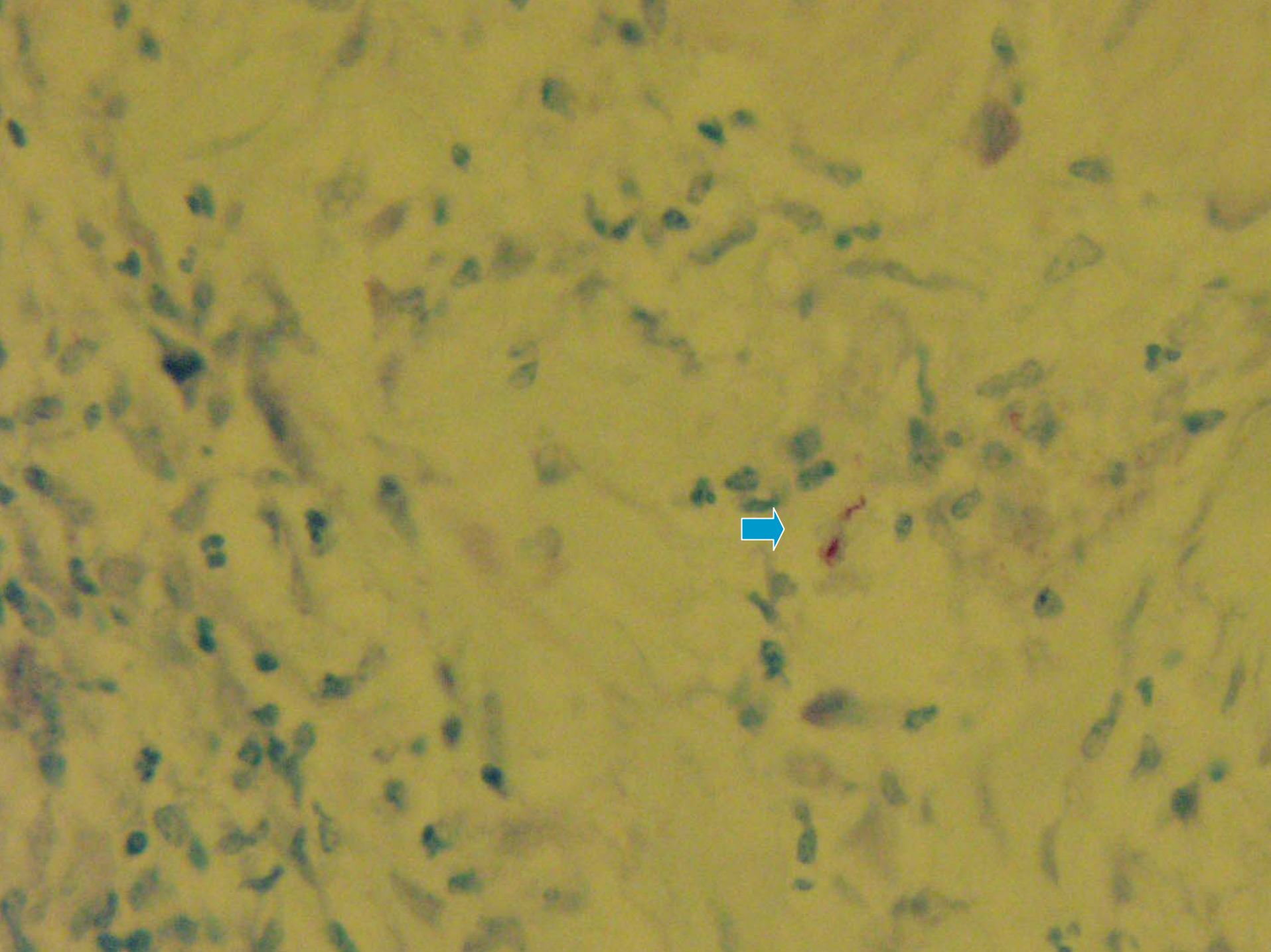










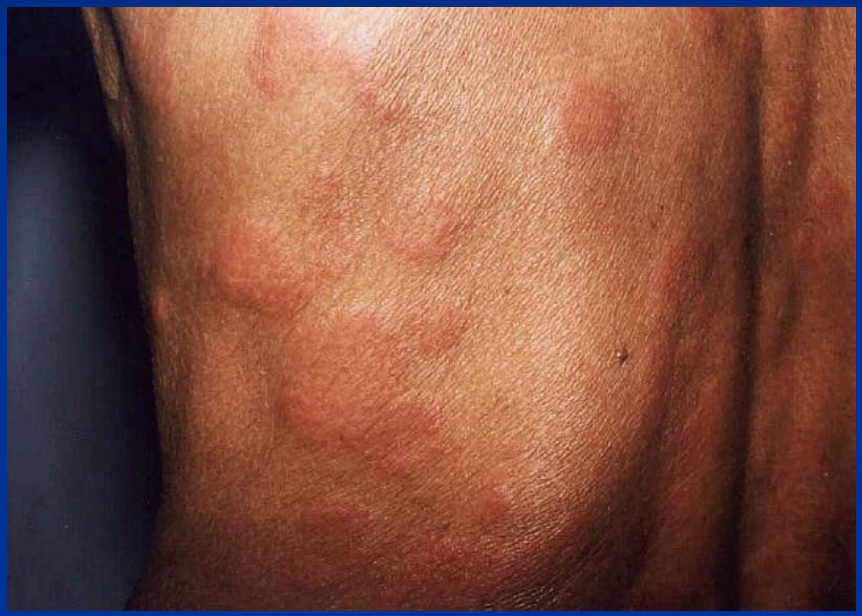


Tuberculoid Leprosy

The Scourge of Satan

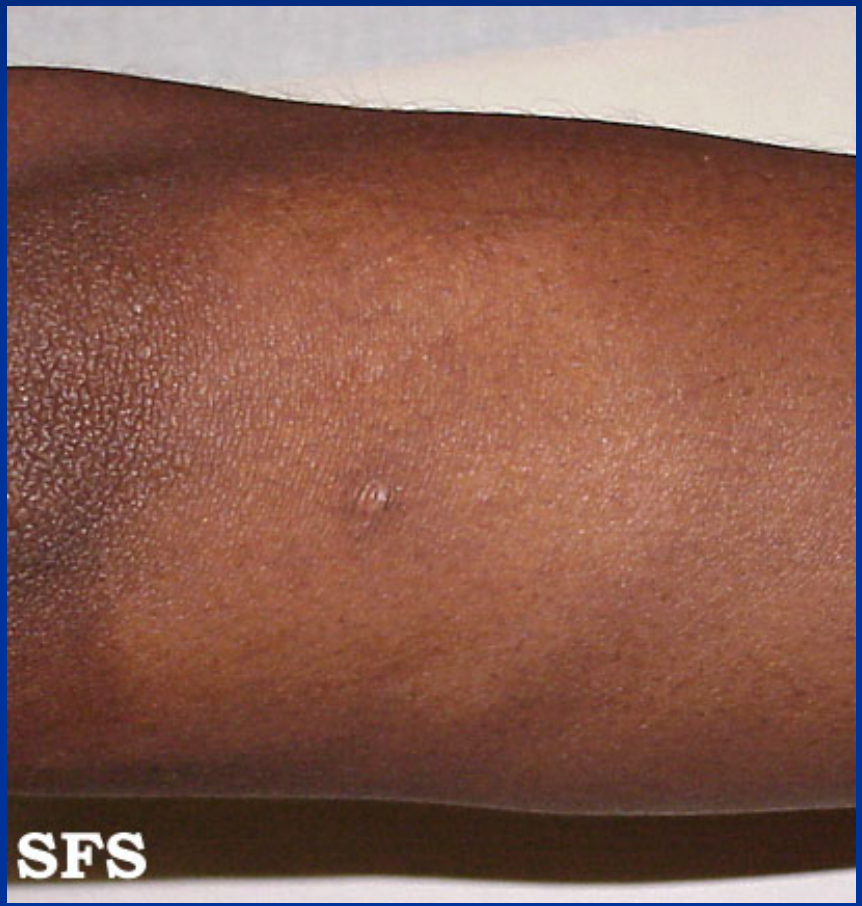
- Appears in an Egyptian papyrus inscribed about 1552-1350 B.C.
- Indian writings dated at 600 B.C, describe a disease that most experts agree was leprosy
- Does not appear in the records of ancient Greece until the army of Alexander the Great came back from India in 326 B.C
- In Rome, the first mention coincides with the return of Pompey's troops from Asia Minor in 62 B.C.

Leprosy-Clinical



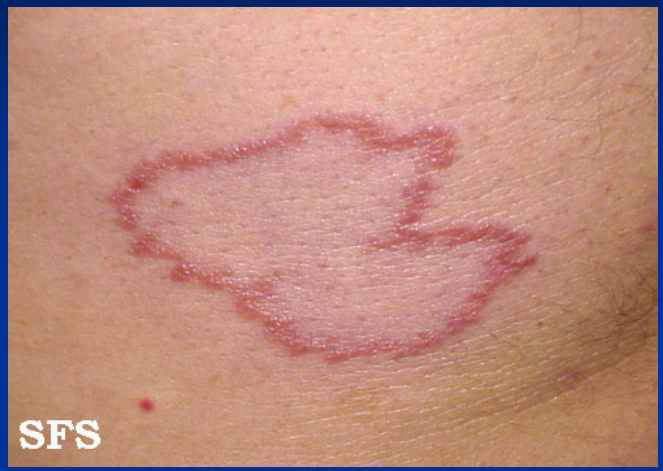
- Anesthesia, thickened nerves
- 90% of patient present with numbness
- Neuropathy
  - Temperature, light touch, deep pressure
- Hypopigmented macule is often the first cutaneous lesion

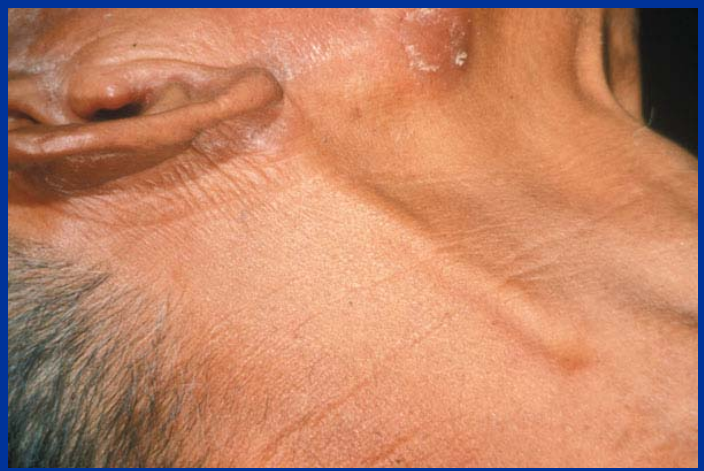
Indeterminate leprosy (IL)



- Early form causes one to a few hypopigmented, or sometimes erythematous, macules
- Sensory loss is unusual
- Most cases evolve from this state into one of the other forms, depending on the patient's immunity to the disease

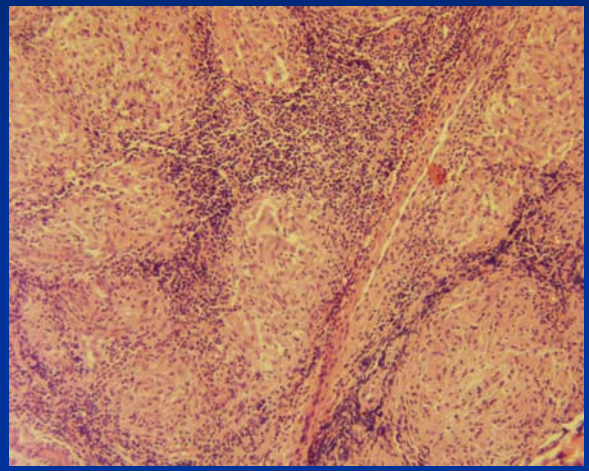
Tuberculoid leprosy (TT)

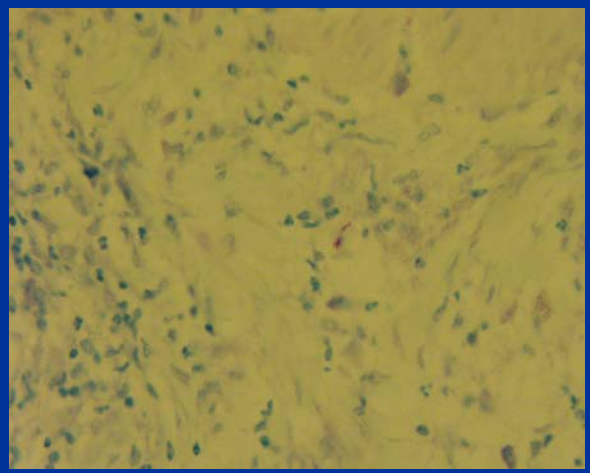




- Erythematous large plaque with well-defined borders that are elevated and slope down into an atrophic center
- Both types of lesions are anesthetic and involve alopecia
- Tender, thickened nerves with subsequent loss of function
- Great auricular nerve and superficial peroneal nerves are often prominent

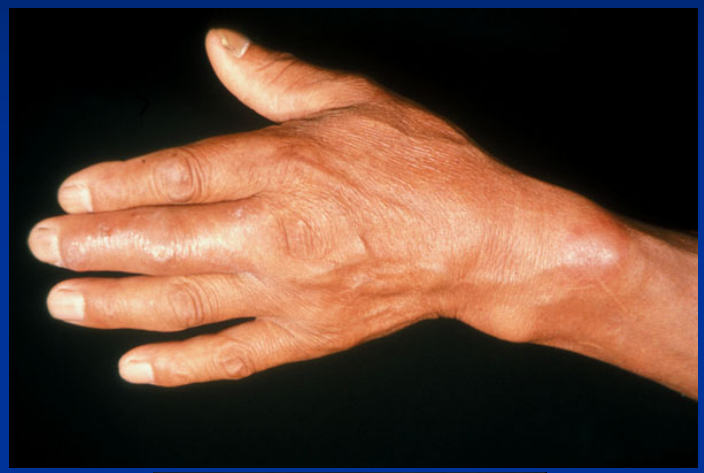
Histopathology

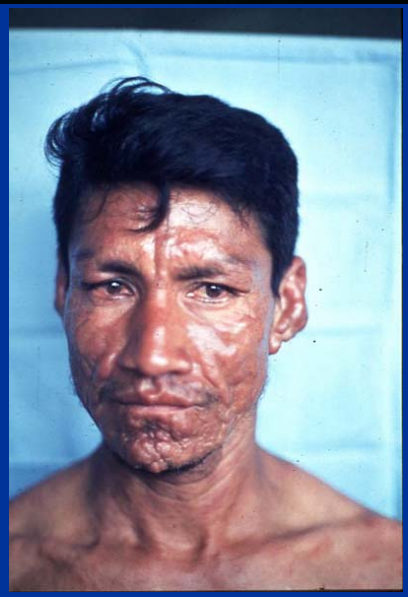




- Non-caseating granulomas with occasional giant cells
- Rare necrosis
- Mixed chronic inflammatory infiltrate
- Perineural involvement

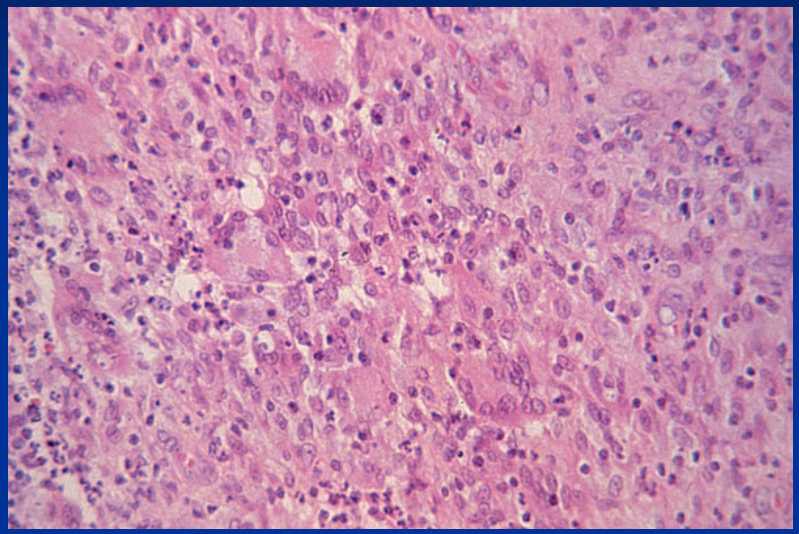
Lepromatous leprosy (LL)

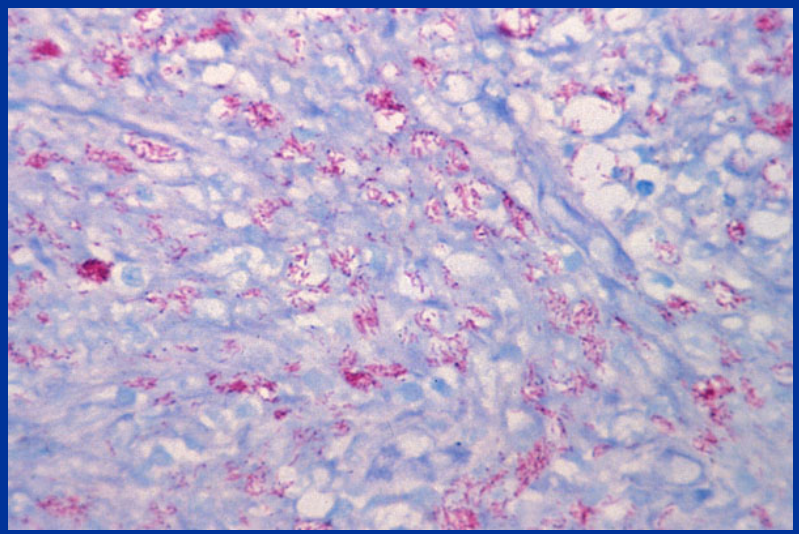




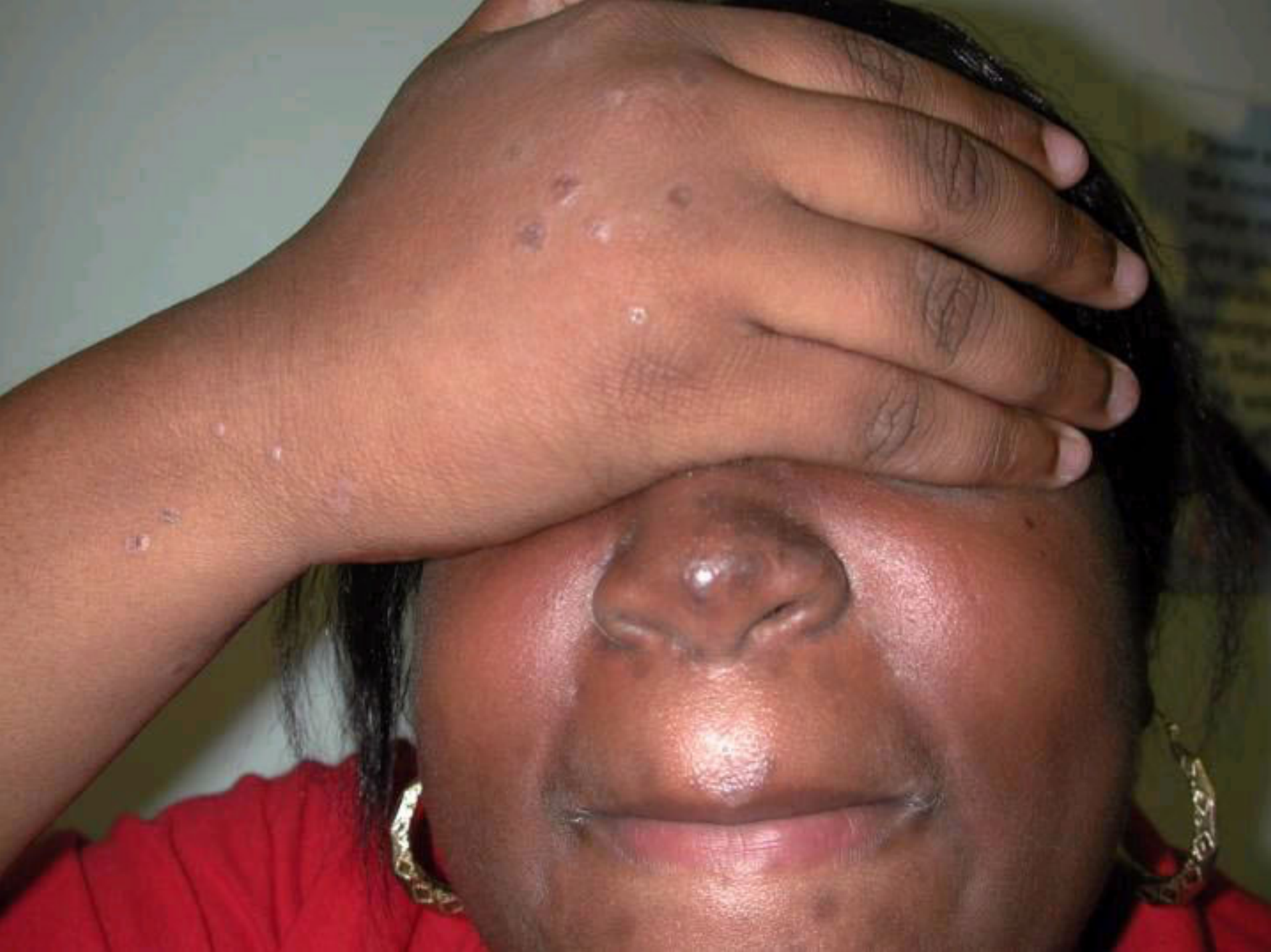
- Early pale macules
- Macular lesions are small, diffuse, and symmetric
- Lateral eyebrows are affected by alopecia (ie, madarosis)
- Diffuse, nodules (lepromas), or plaques-Leonine
- Cannot convert back to the less severe borderline or tuberculoid types of disease

