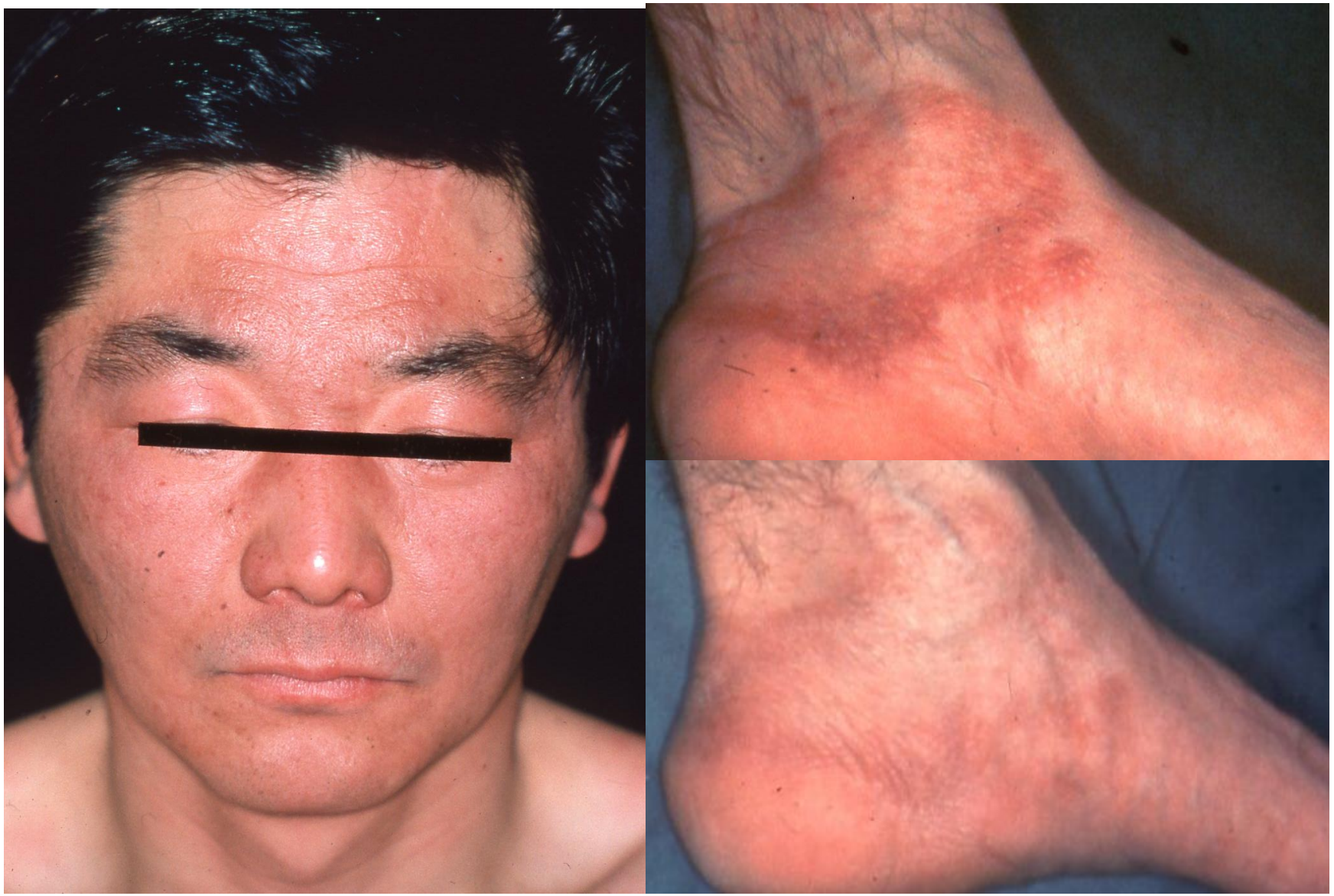
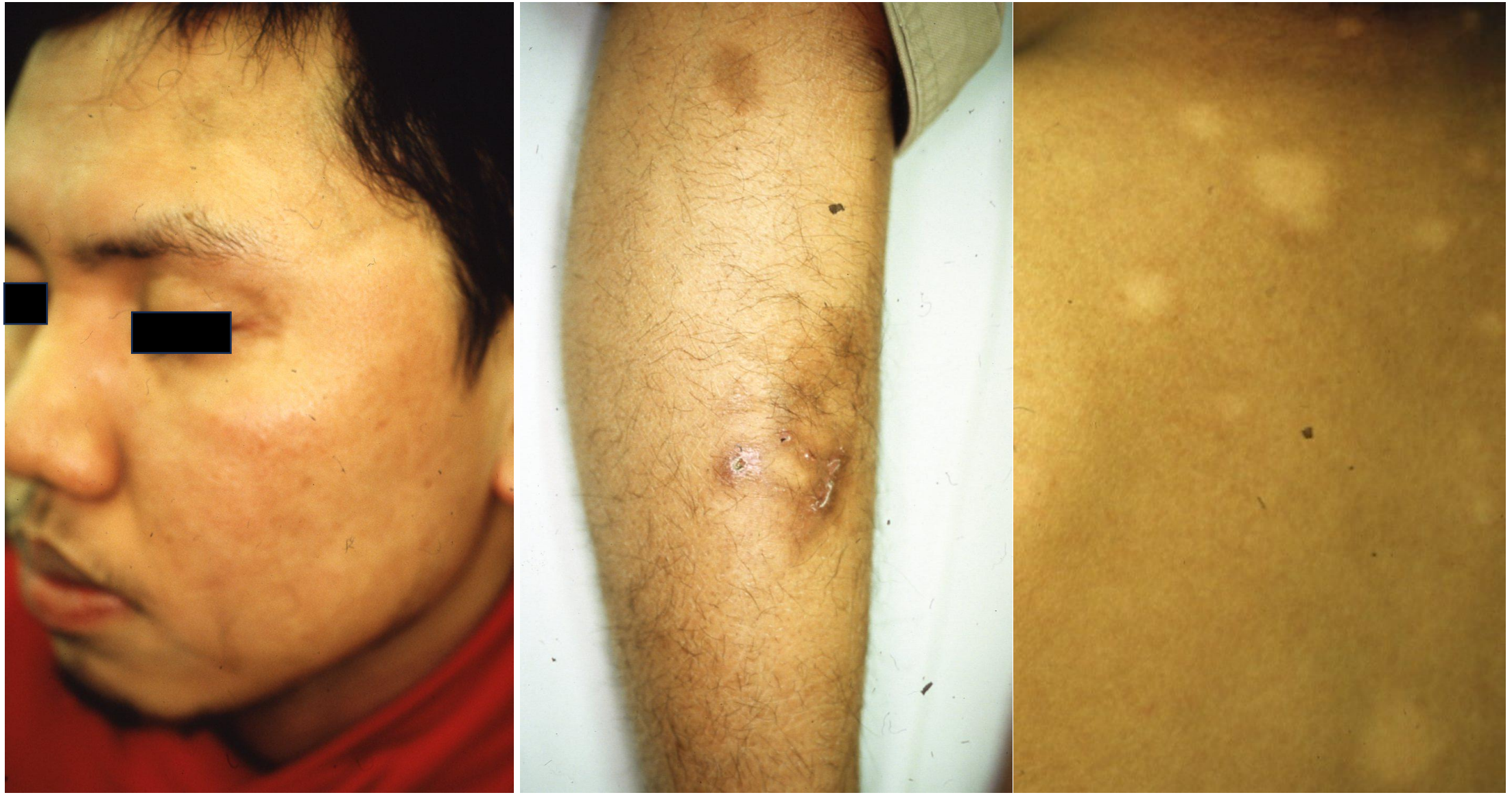
Skin lesions of Hansen's disease

Traditionally, Hansen's disease (leprosy) has been divided into two major groups, lepromatous (multibacillary) and tuberculoid (paucibacillary) types. The borderline type, the most common form, shows an intermediate severity. Lepromin test is positive in the tuberculoid type.