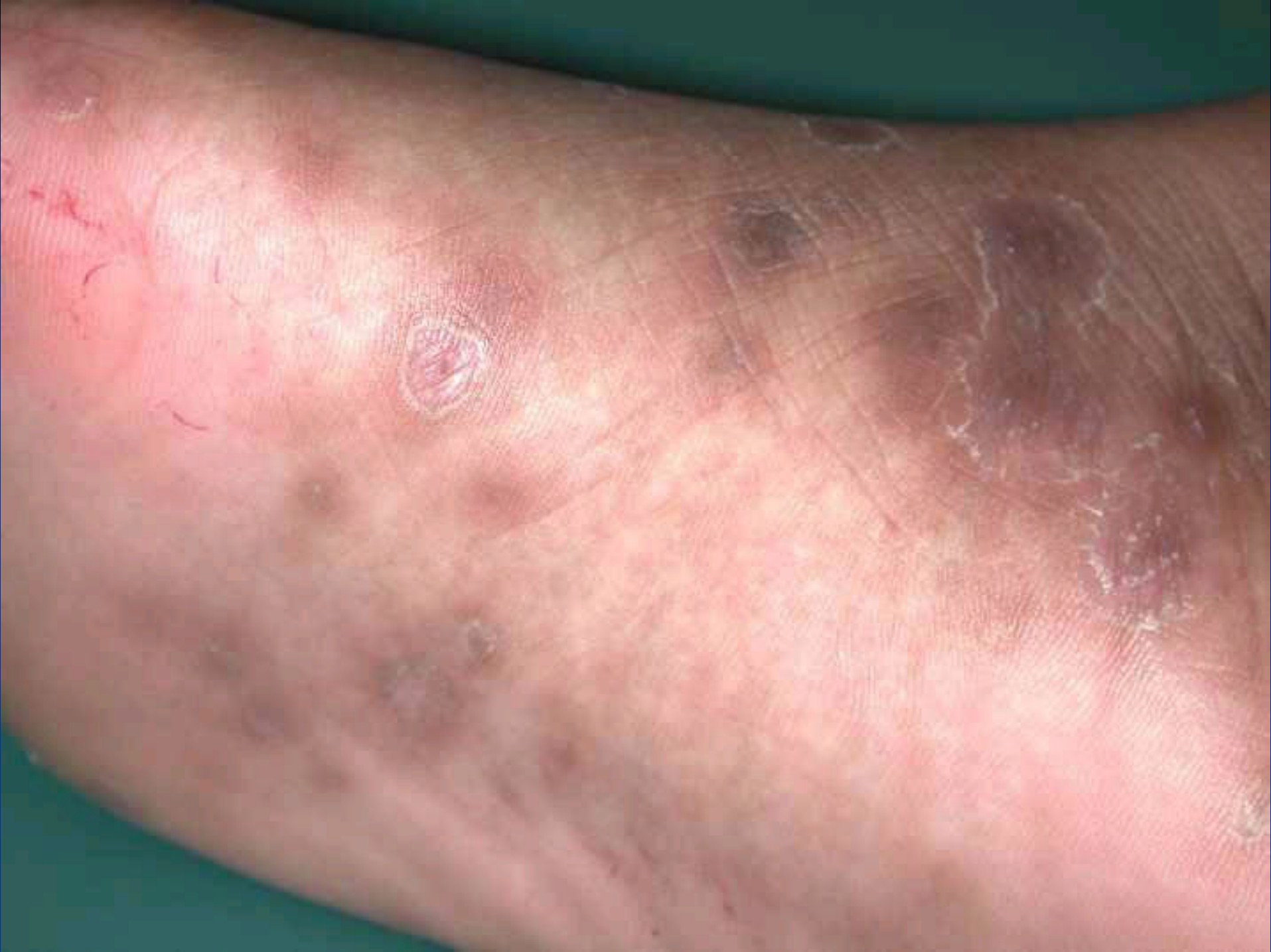
Histopathology-Lepromatous

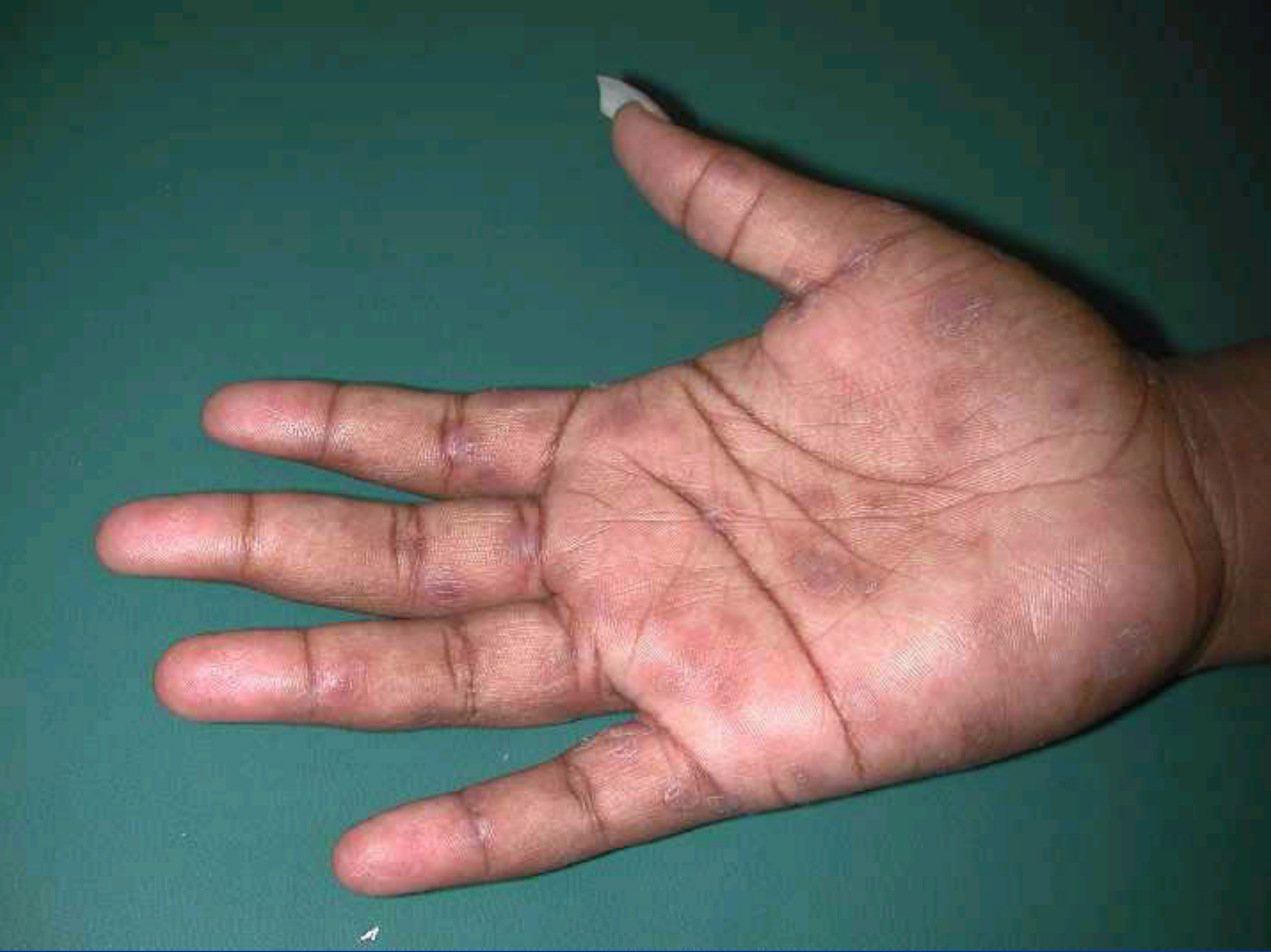


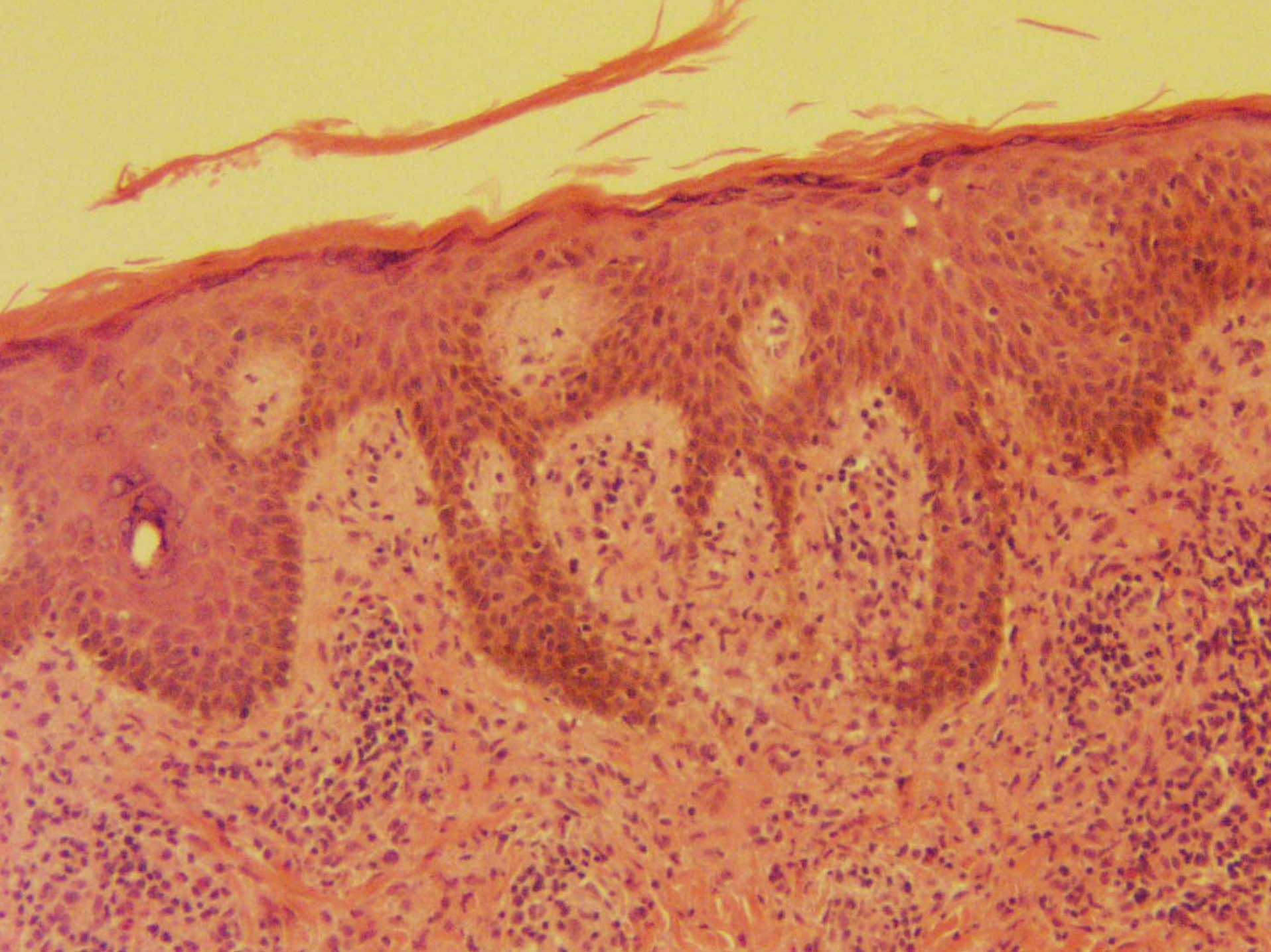


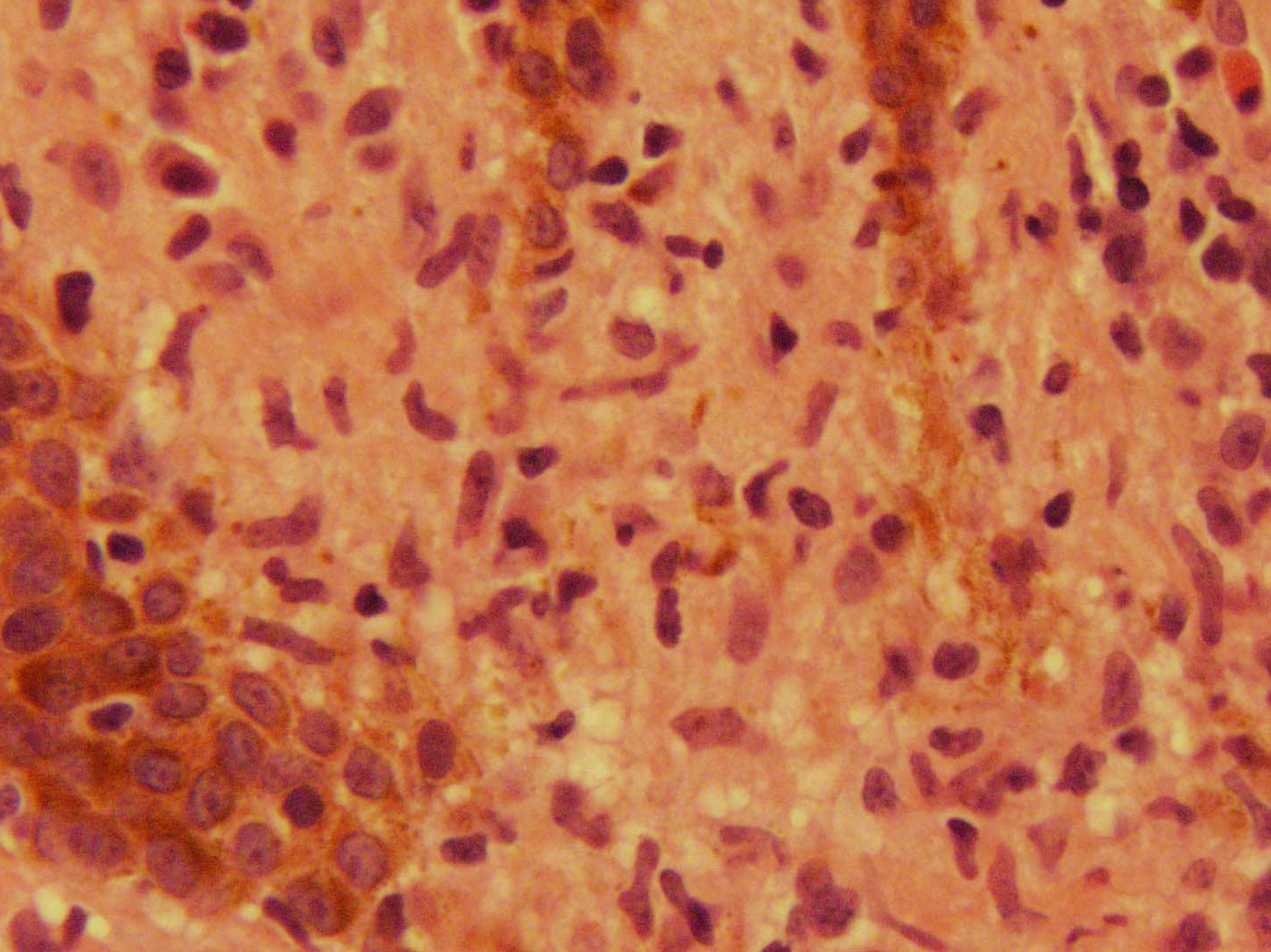
- Diffuse infiltrate of foamy macrophages with Grenz zone
- Numerous AFB and globi (clumps)
- Numerous bacilli invade nerves
- Rule out histoid leprosy (Mycobacterium spindle cell tumor)

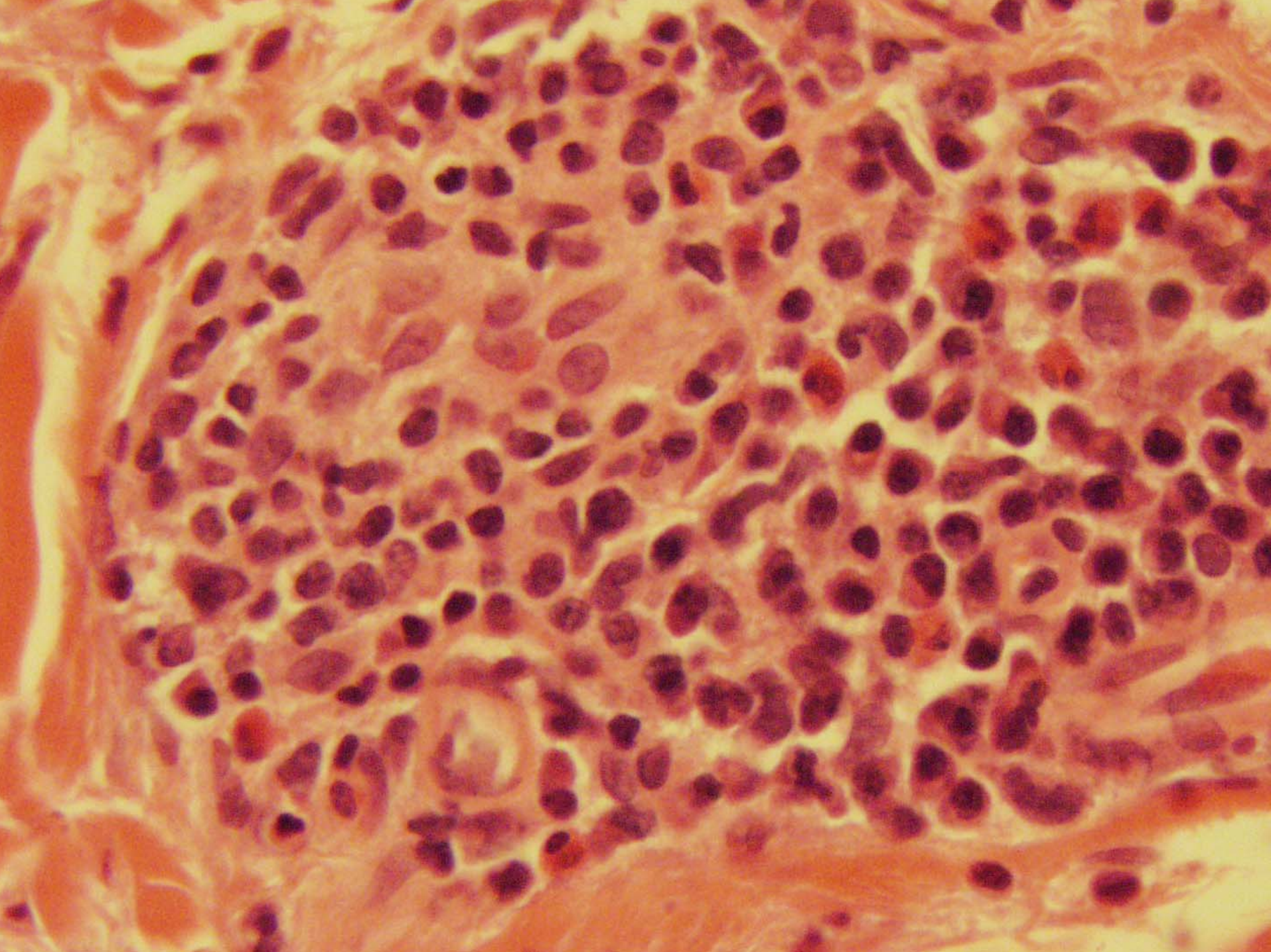


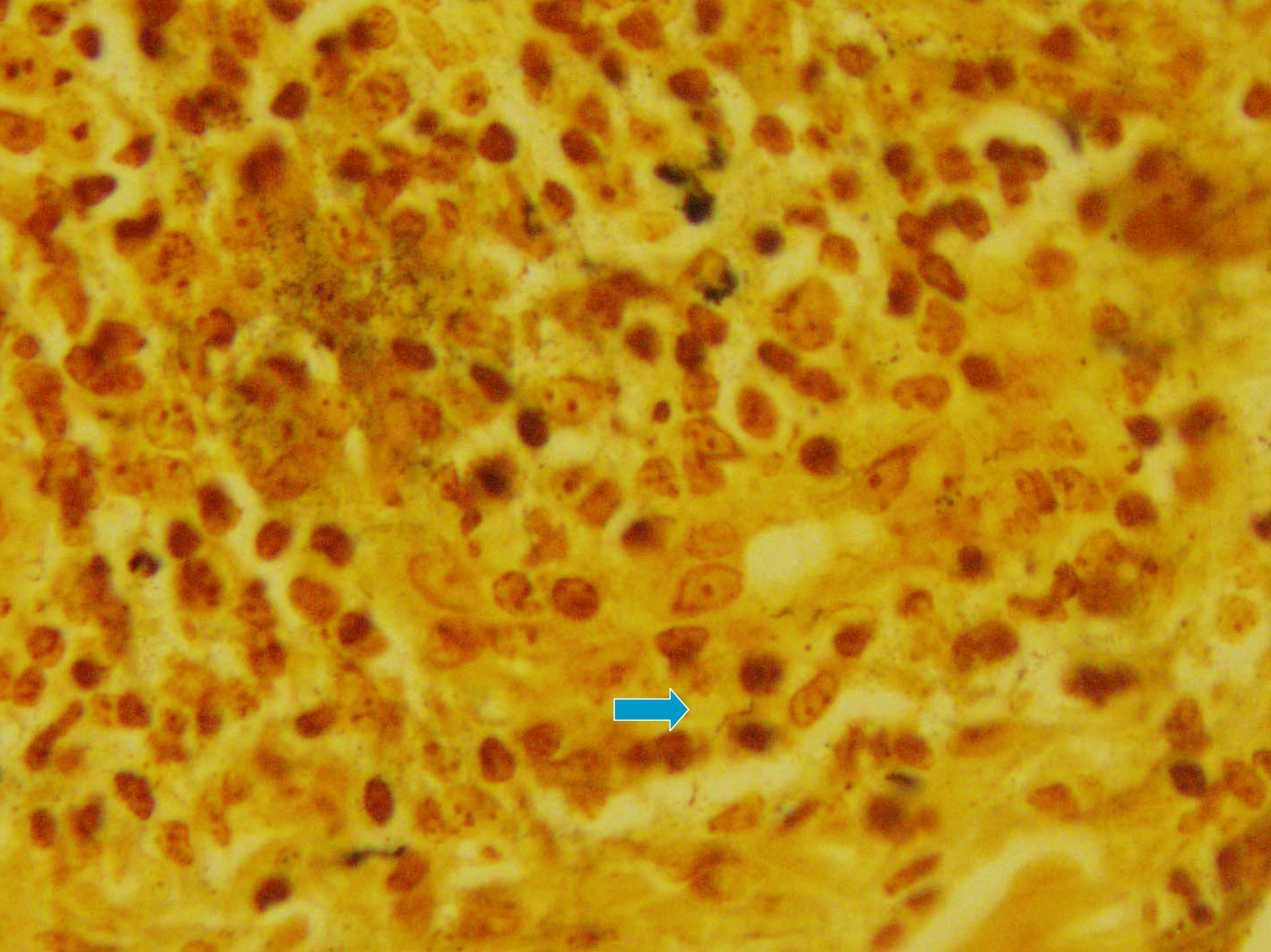












Syphilis

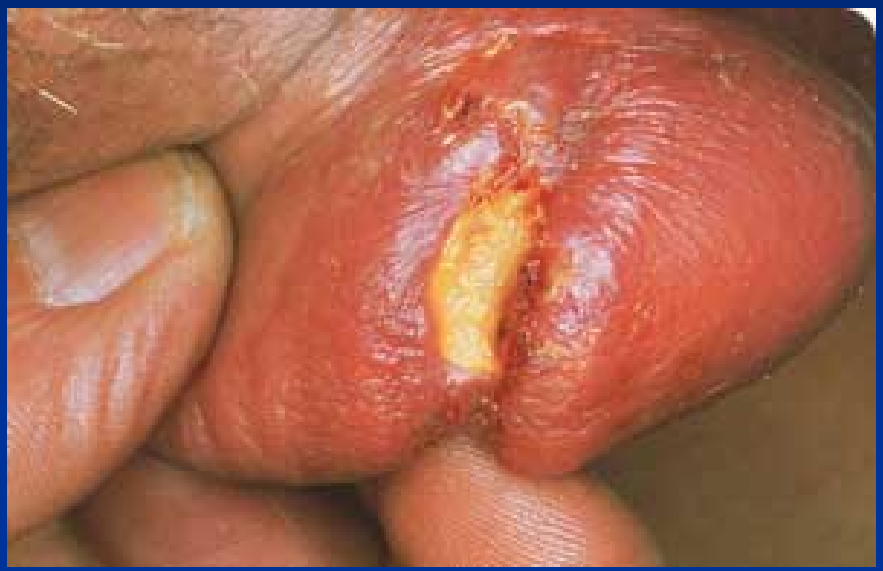
The physician who knows syphilis knows medicine.

----Sir William Osler

Syphilis in the United States

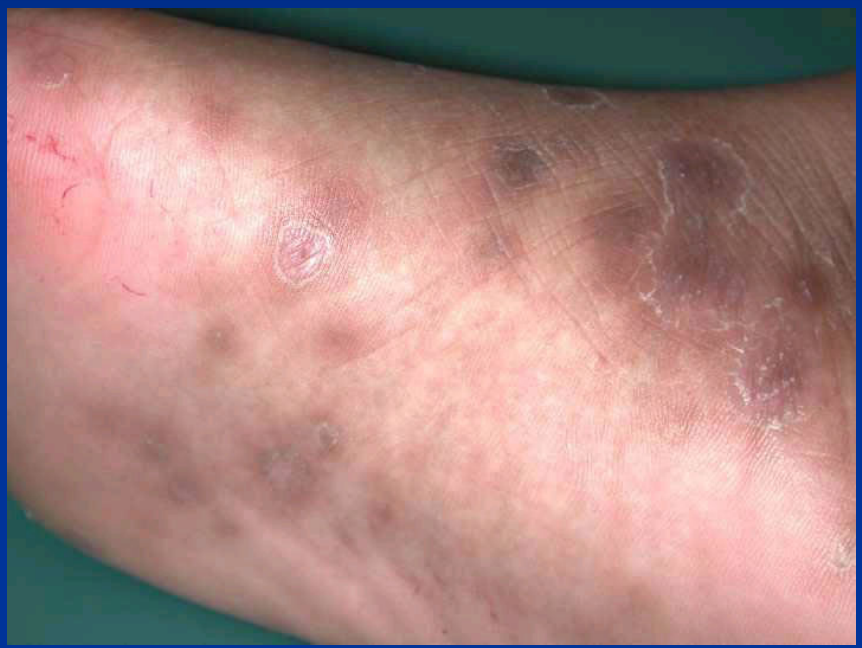
- 1940-100,000 cases (pre-antibiotic era)
- 1956-10,000 cases
- 1990-45,000 cases
  - AIDS
  - intravenous (IV) drug and crack cocaine abuse
  - Prostitution
- 1995-16,500 cases

Primary Syphilis



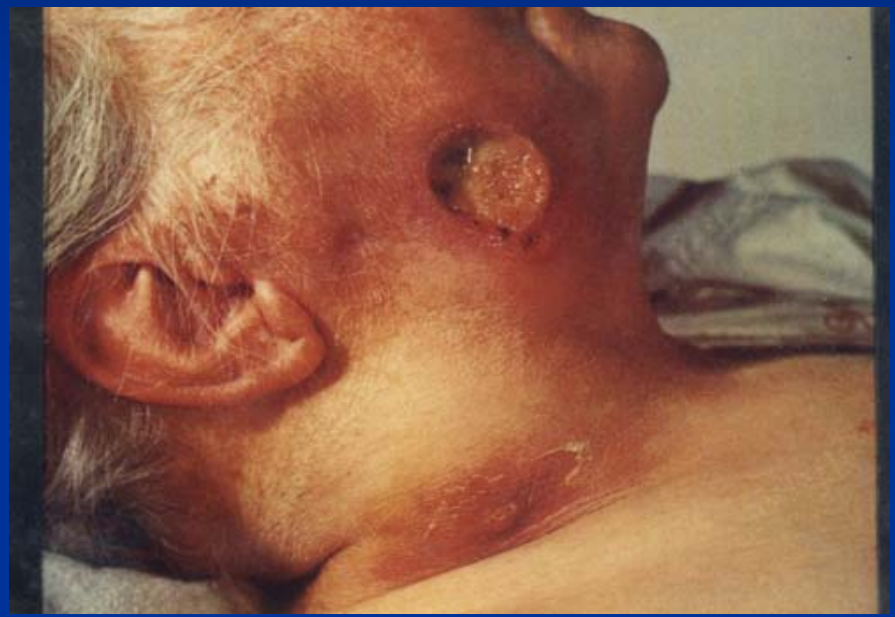
- Develops at the site of transmission
- Incubation period of 10-90 days (mean 21-28 days)
- Heals spontaneously in 3-7 weeks

Secondary Syphilis



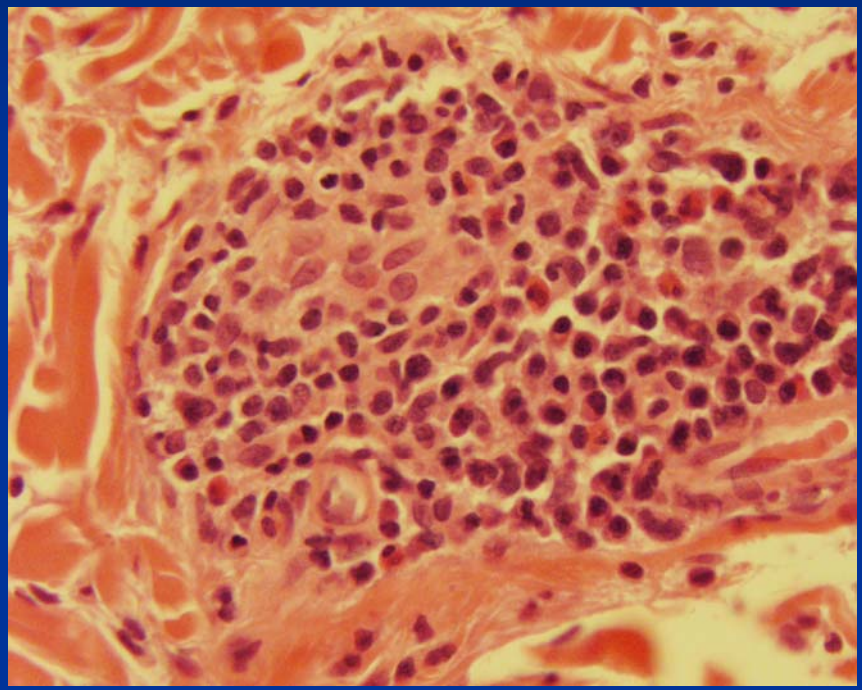
- About 4-10 weeks after the appearance of the primary lesion
- Malaise, fever, myalgias, and arthralgias
- Generalized body rash and lymphadenopathy
- Symptomatic secondary syphilis usually resolves without treatment

Latent Syphilis



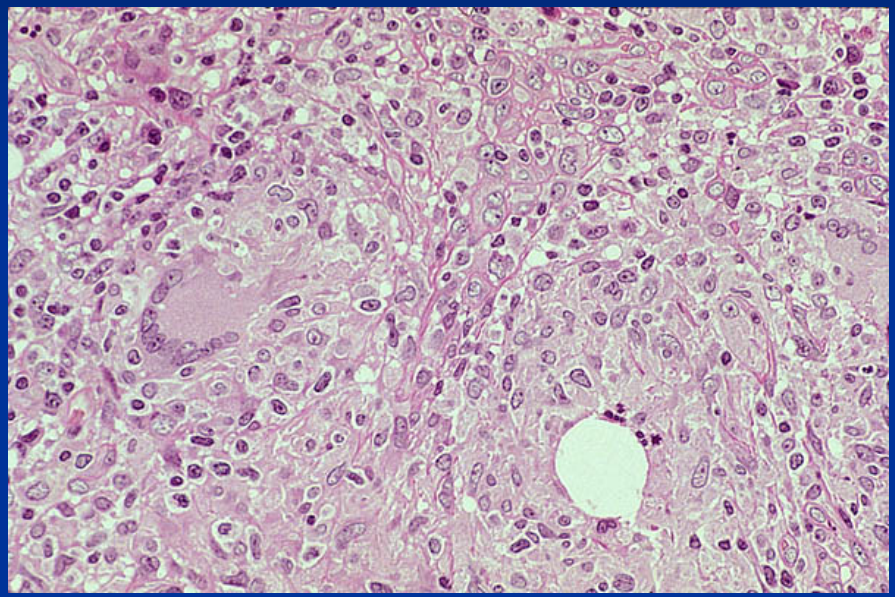
- Early
  - Encompasses the first 1-2 years of the disease and is marked by occasional relapses of active secondary lesions
- Late
  - Asymptomatic and generally noninfectious
  - About one third of untreated patients develop tertiary syphilis
  - Latency period lasting years to decades and manifests as gummatous or cardiovascular syphilis or neurosyphilis

Secondary Syphilis Histopathology

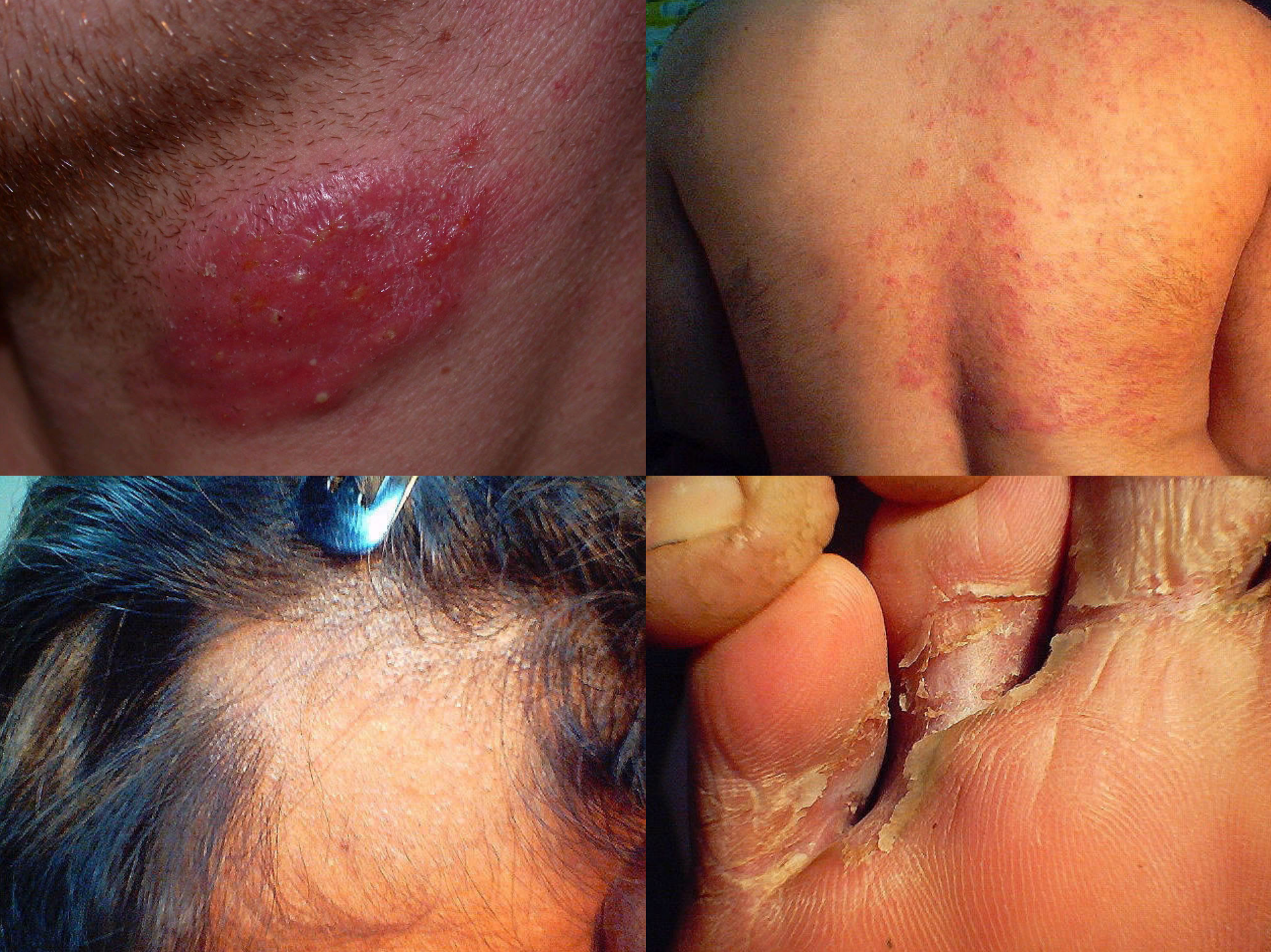


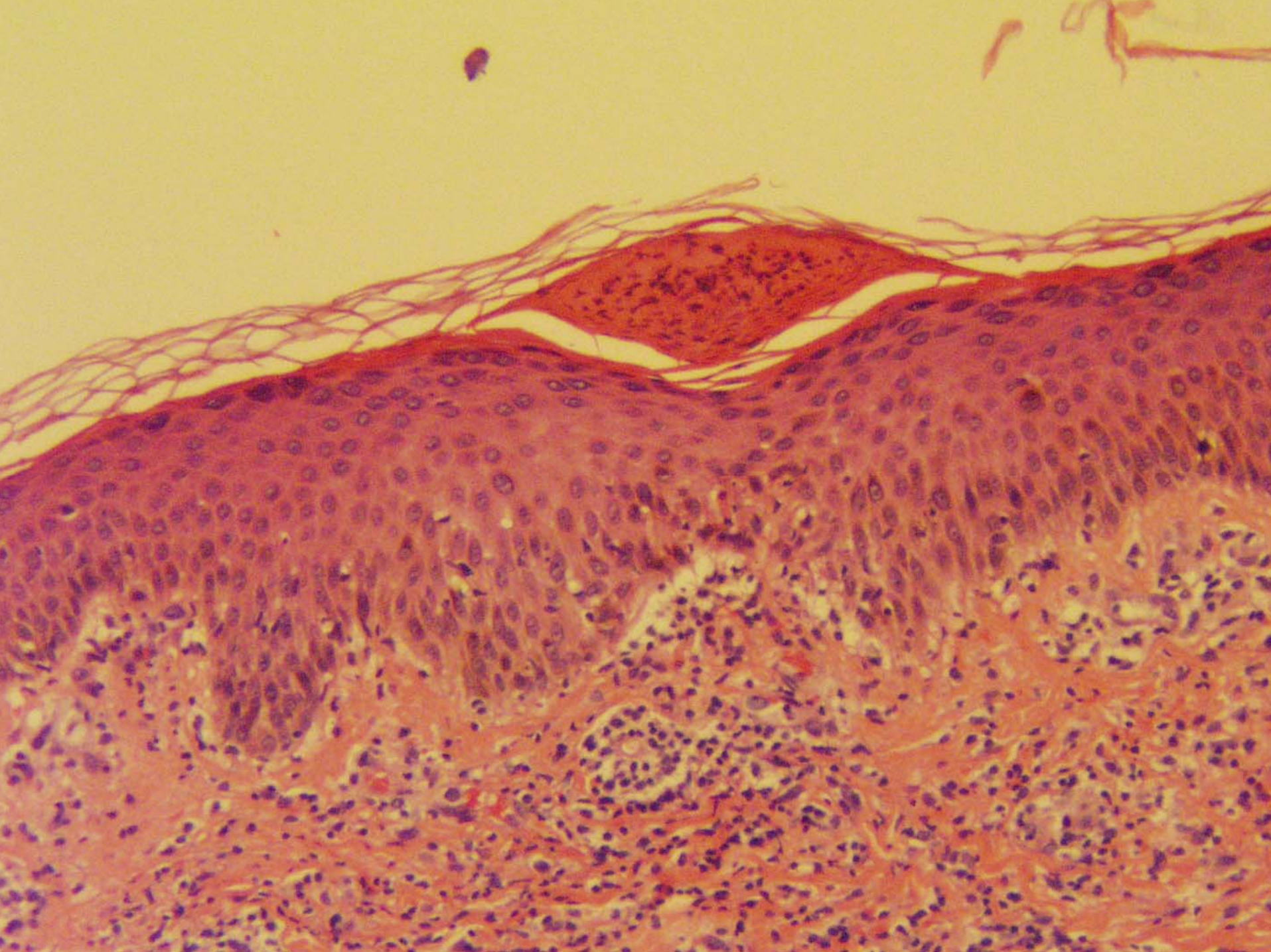
- Psoriasiform dermatitis with superficial and deep mixed infiltrate with plasma cells
- Plasma cells absent (10-15%)
- Rarely granulomatous, neutrophilic dermatosis, or pseudolymphoma

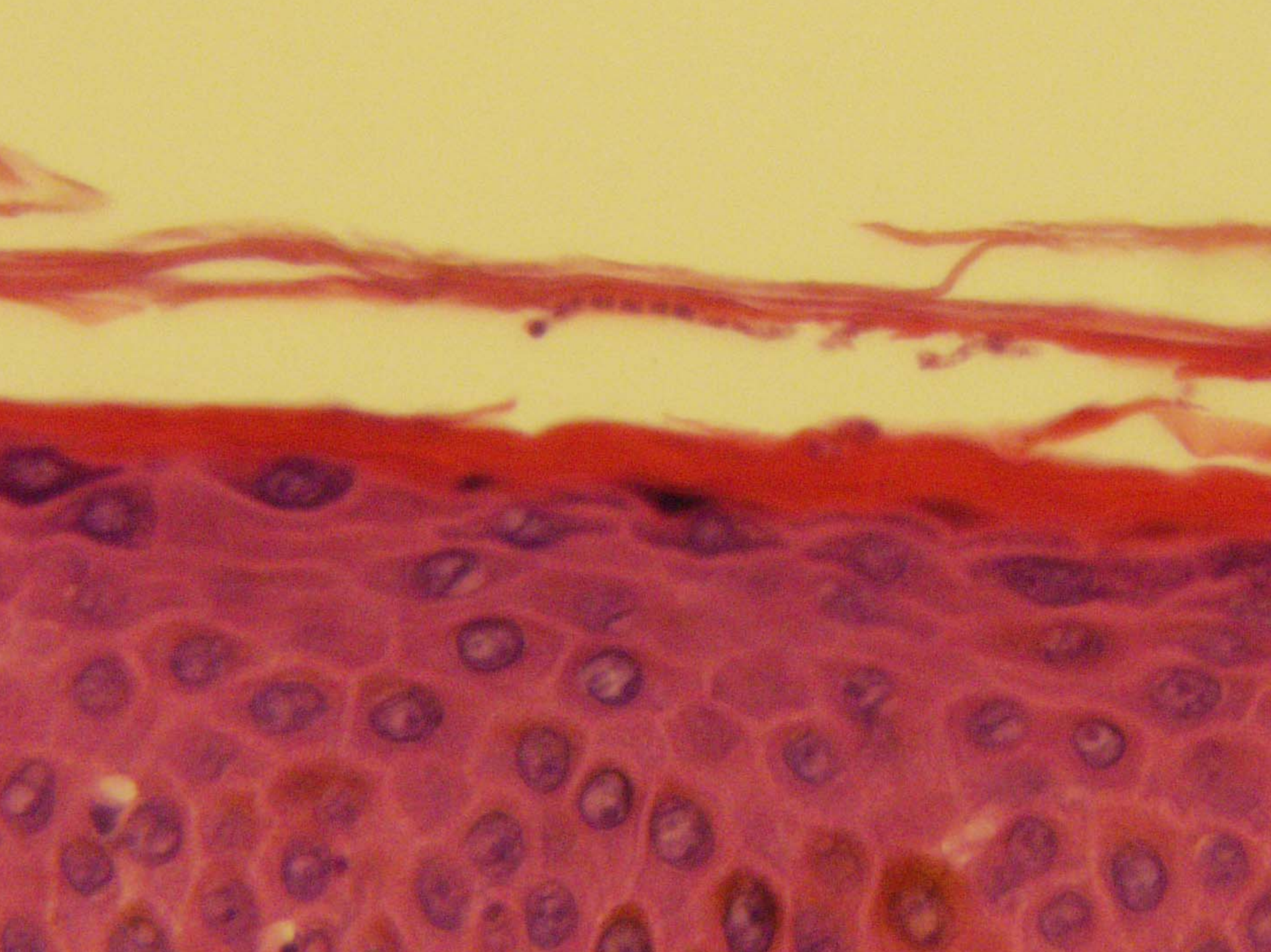
Tertiary Syphilis-Histopathology



- Warthin-Starry stains or other silver stains are usually positive for the organisms
- Silver stains may be negative in tertiary disease

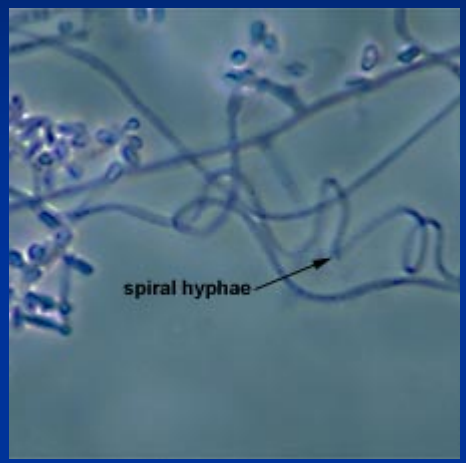


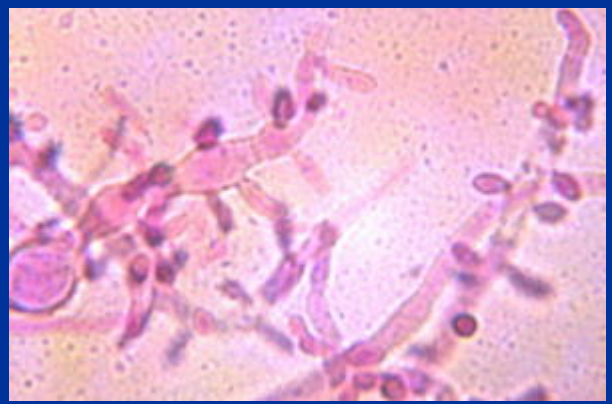




Dermatophytosis

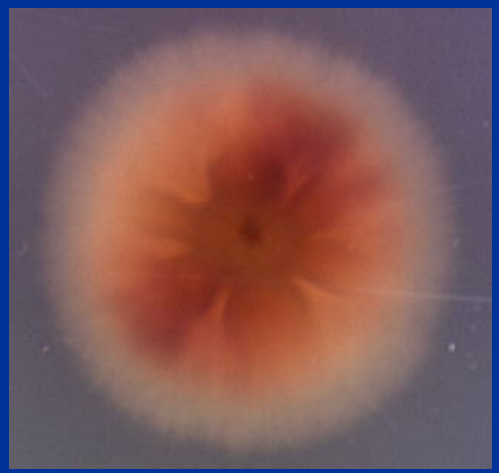
Wet Mount





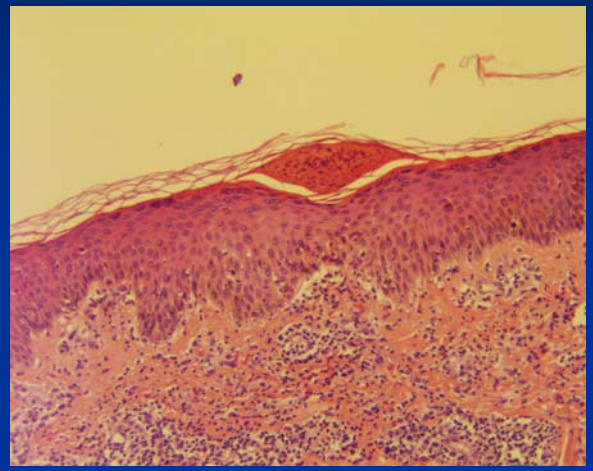
- Wet mount potassium hydroxide preparation (KOH prep)
- Stain such as lactophenol blue may be added and the slide is examined under the microscope
- Dermatophytes often take weeks to culture

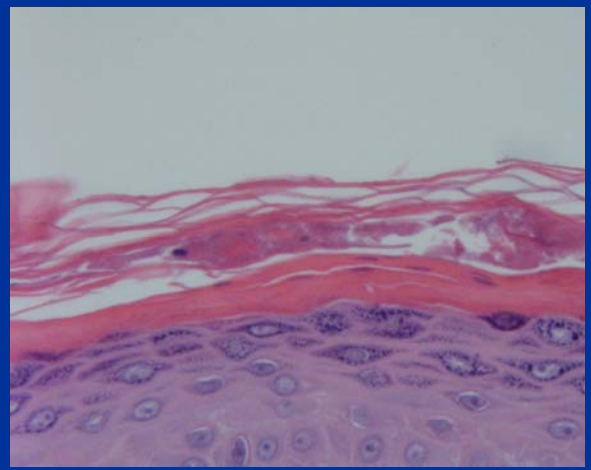
Culture



- Plate on Sabouroud's Dextrose
- Look at both sides of the plate

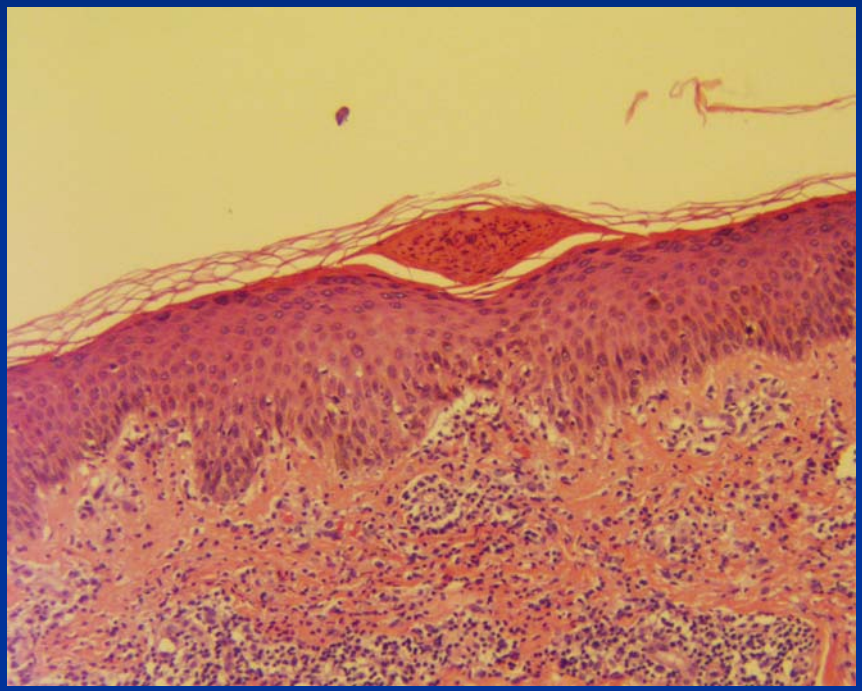
Histopathology





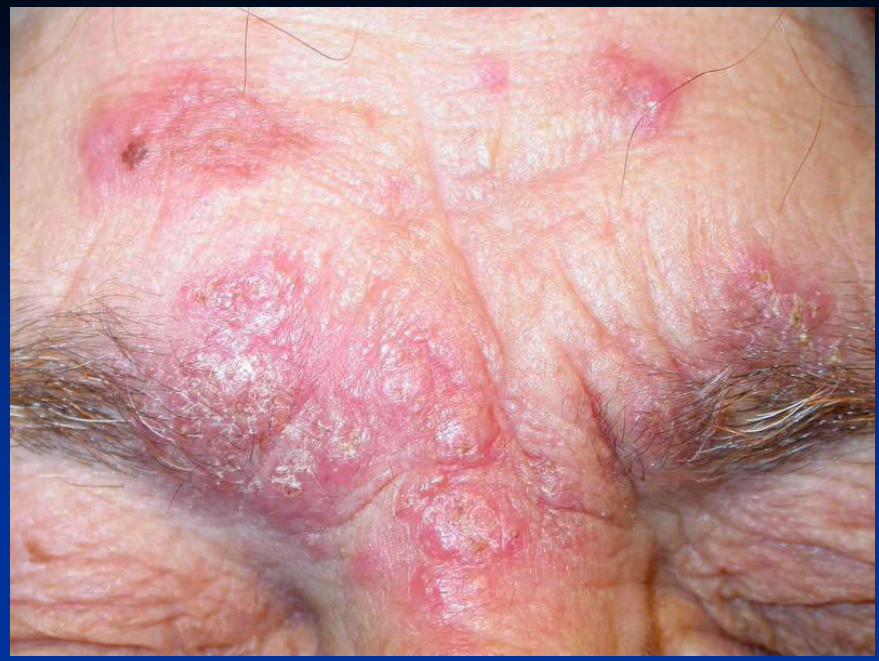
- Classic pattern-pmns within the stratum corneum*
- Sandwich sign (compact orthokeratosis and a layer of compact orthokeratosis underlying normal orthokeratosis)
- Endothrix vs exothrix
- Using a ultraviolet Wood's lamp, endothrix infections will not fluoresce as opposed to exothrix infections

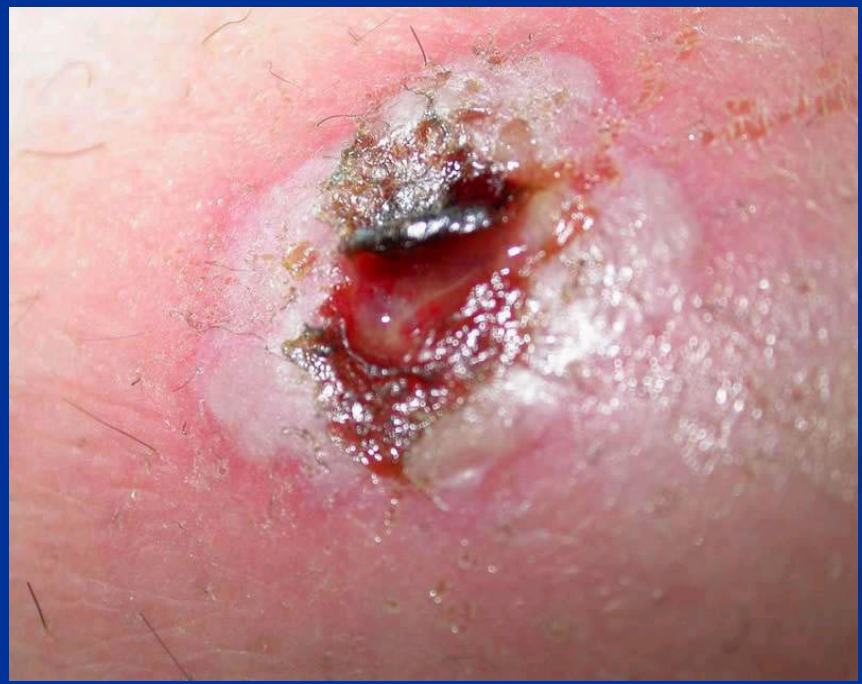
A Classic Pattern?

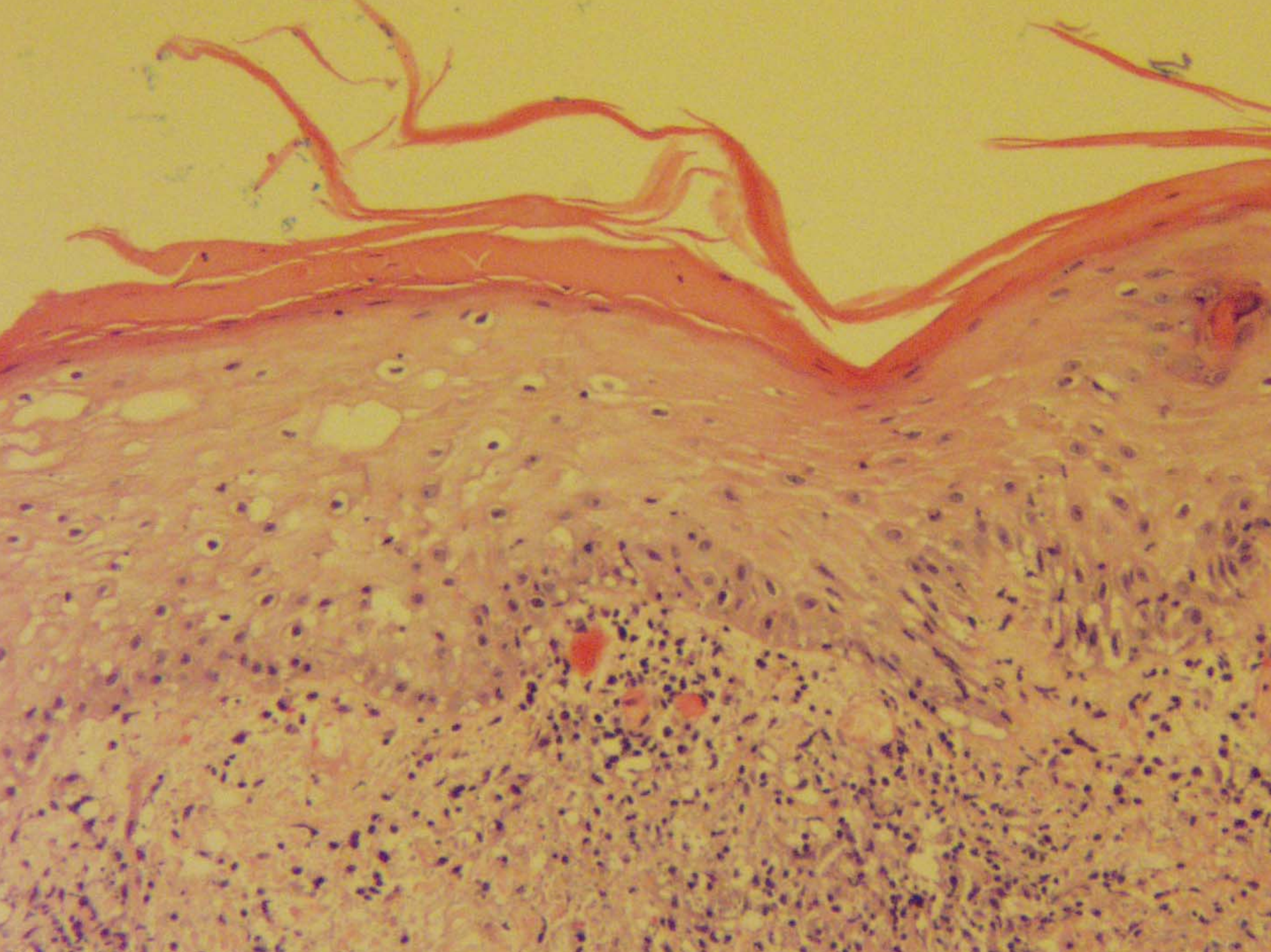


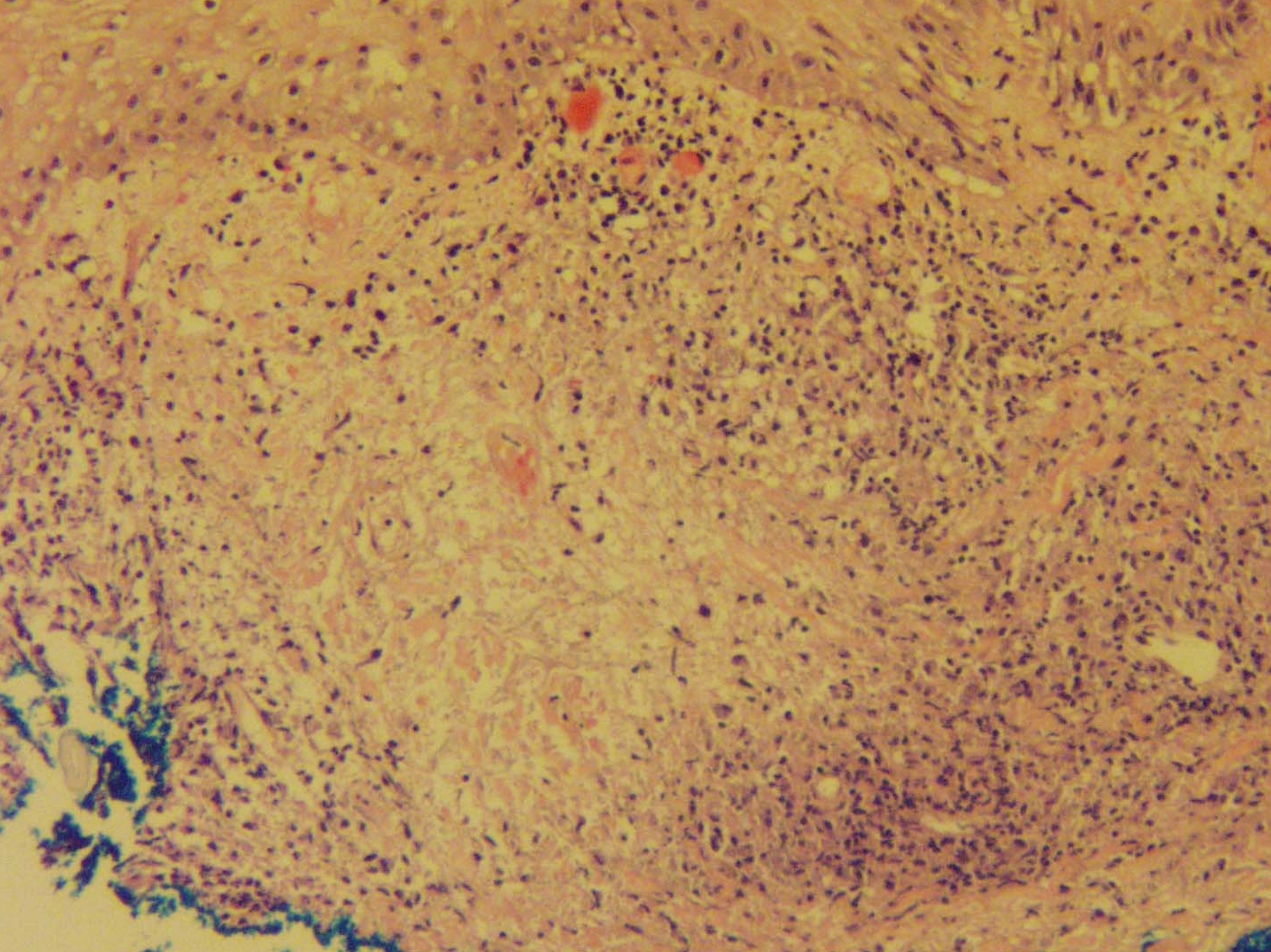
- Retrospective case-control study on 303 cases of spongiotic or psoriasiform dermatitides over a 35-month period-PAS and H and E
- Sensitivity and specificity for diagnosing dermatophyte infection based upon neutrophils within the stratum corneum were 62 and 59%, respectively
- Neutrophils within the stratum corneum is neither sensitive nor specific in the diagnosis of dermatophytosis

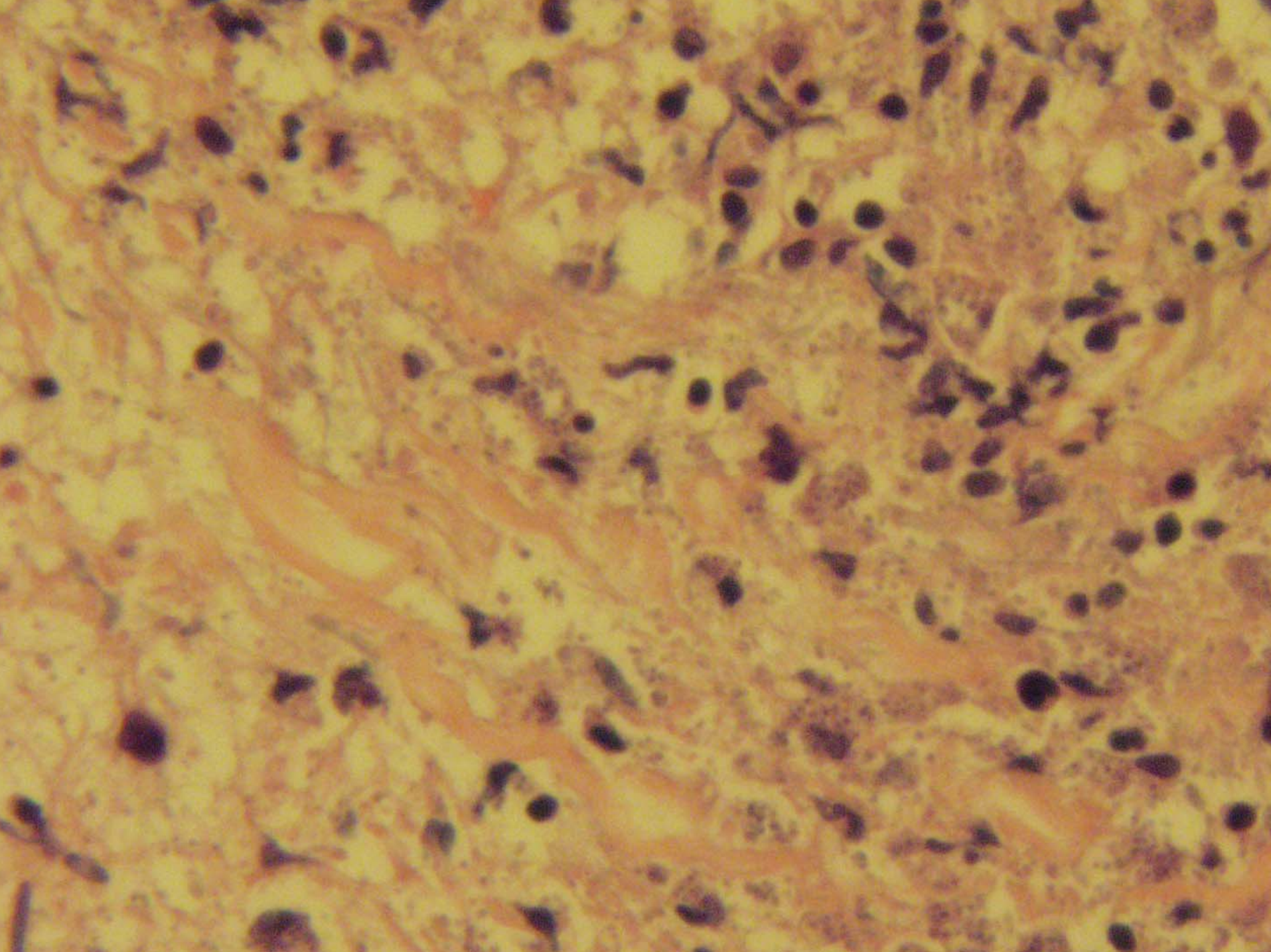
J Cutan Pathol 2003 Apr;30(4):253-255

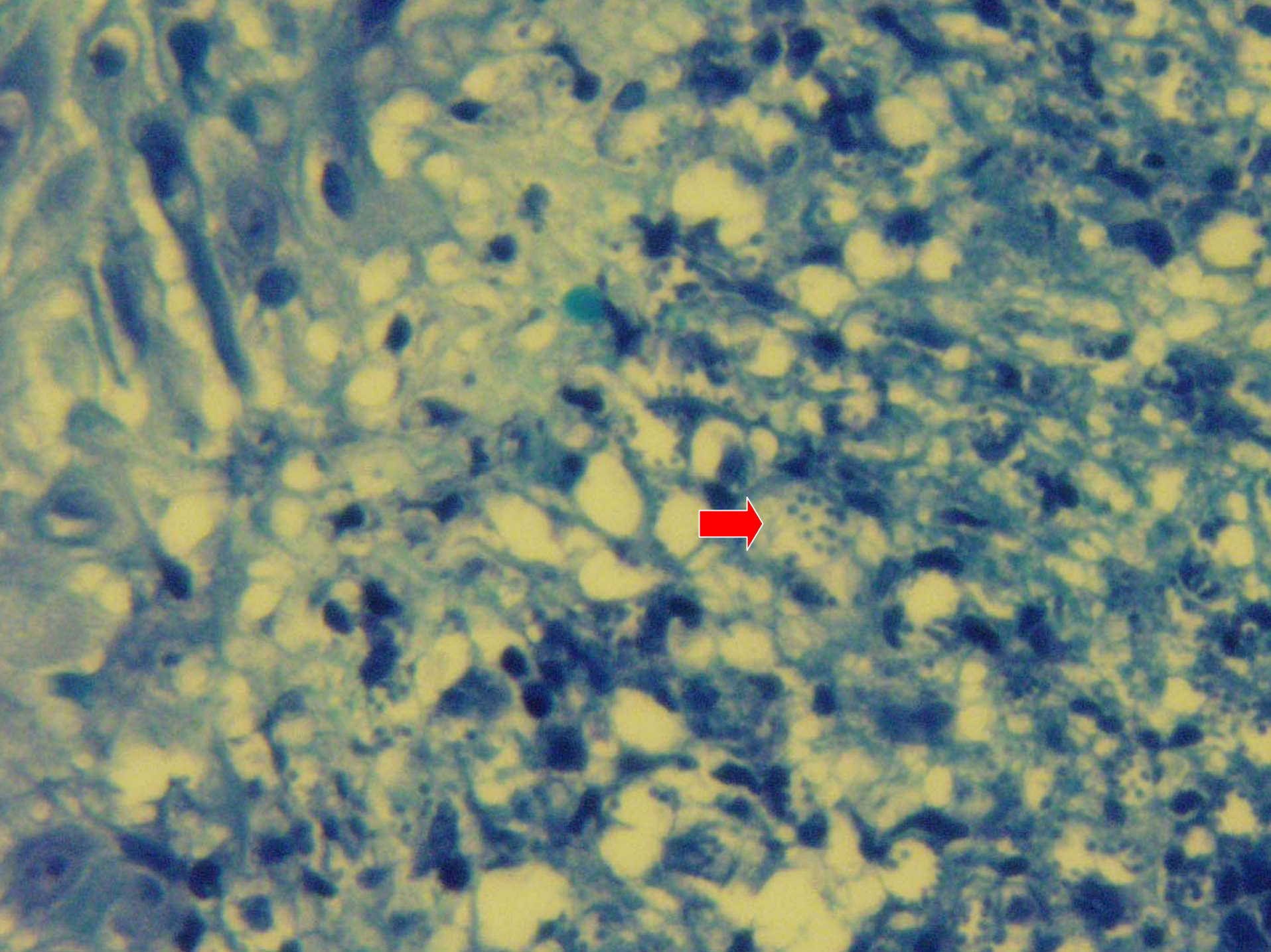










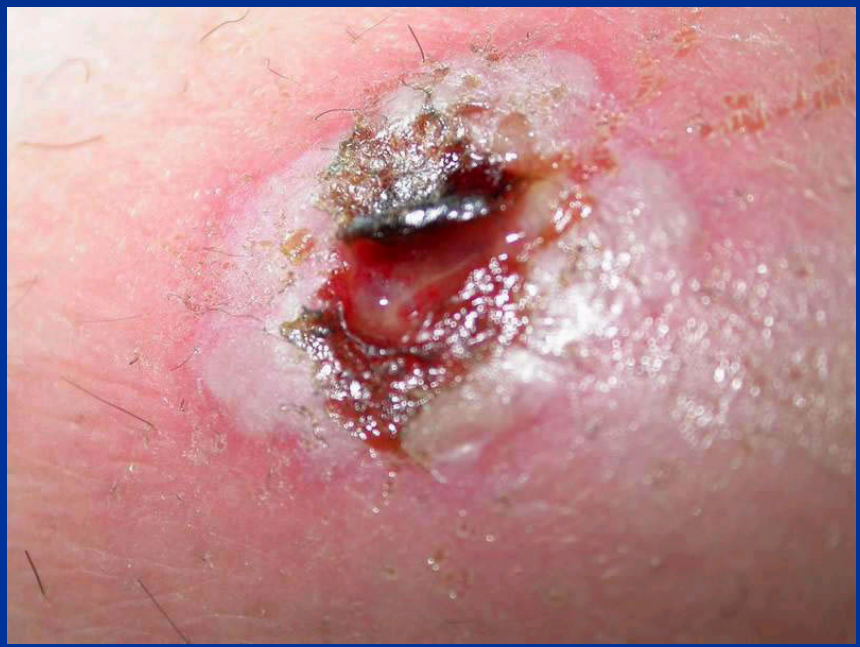


Leishmaniasis

Sandfly

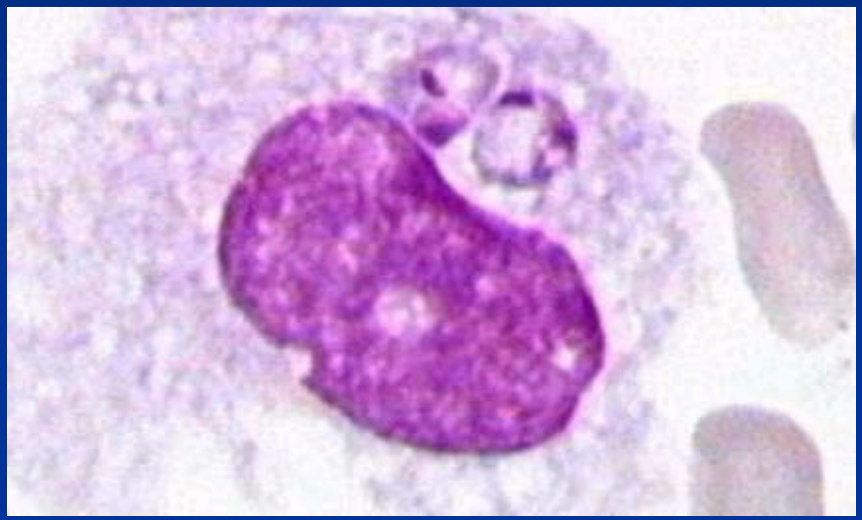
- Vector Sandflies (*Phlebotomus* species)
- *Leishmania* are intracellular parasites that infect the mononuclear phagocytes

Clinical Variants



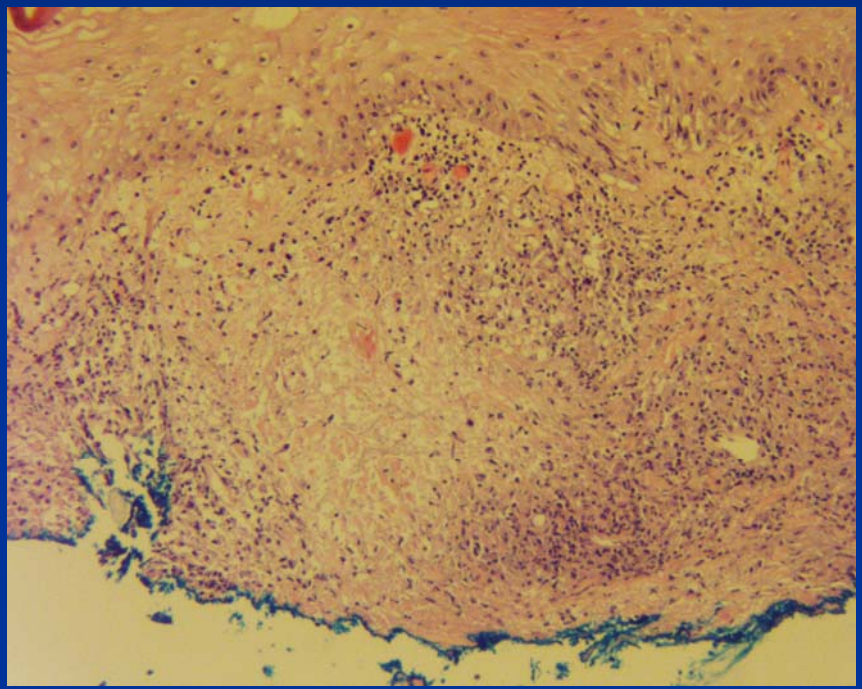
- Visceral
  - *Leishmania donovani* causing visceral leishmaniasis (kala azar)
- Cutaneous
  - *Leishmania tropica* and *Leishmania brasiliensis*
  - *L tropica* is seen mainly along the shores of the Mediterranean, through the Middle East, central Africa, and parts of India
  - Cutaneous leishmaniasis caused by *L brasiliensis* is confined mainly to Central America and South America

Histopathology

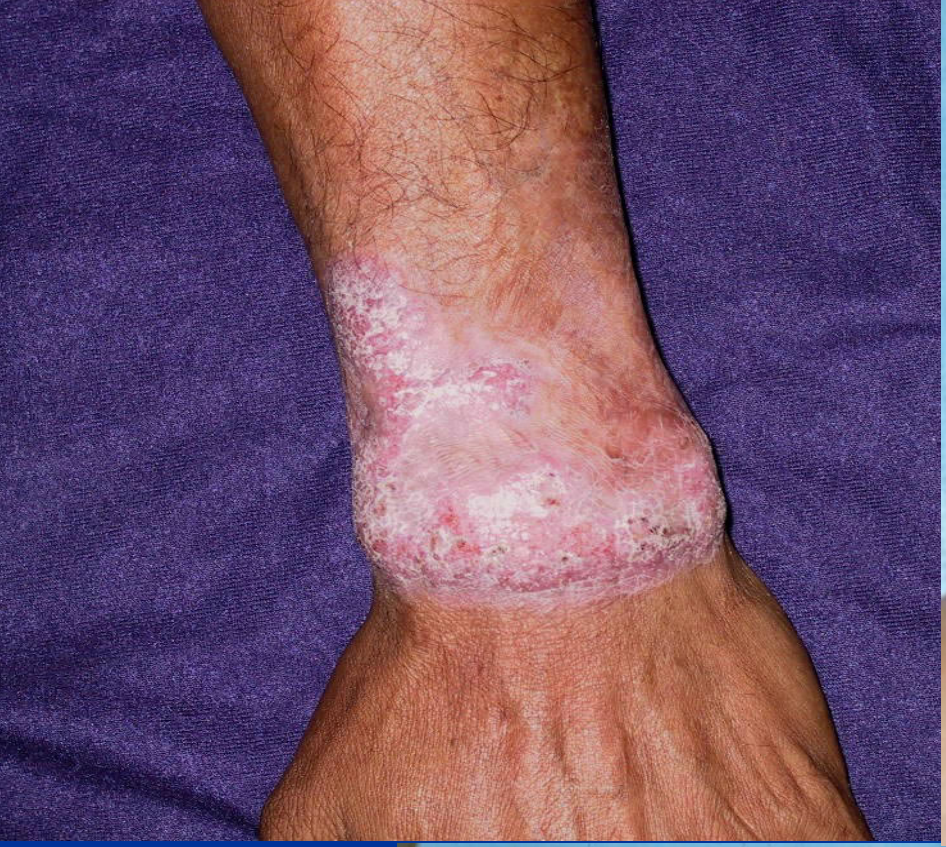


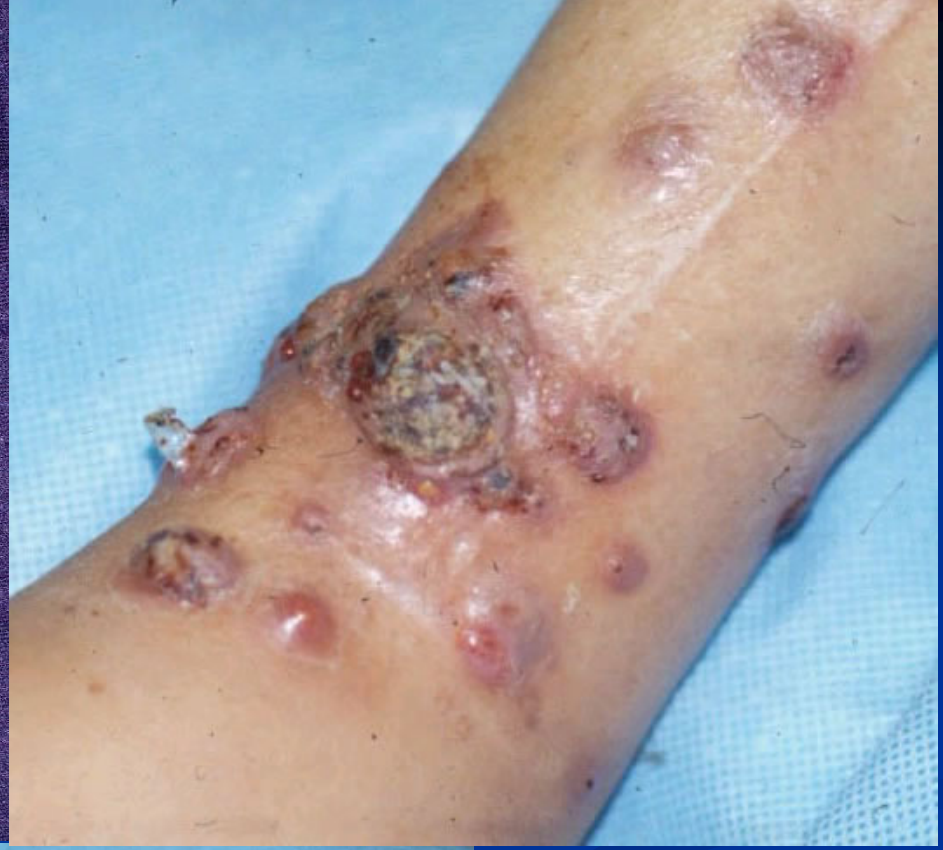
- Parasitized macrophages widely disseminated

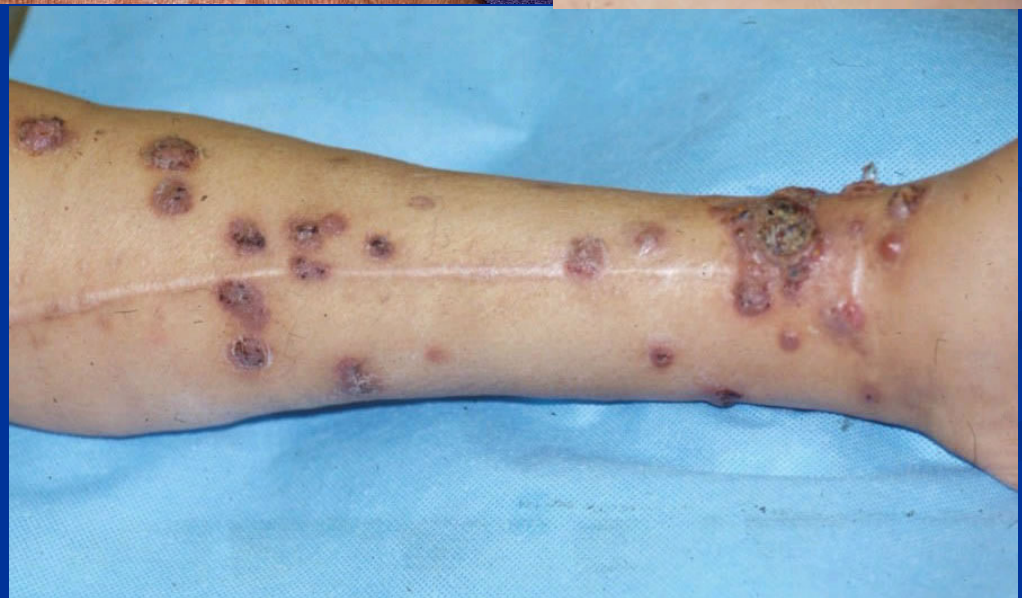
Histopathology-Skin

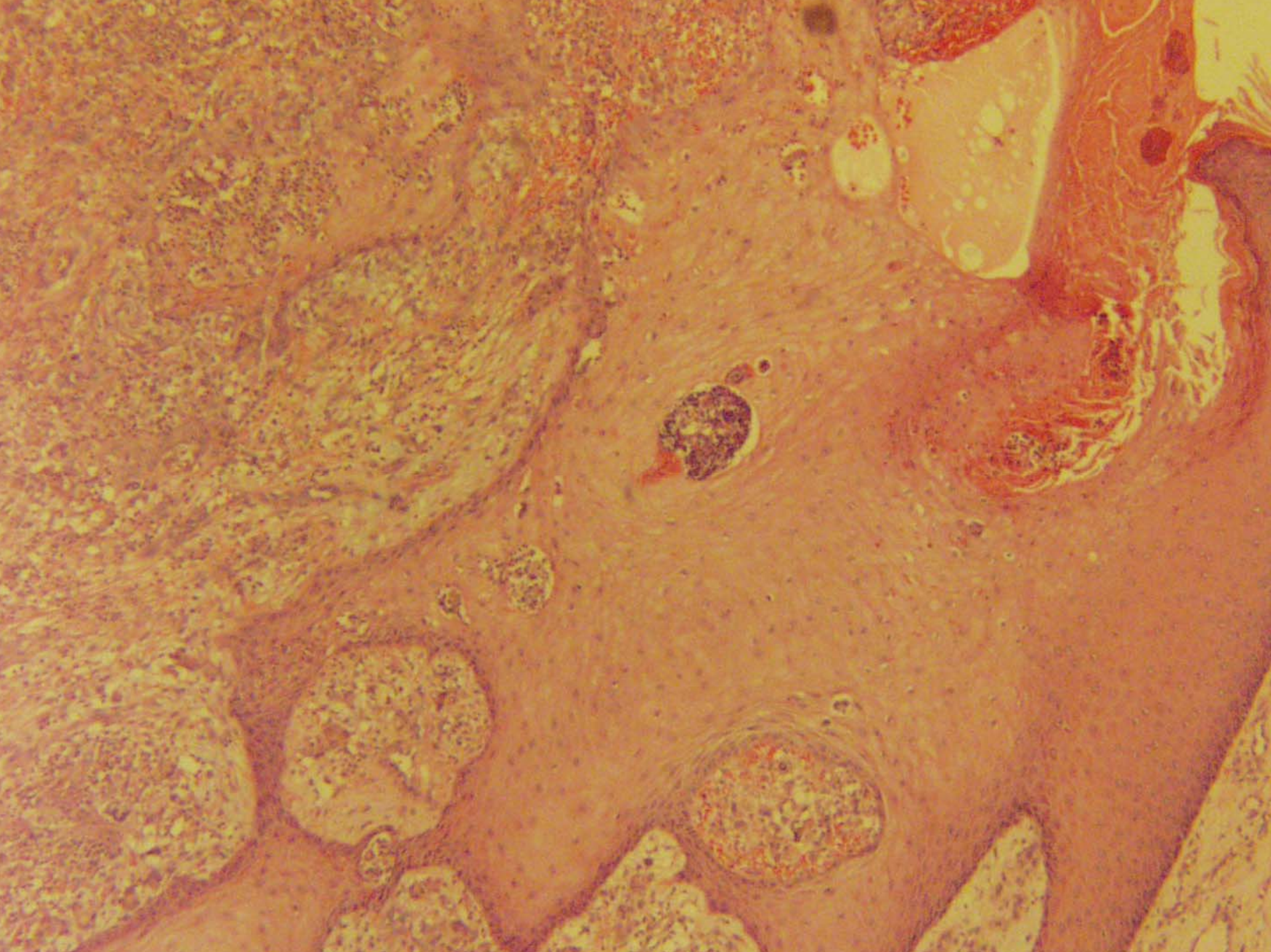


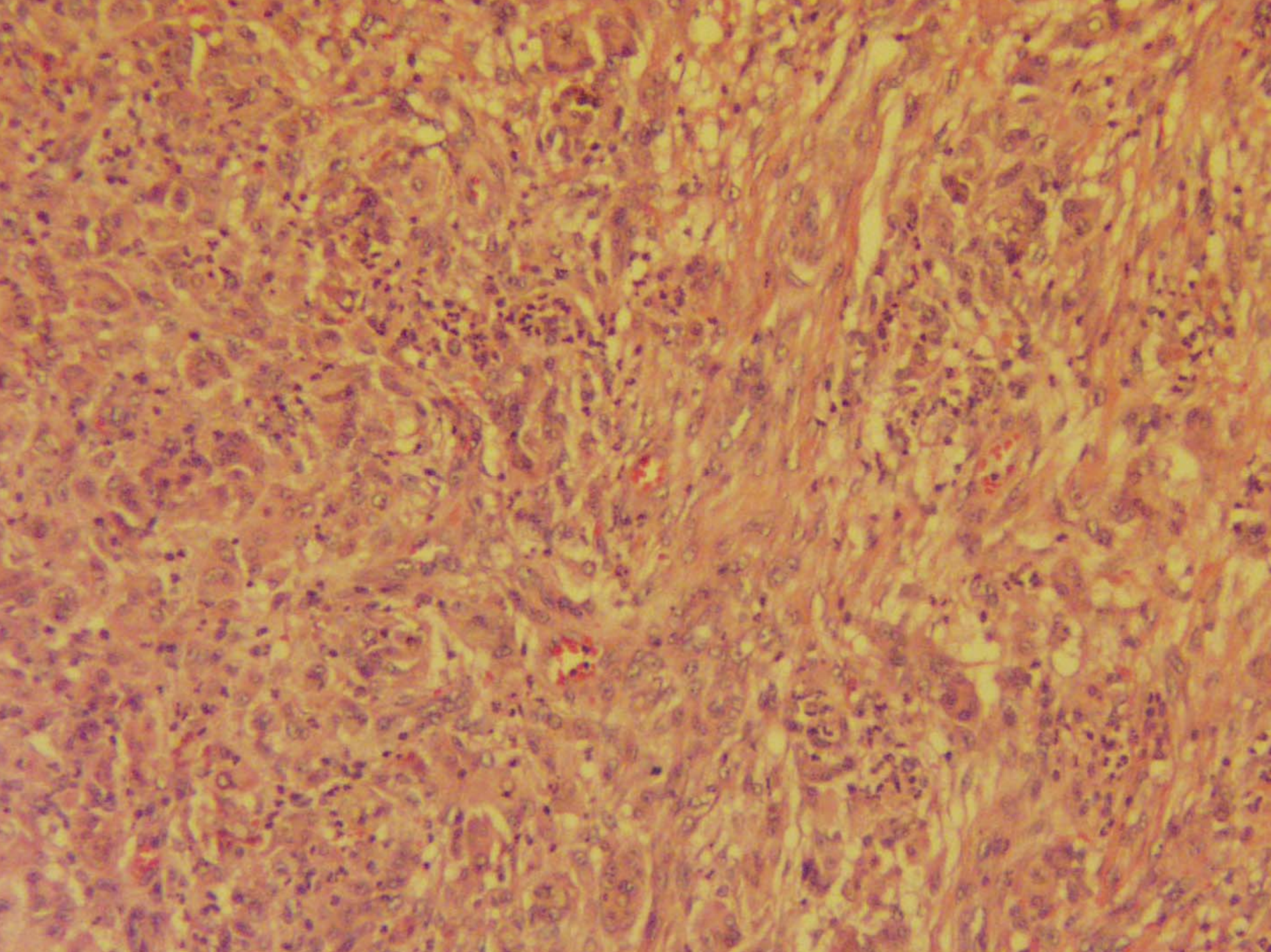
- Irregular acanthosis
- Dense dermal infiltrate of mixed inflammatory cells, particularly plasma cells, lymphocytes, and histiocytes
- Early, organisms may be numerous
- With time, noncaseating granulomata in which few or no organisms
- Ulcerated lesions commonly may become infected secondarily
- Biopsy specimens from old (>6 mo), partially treated, or low-burden infections frequently are nondiagnostic

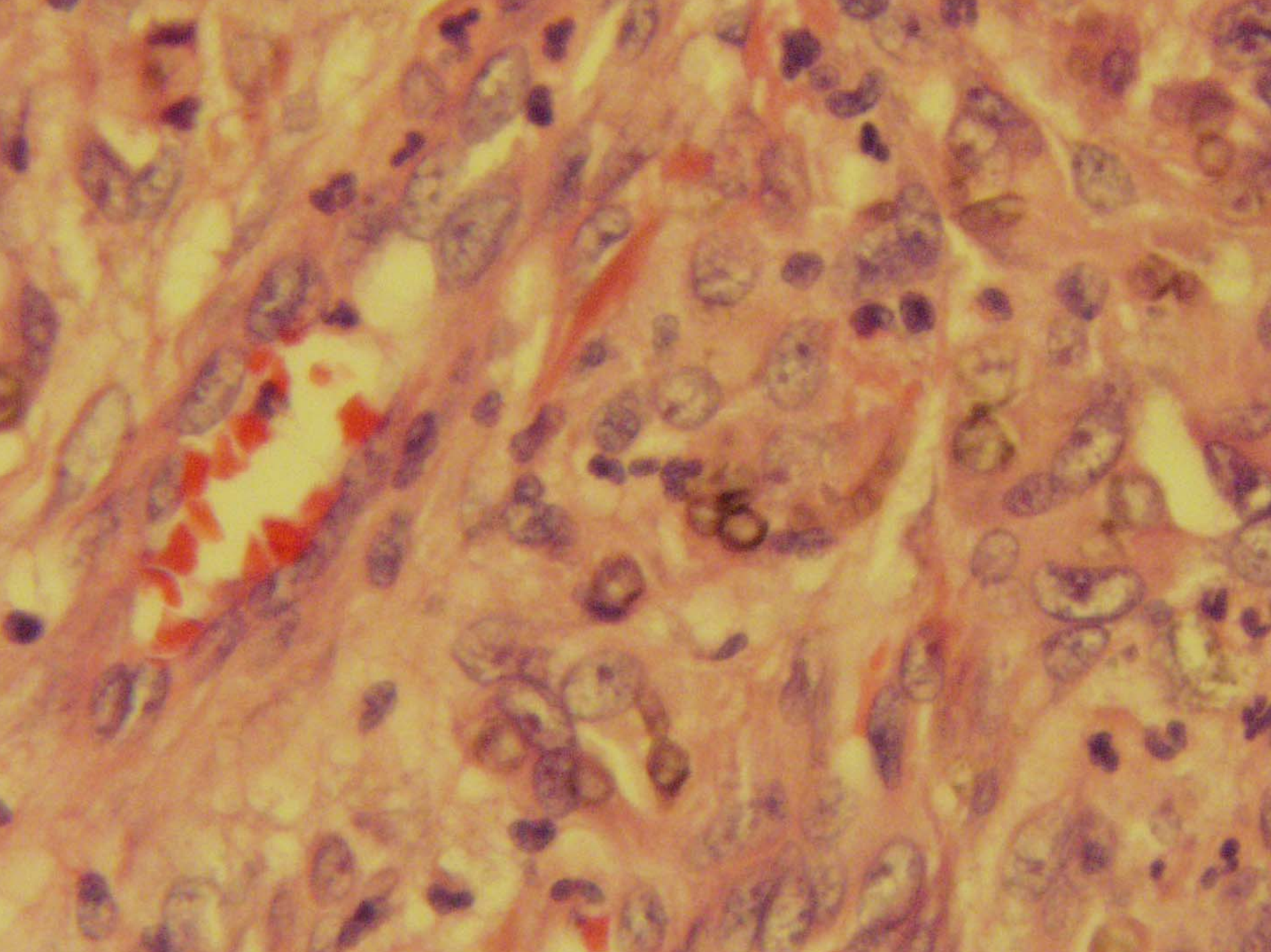


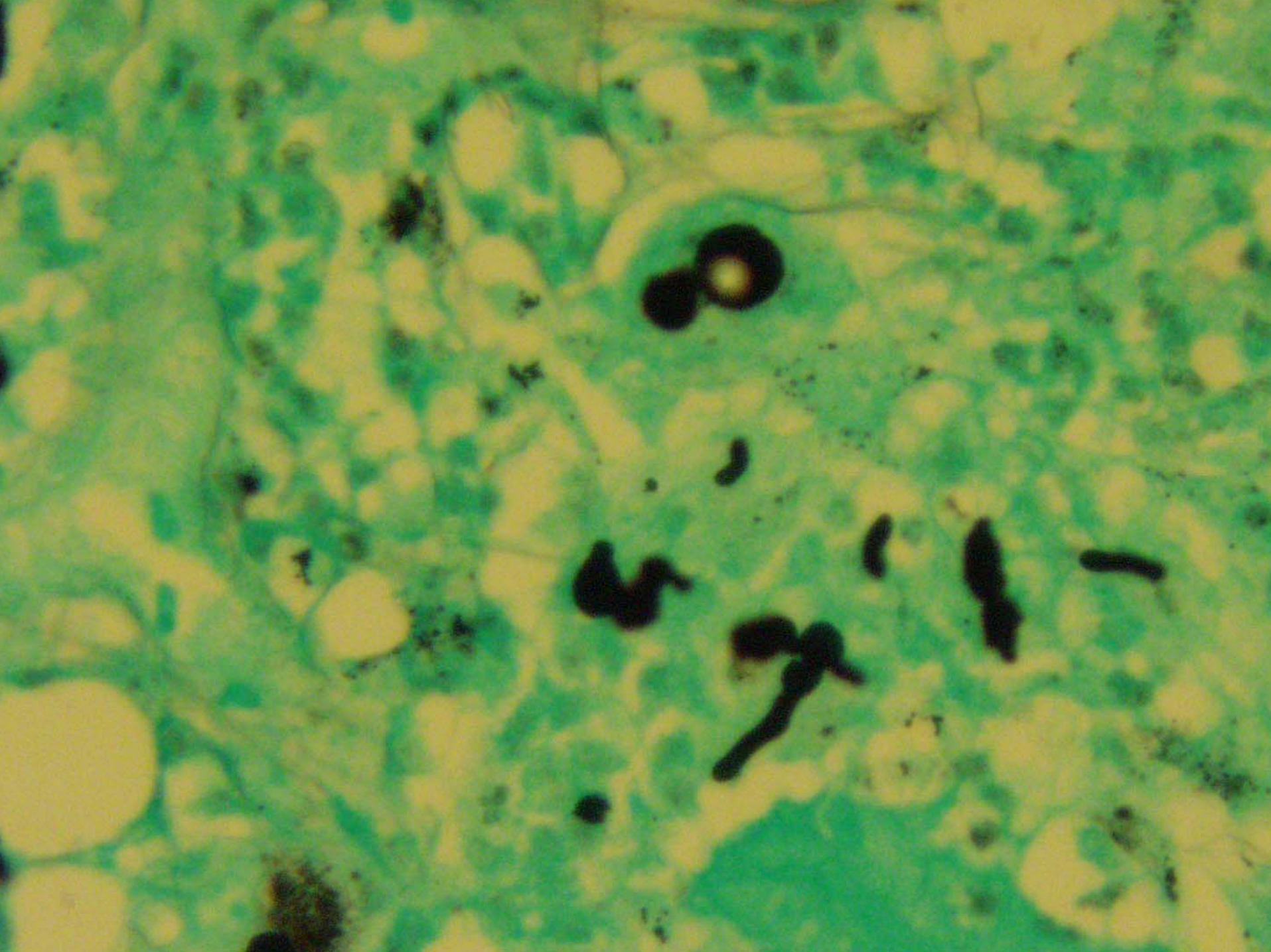






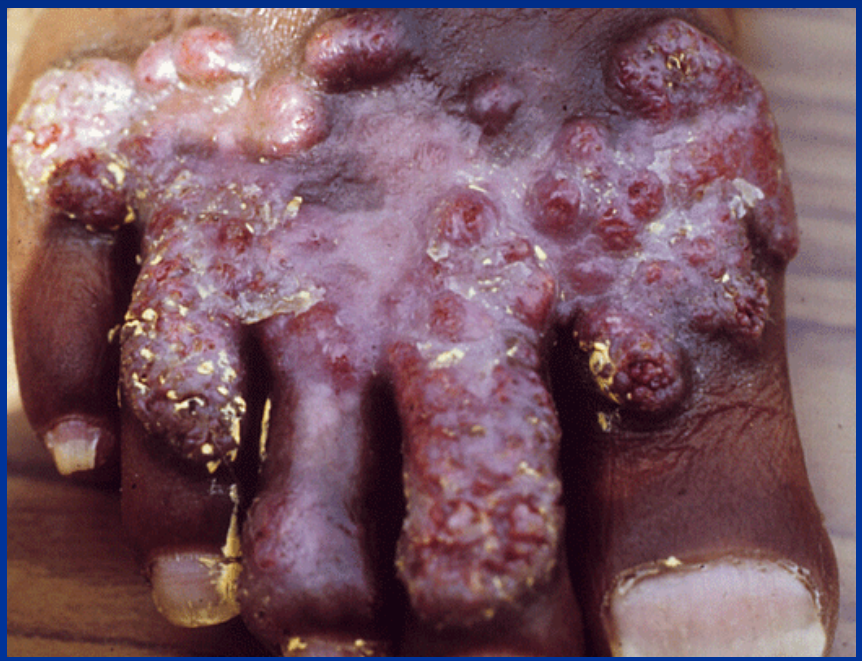






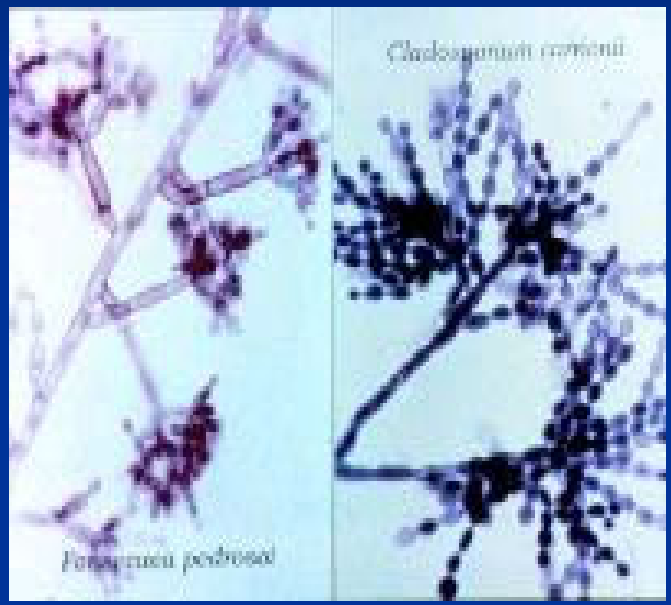
Chromoblastomycosis

Chromoblastomycosis



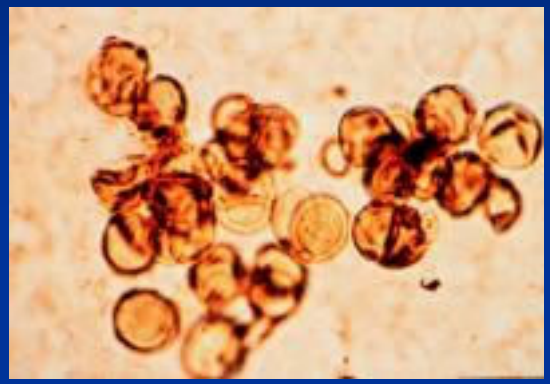
- Trauma to the skin with long interval
- Over time leads to nodule or plaque
- Rarely lymphatic and hematogenous dissemination
- On the surface of both types of clinical variants, numerous black dots may be observed where the causative organisms are preferentially found
- Secondary infection with bacteria common

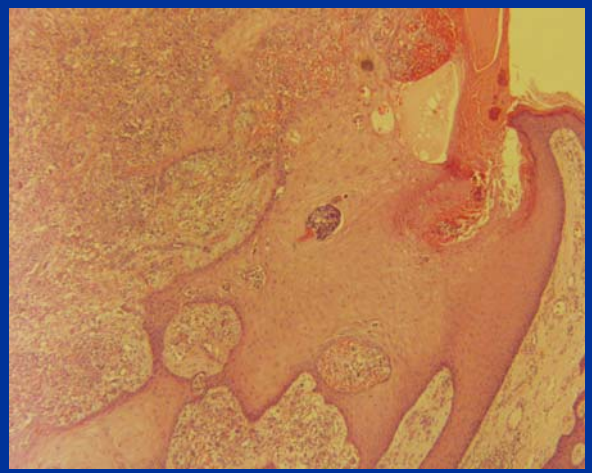
Fungal Causes



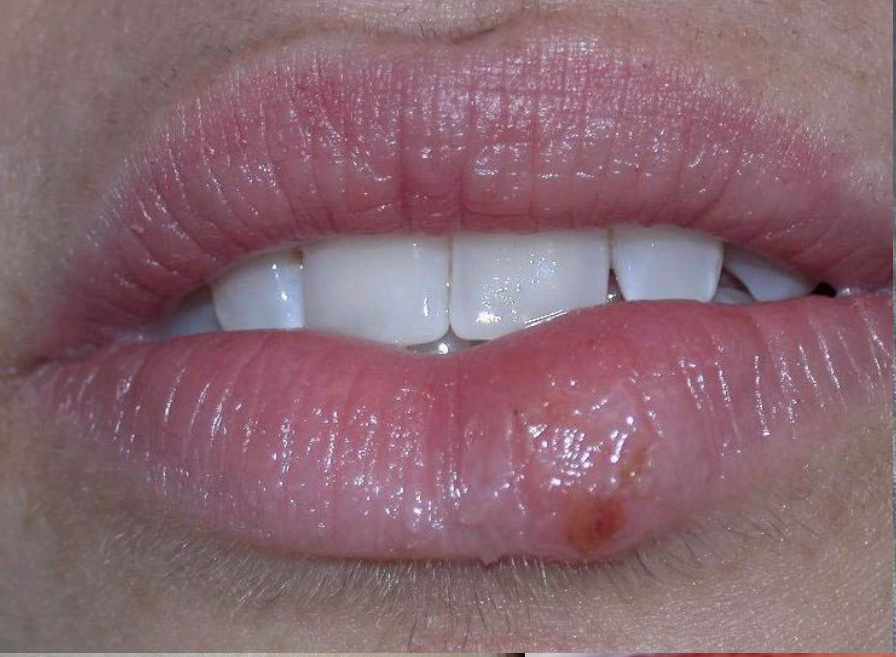
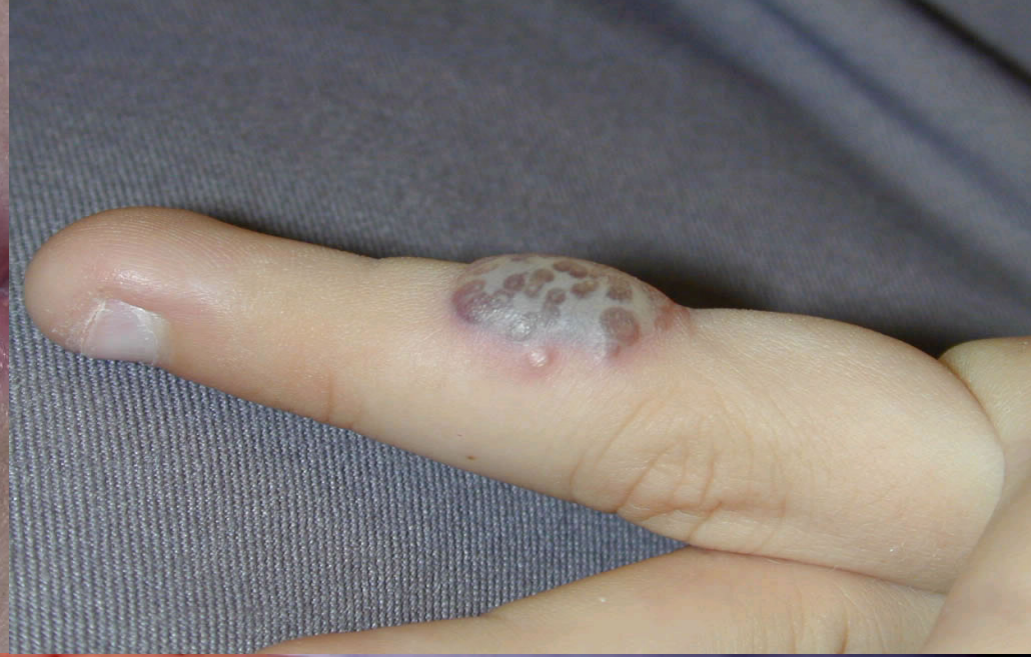
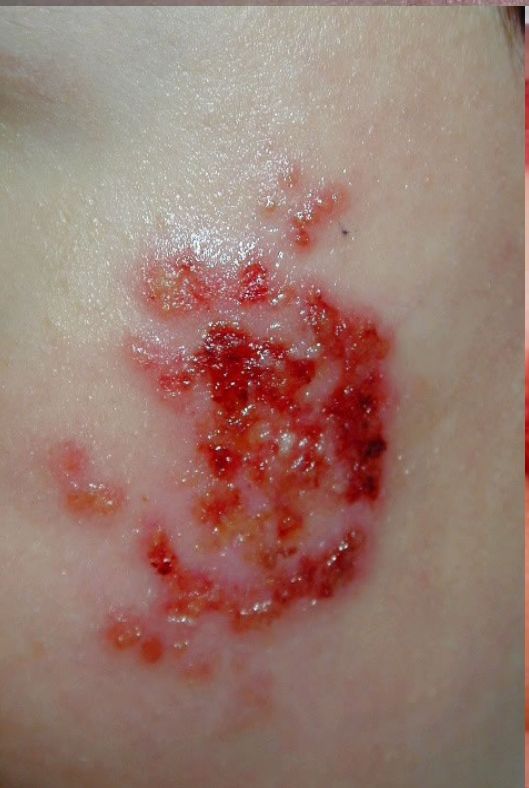
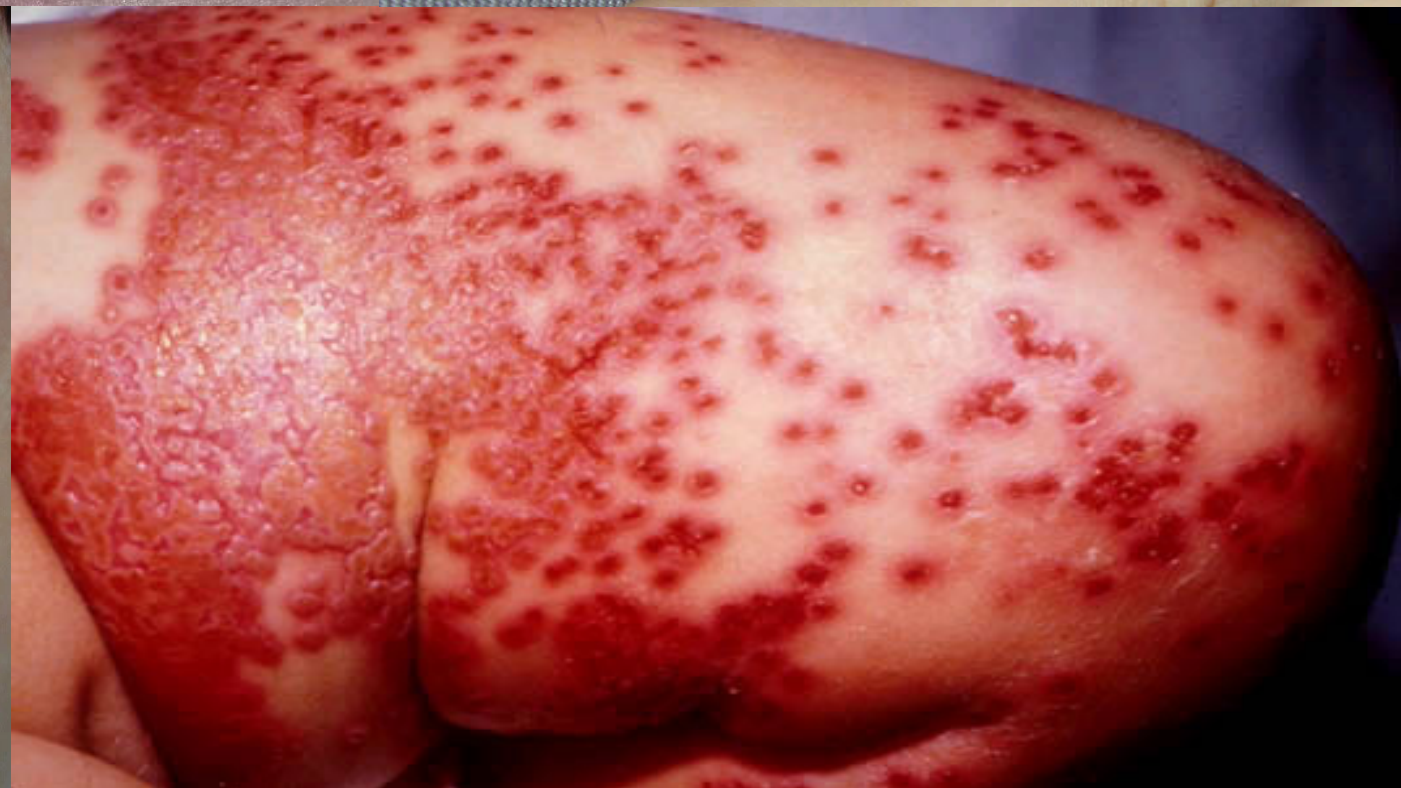
- Four different genera:
  - *F pedrosoi, P verrucosa, C carrionii,* and *F compacta*
  - Different species of *Exophiala* have also been reported.
- *C. carrionii* is the most common agent of chromoblastomycosis in that country

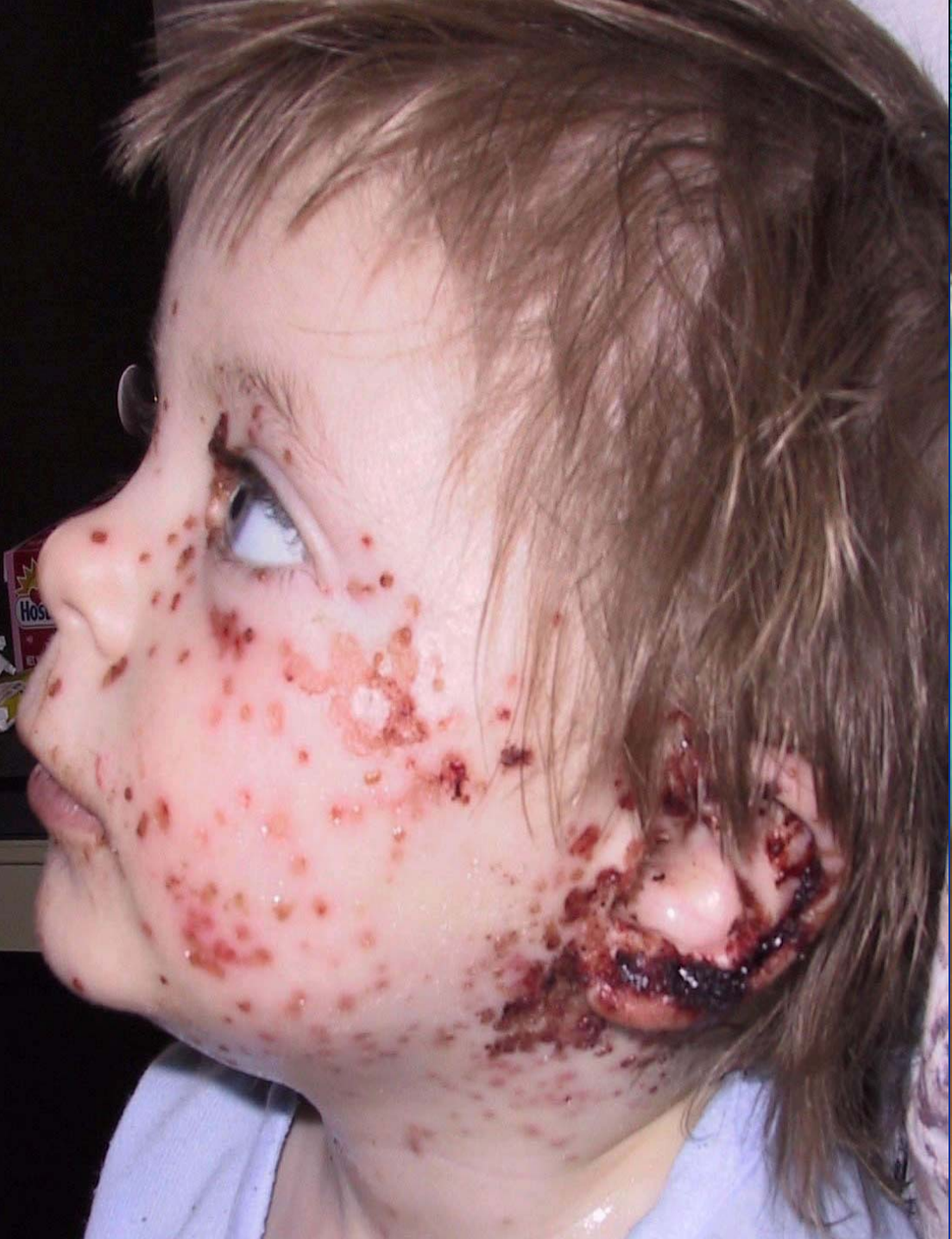
Histopathology

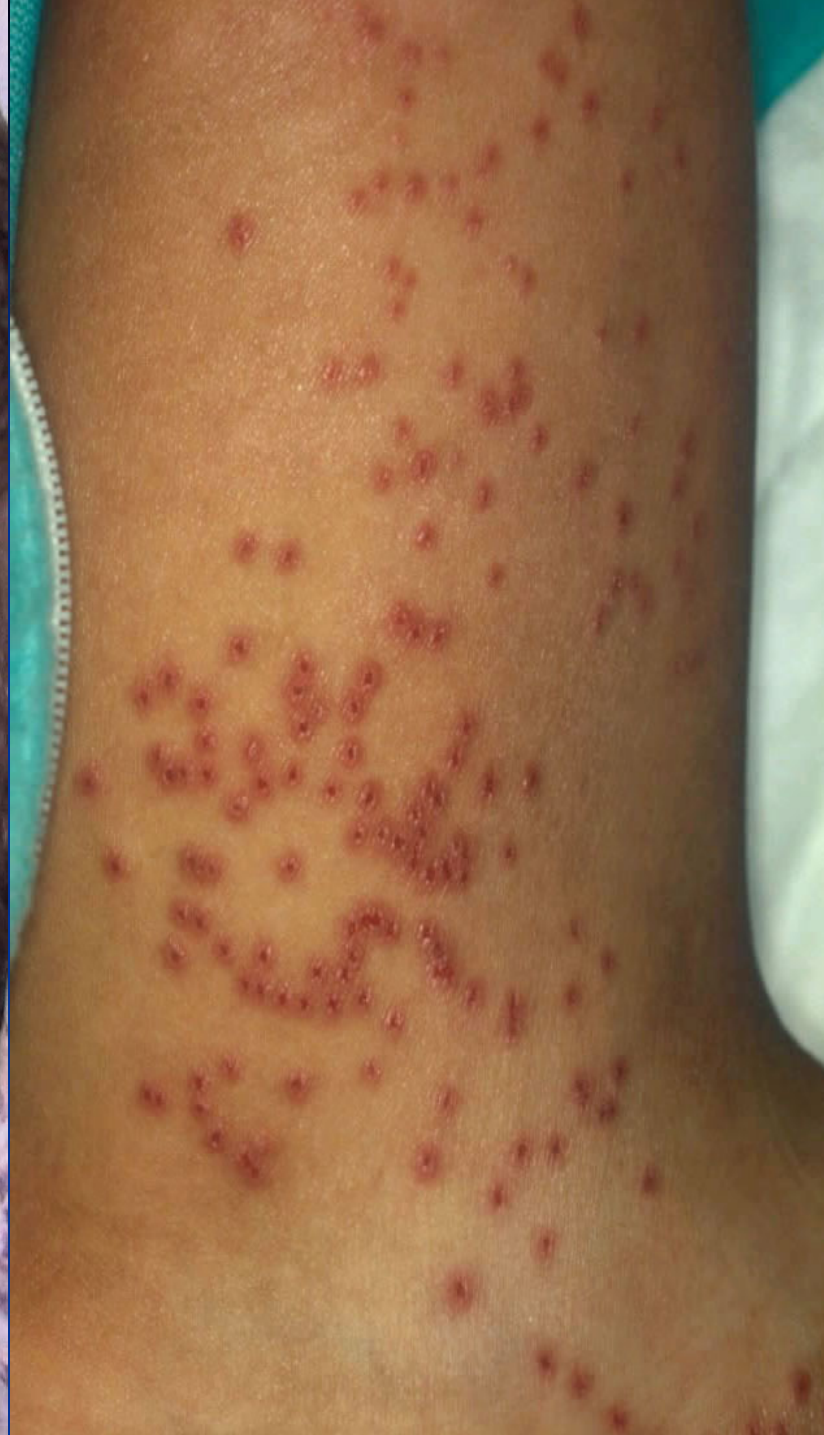


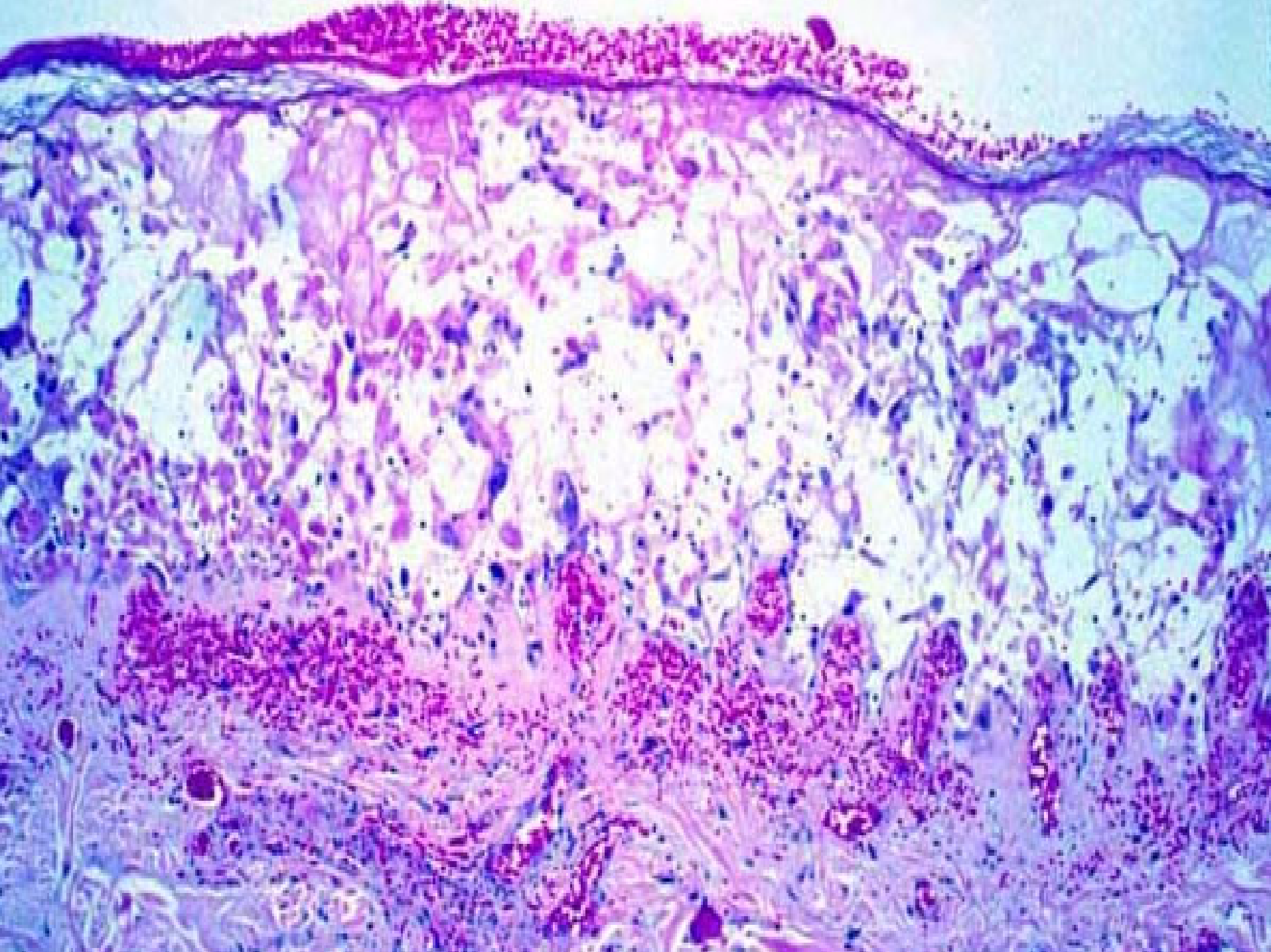


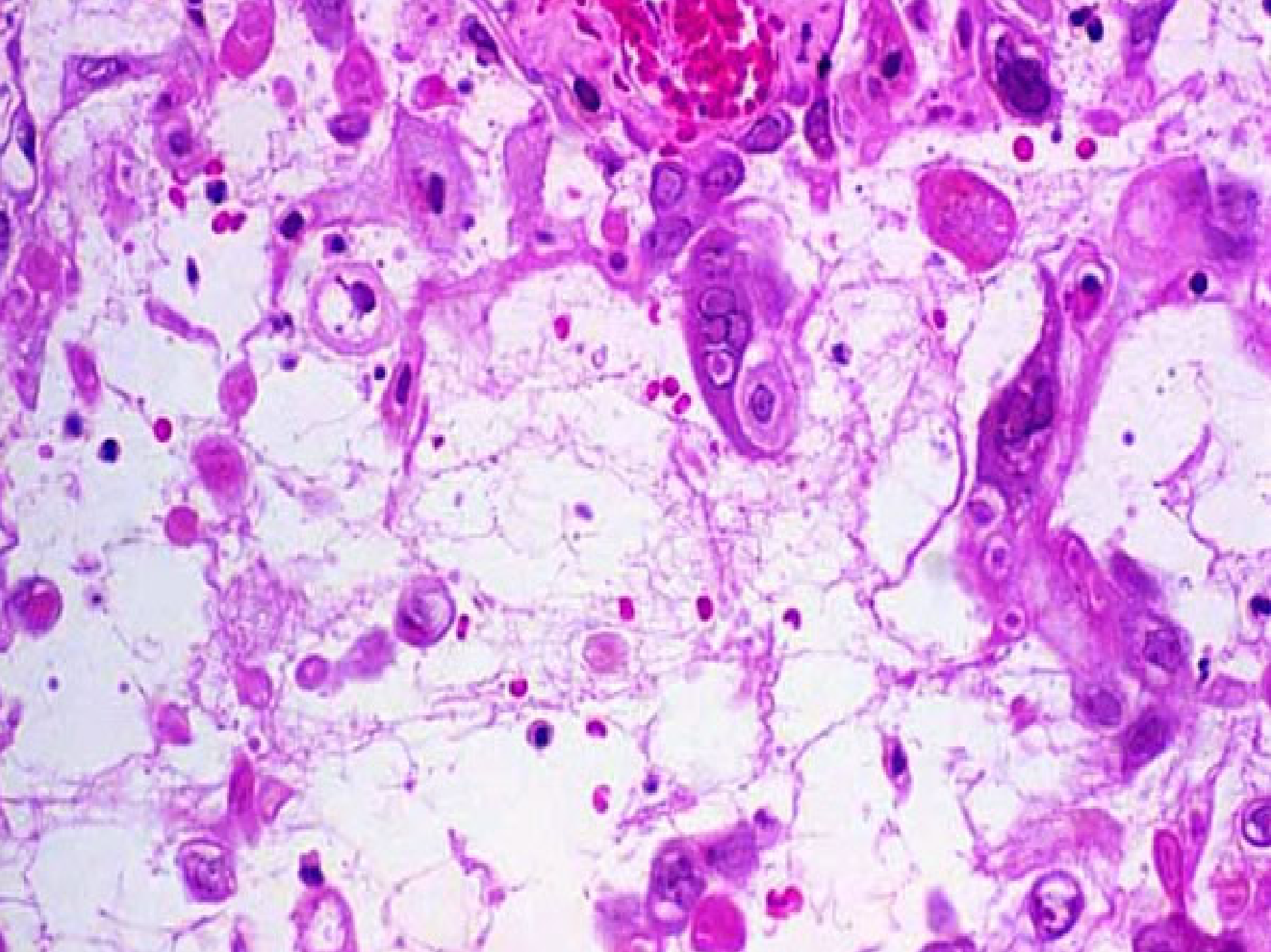
- Pseudoepitheliomatous hyperplasia
- Microabscesses, granulomas, granulomatous reactions
- Giant cells contain brown-colored, thick-walled fungal cells
  - Muriform fungal cells may be single, 2-celled, or multiple-celled
  - Copper pennies, Medlar bodies, sclerotic bodies
- Transepidermal elimination of the fungal cells is the histologic counterpart of the black dots clinically evident

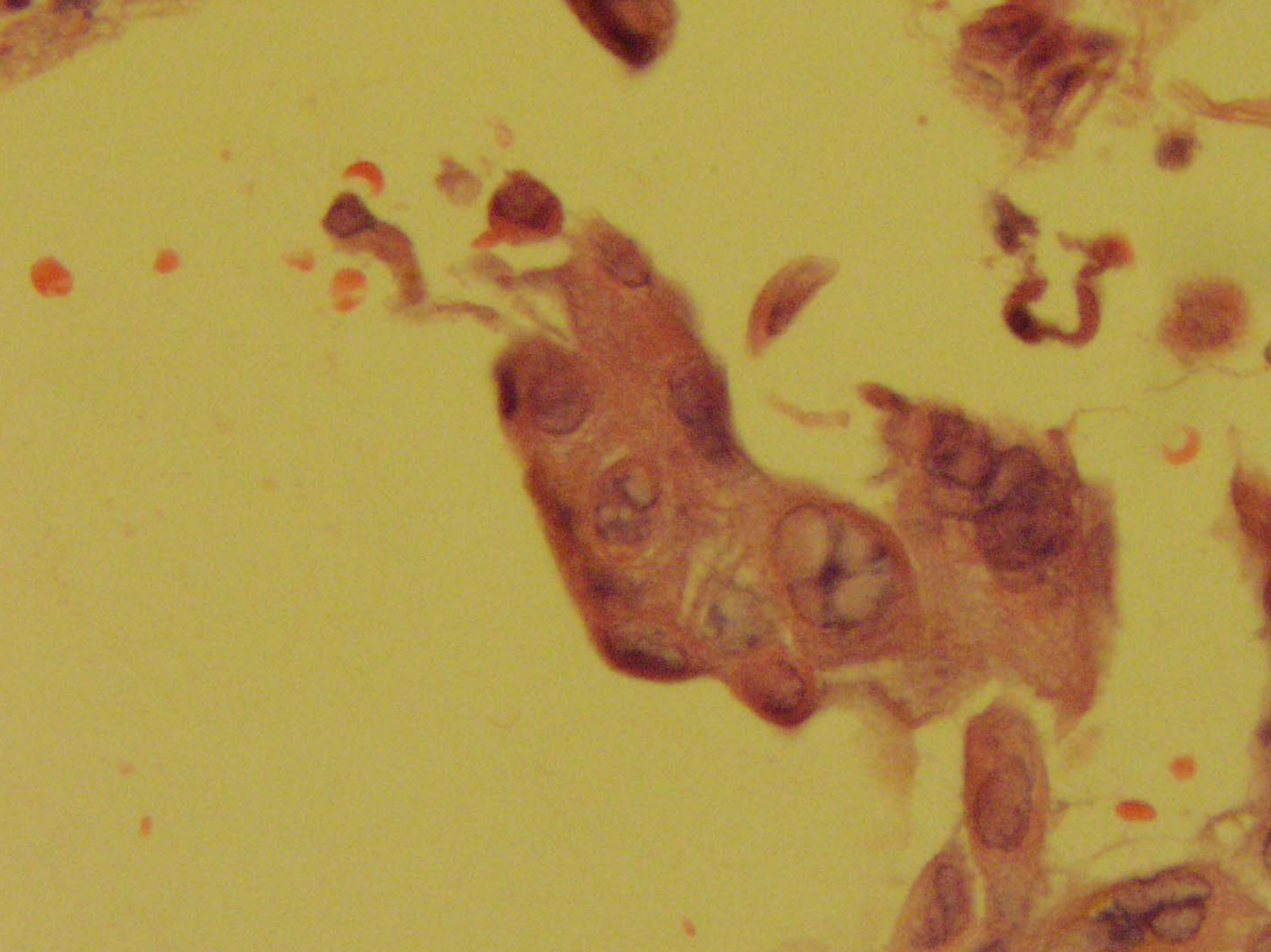







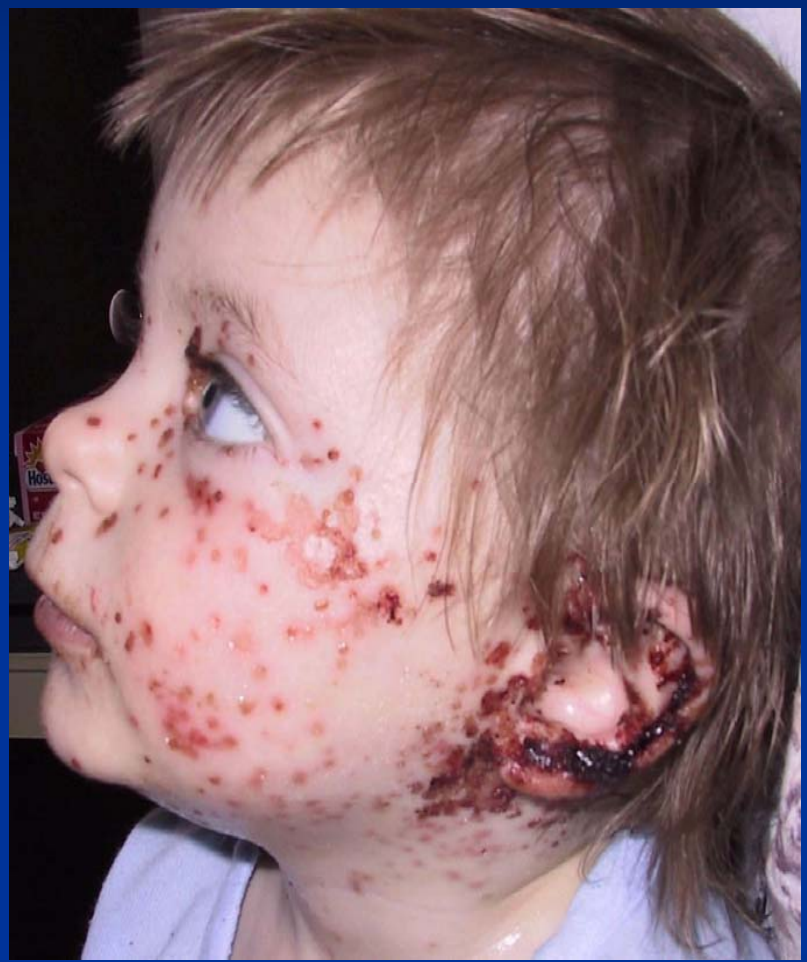






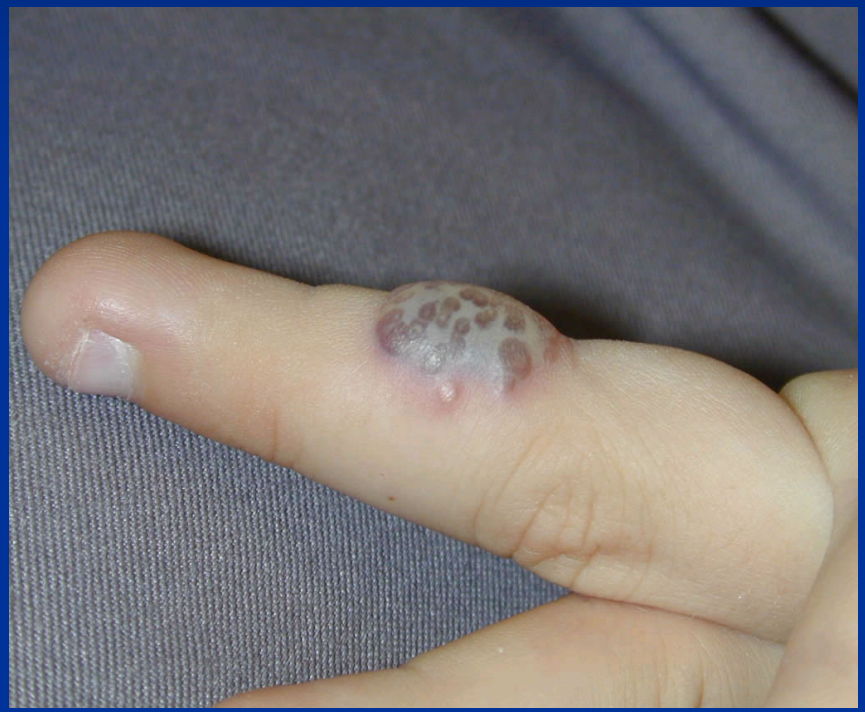


Eczema Herpeticum



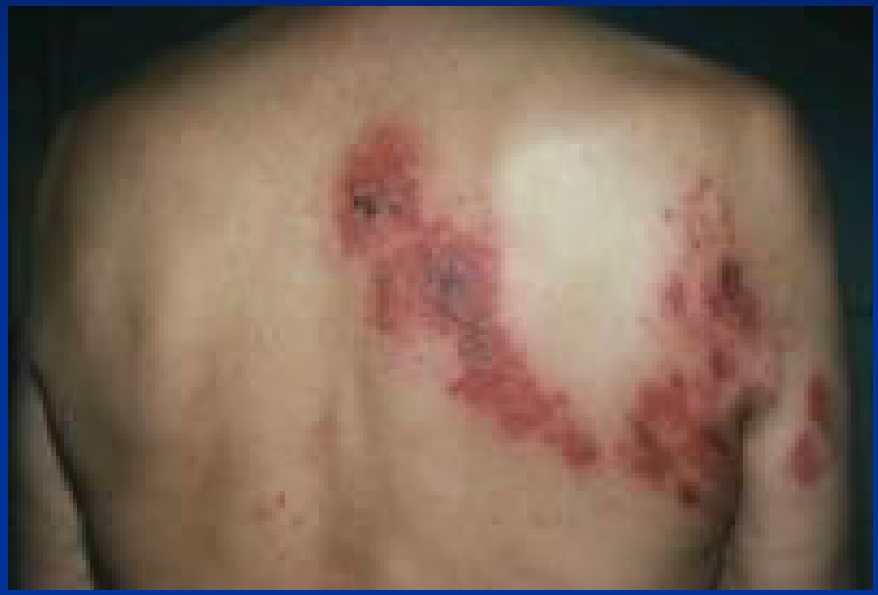
- Also known as Kaposi varicelliform eruption
- Caused by HSV-1
- Commonly develops in patients with atopic dermatitis, burns, or other inflammatory skin conditions
- Children are most commonly affected

Herpetic Whitlow



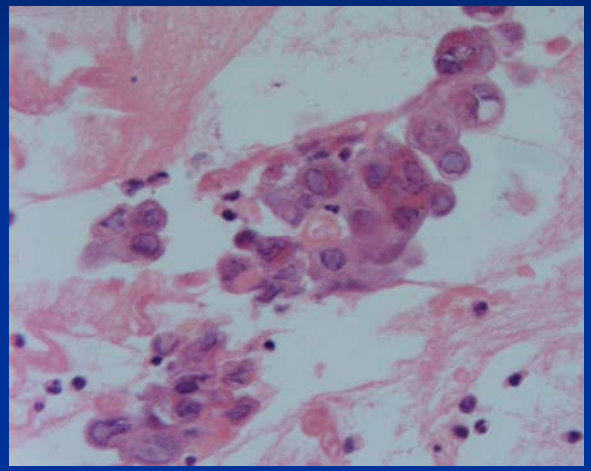
- Vesicular outbreaks on the hands and the digits, was most commonly due to infection with HSV-1
- Usually occurs in children who sucked their thumbs and, prior to the widespread use of gloves in health care workers
- Occurrence of herpes whitlow due to HSV-2 is increasingly recognized, probably due to digital-genital contact

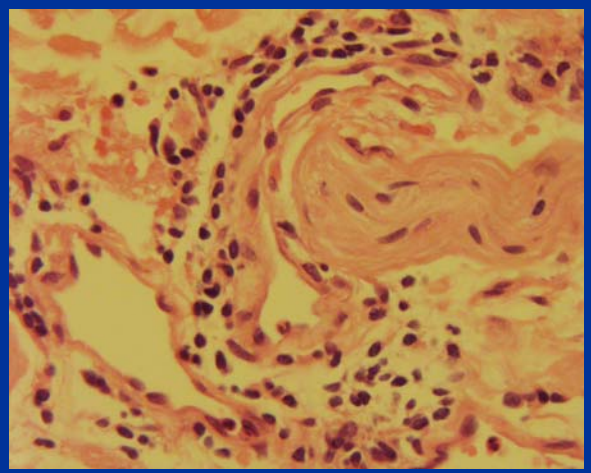
Zoster



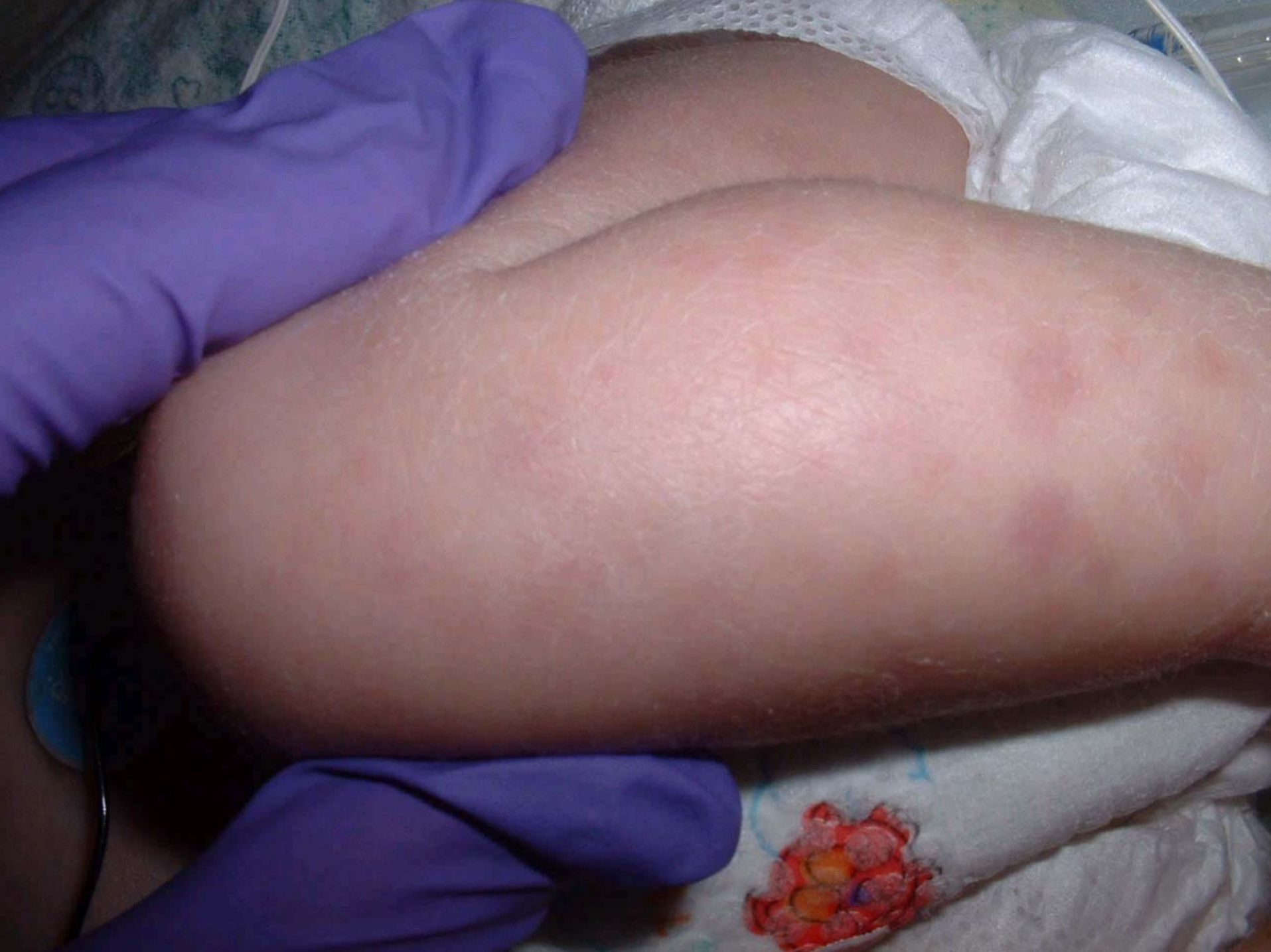
- During the acute phase, significant inflammation of the skin, dorsal root ganglia, and peripheral nerves is present
- Evidence for early denervation of skin tissue, hemorrhagic necrosis, and neuronal loss in dorsal root ganglia is present
- Inflammatory changes may persist for months and lead to scarring

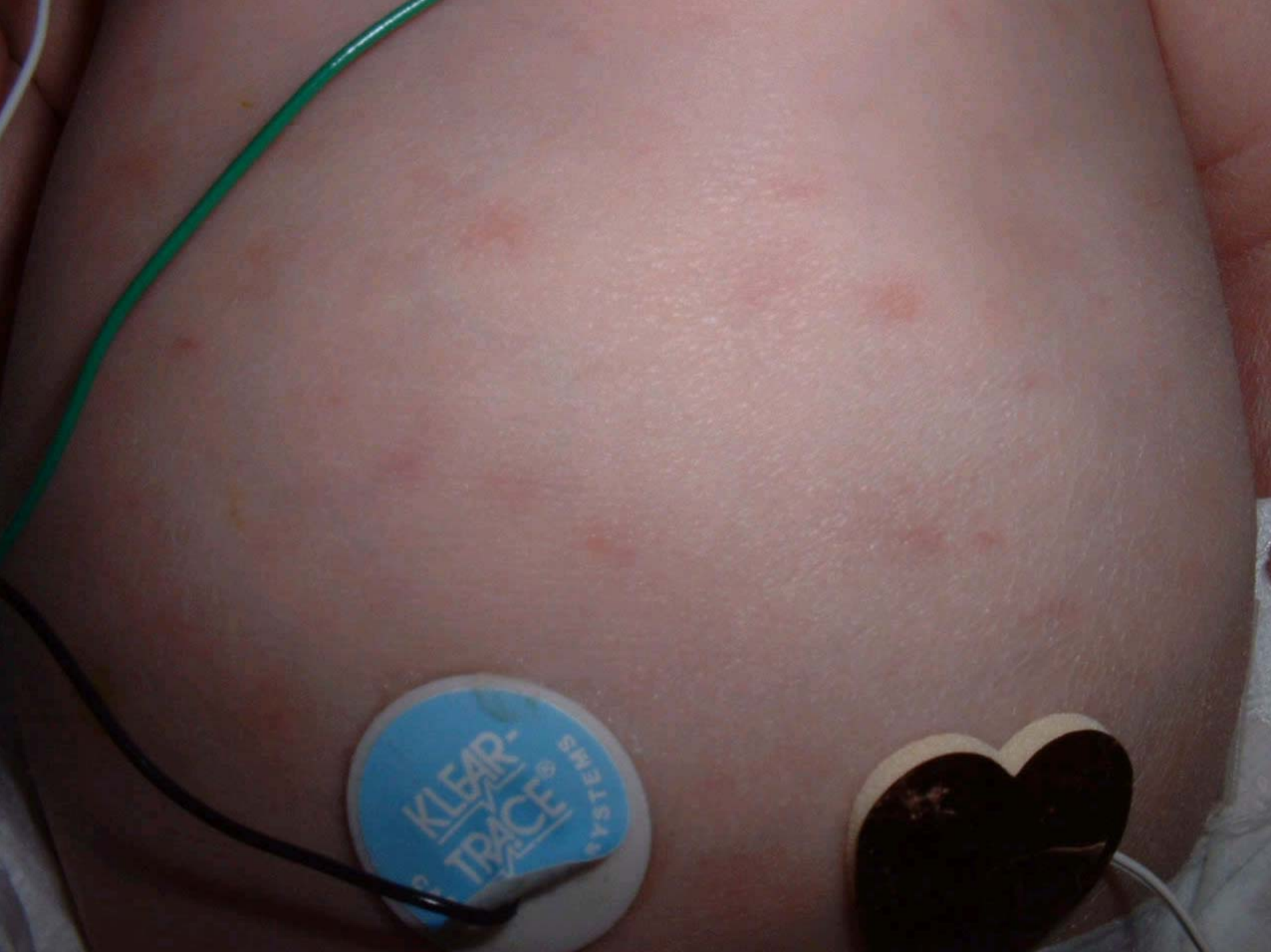
Histopathology





- Characteristic multinucleated ground glass cytoplasmic changes
- Perineural lymphocytic infiltrate with Zoster

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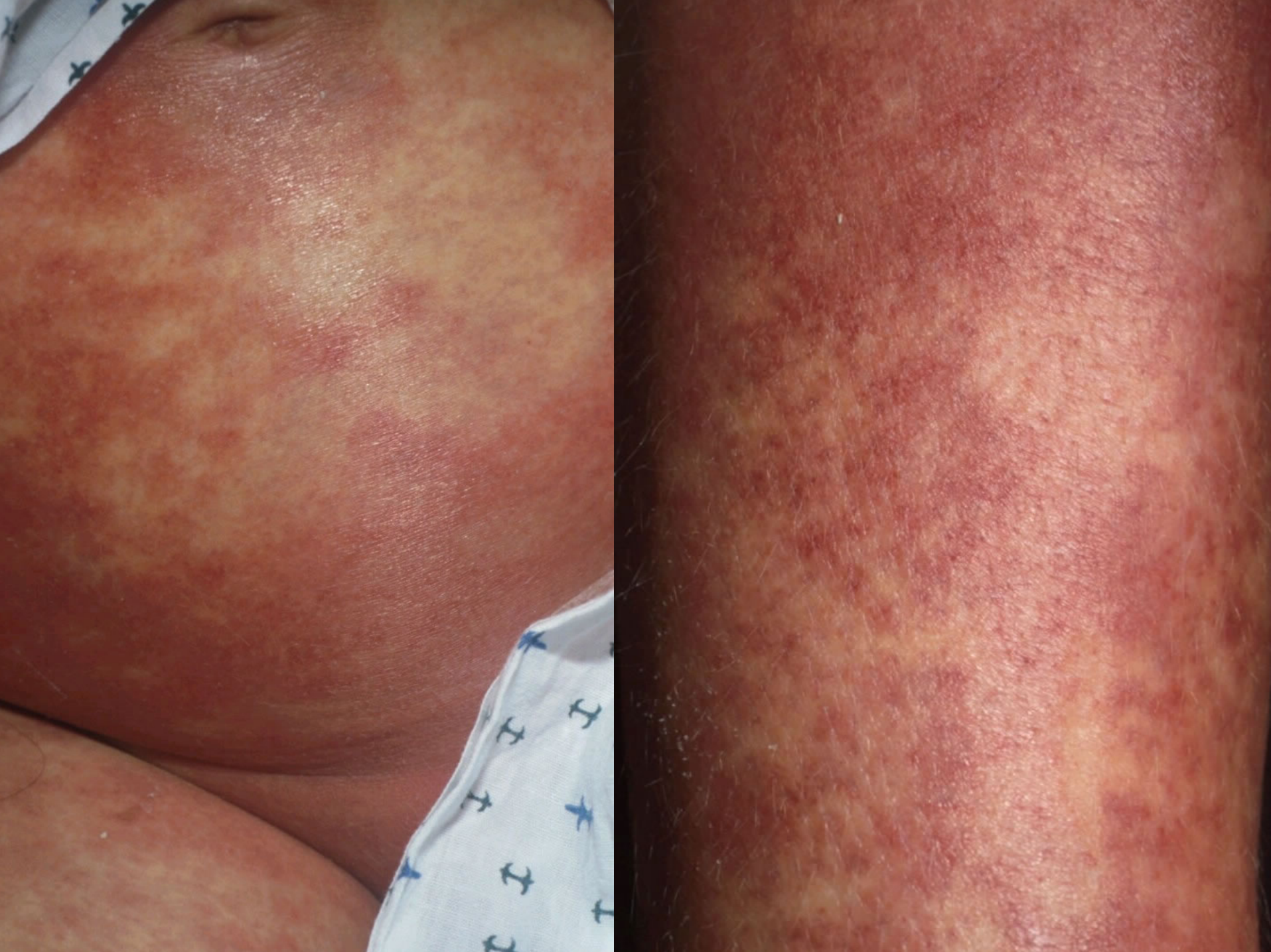

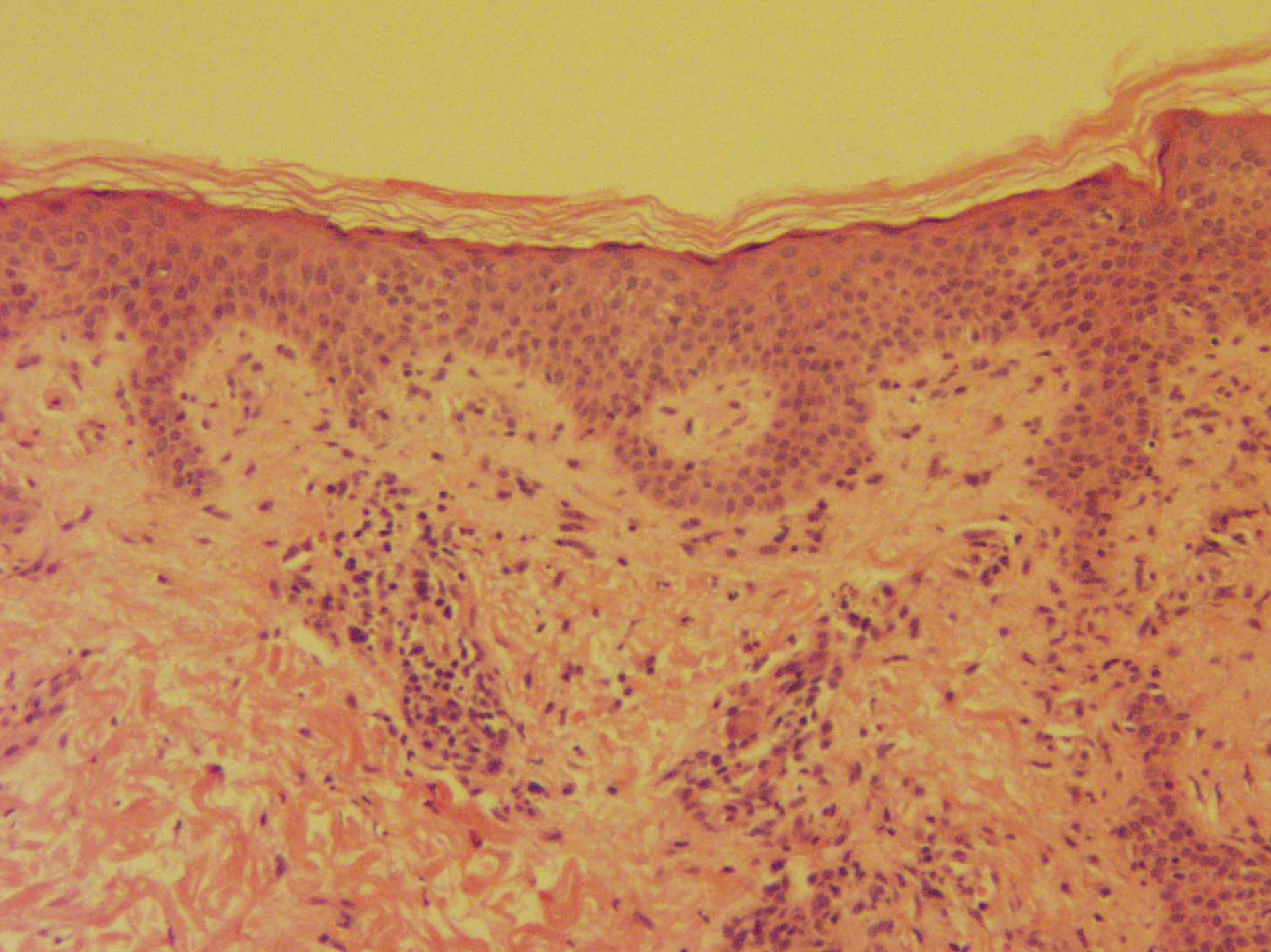

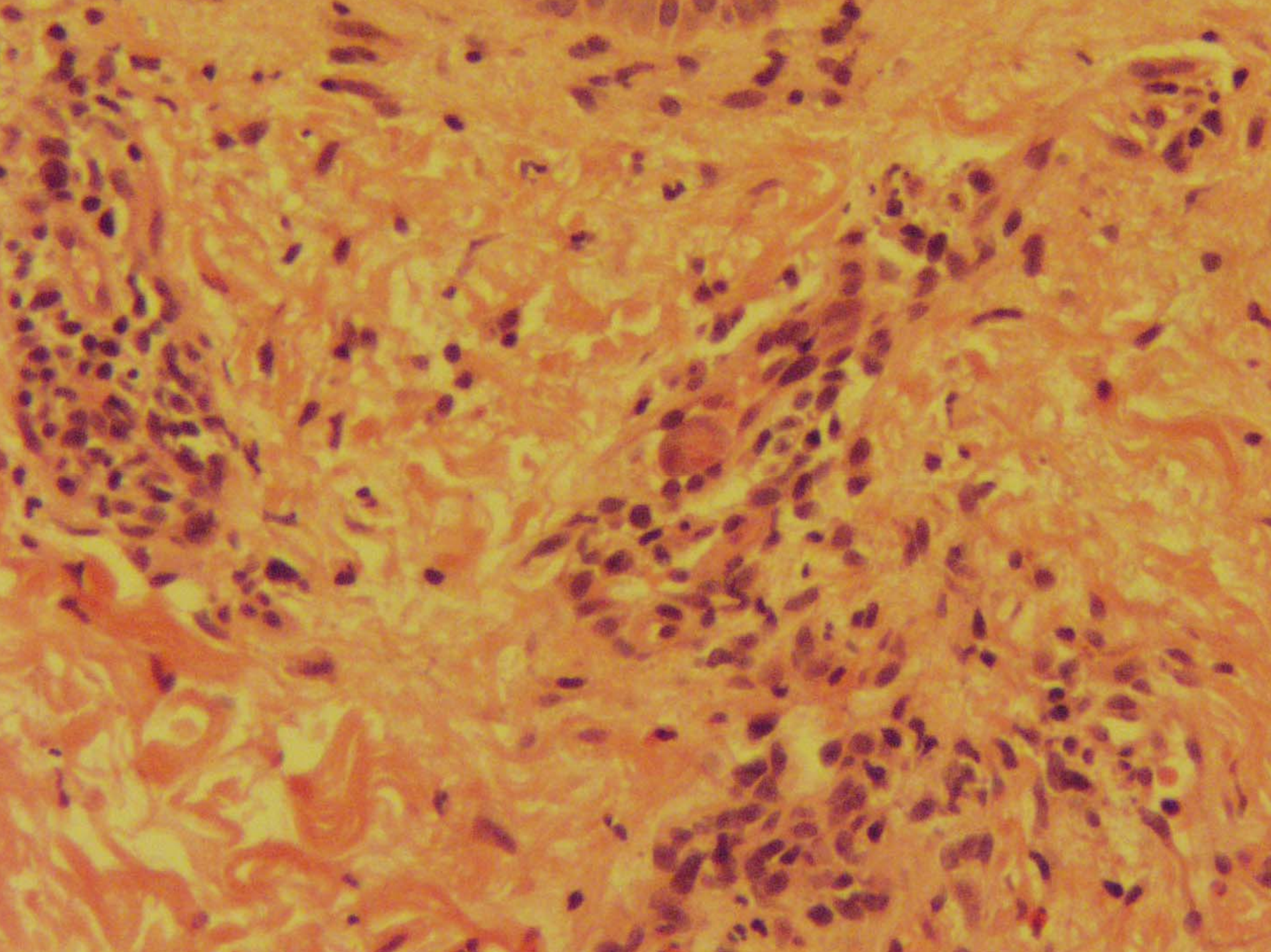

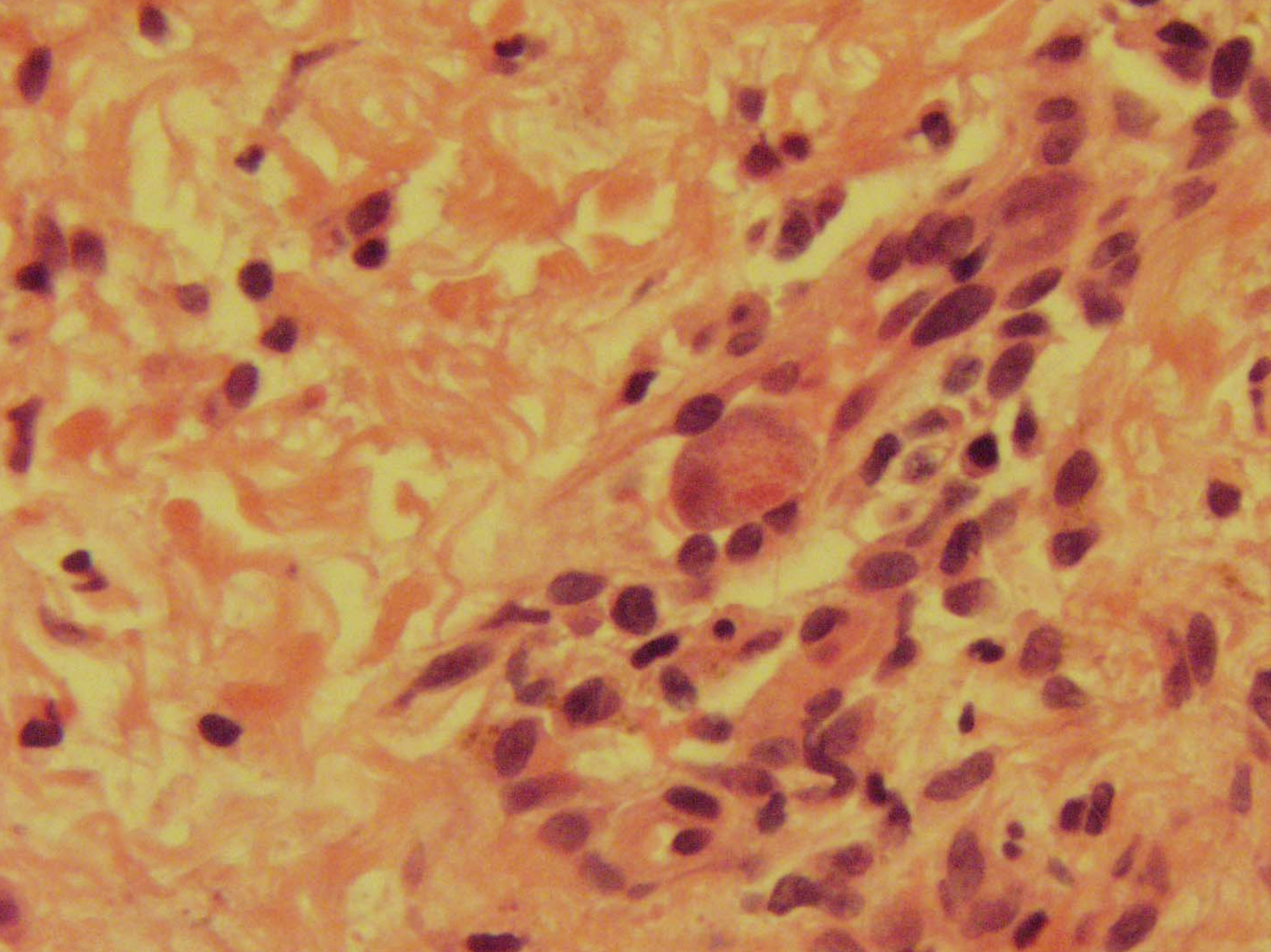

Congenital CMV Infection

Congenital Cytomegalovirus Infection

- Presumed to be transplacental
  - May be transmitted perinatally, both by aspiration of cervicovaginal secretions in the birth canal and by breastfeeding
  - More than 50% of infants fed with breast milk that contains infectious virus become infected with CMV
- Infants who are not infected congenitally or perinatally with CMV are at high risk to acquire infection in day care centers
  - Prevalence of CMV infection in day care center attendants, particularly children younger than 2 years, approximates 80%
- May be transmitted via saliva, urine, and fomites
  - Children, in turn, may transmit infection to their parents
  - Major role in the epidemiology of many CMV infections in young parents

Differential Diagnosis

- TORCH agents
- Congenital toxoplasmosis
  - Intracranial calcifications observed in congenital toxoplasmosis tend to be scattered diffusely throughout the brain and not in the classic periventricular distribution of CMV
- Other congenital infections to be considered include lymphocytic choriomeningitis virus (LCMV) infection, HSV infection, syphilis, enteroviral disease, HIV infection, and rubella