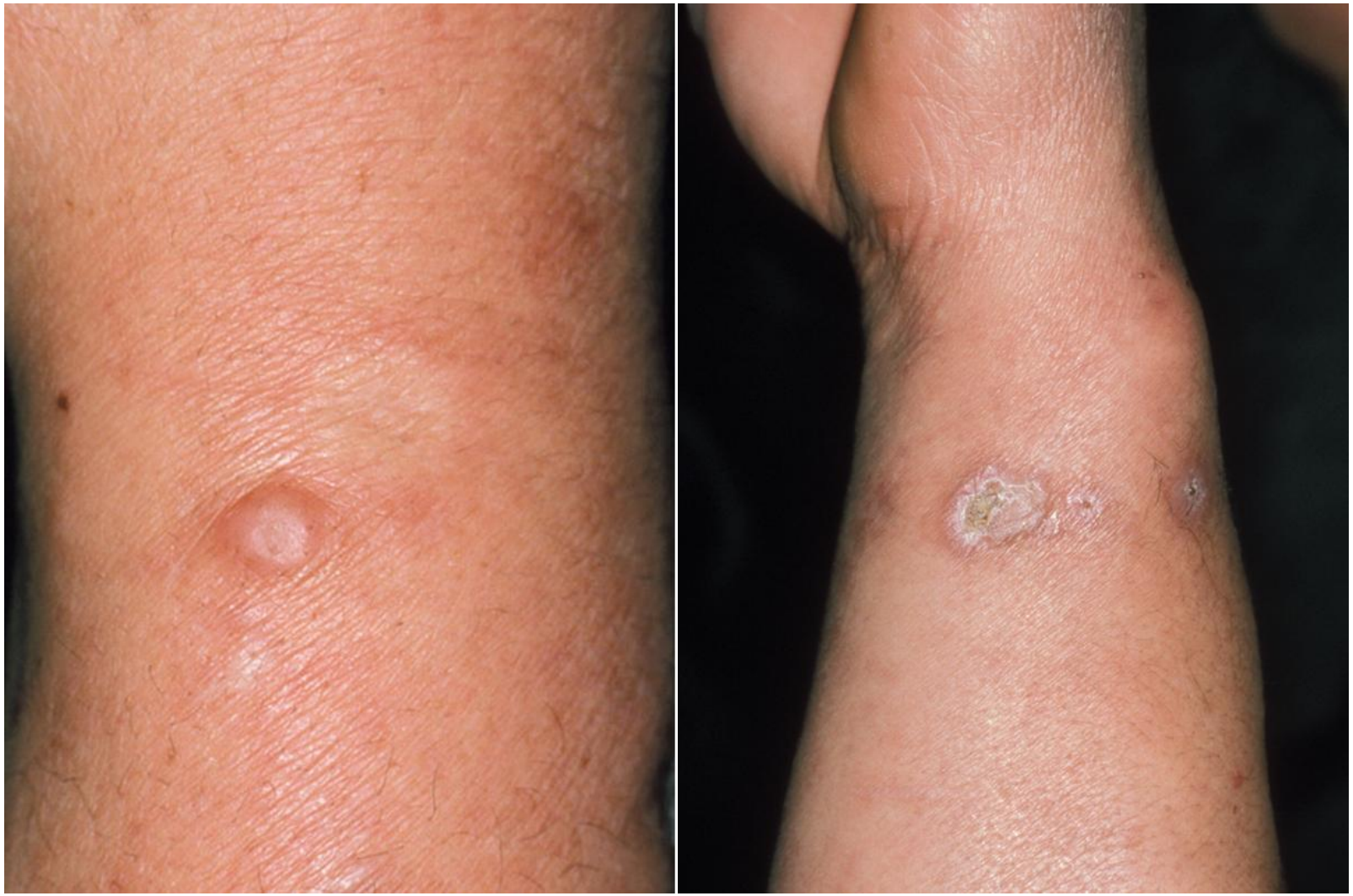
Ref.: Florian MC, et al. Clinical aspects and classification of Hansen's disease. In: Deps PD (eds) Hansen's Disease. Springer, Cham.2023. doi: 10.1007/978-3-031-30893-2_9



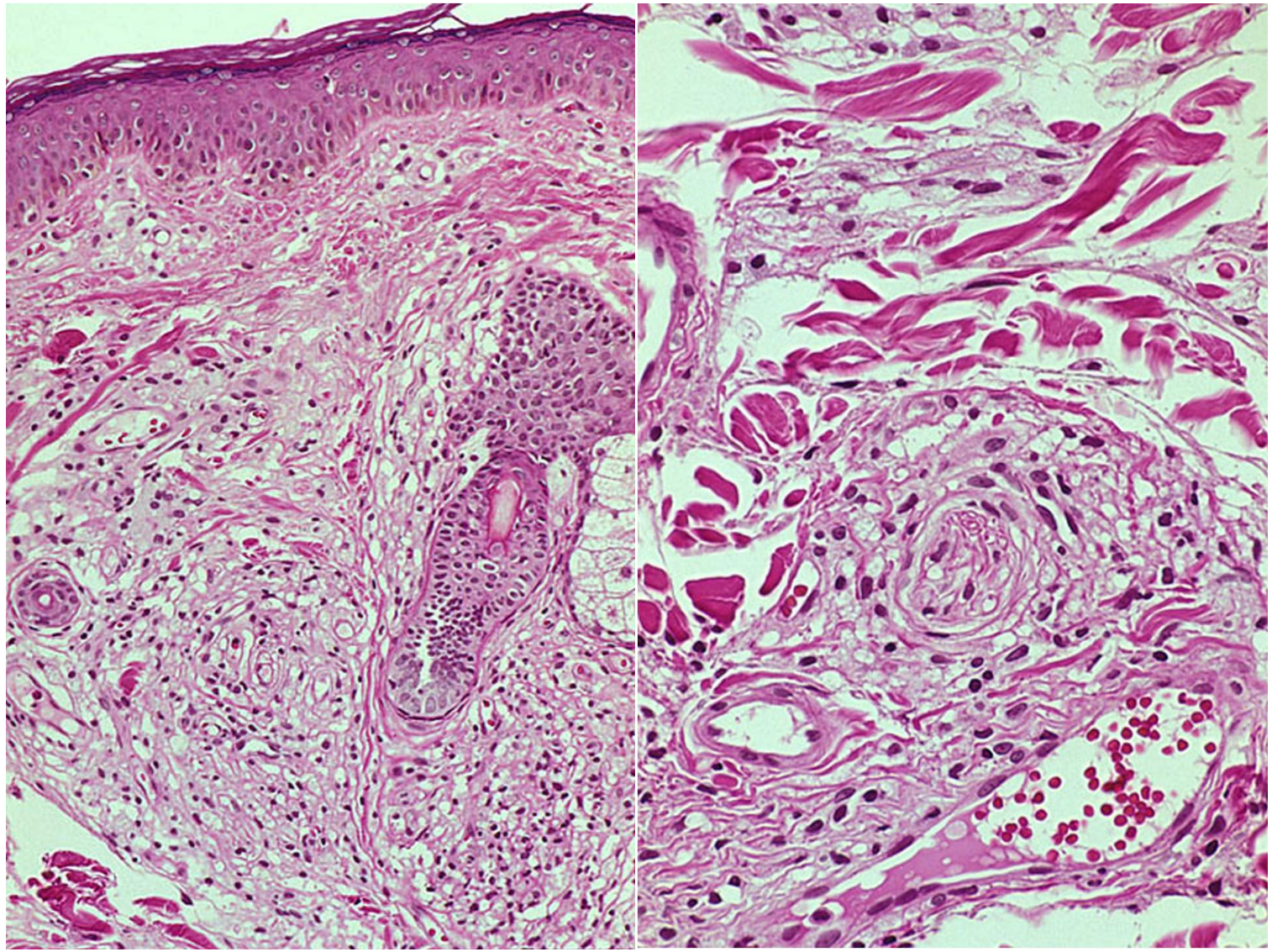
Skin lesions of lepromatous (multibacillary) leprosy (a Japanese farmer aged 40's living in Okinawa). Indurated erythematous lesion are seen on the face (left). The foot lesion (right top) shows indurated ill-defined infiltration. The infiltrative lesion significantly regressed three months after treatment with diphenylsulfone (DDS) 100 mg/day and rifampicin 450 mg/day (right bottom).



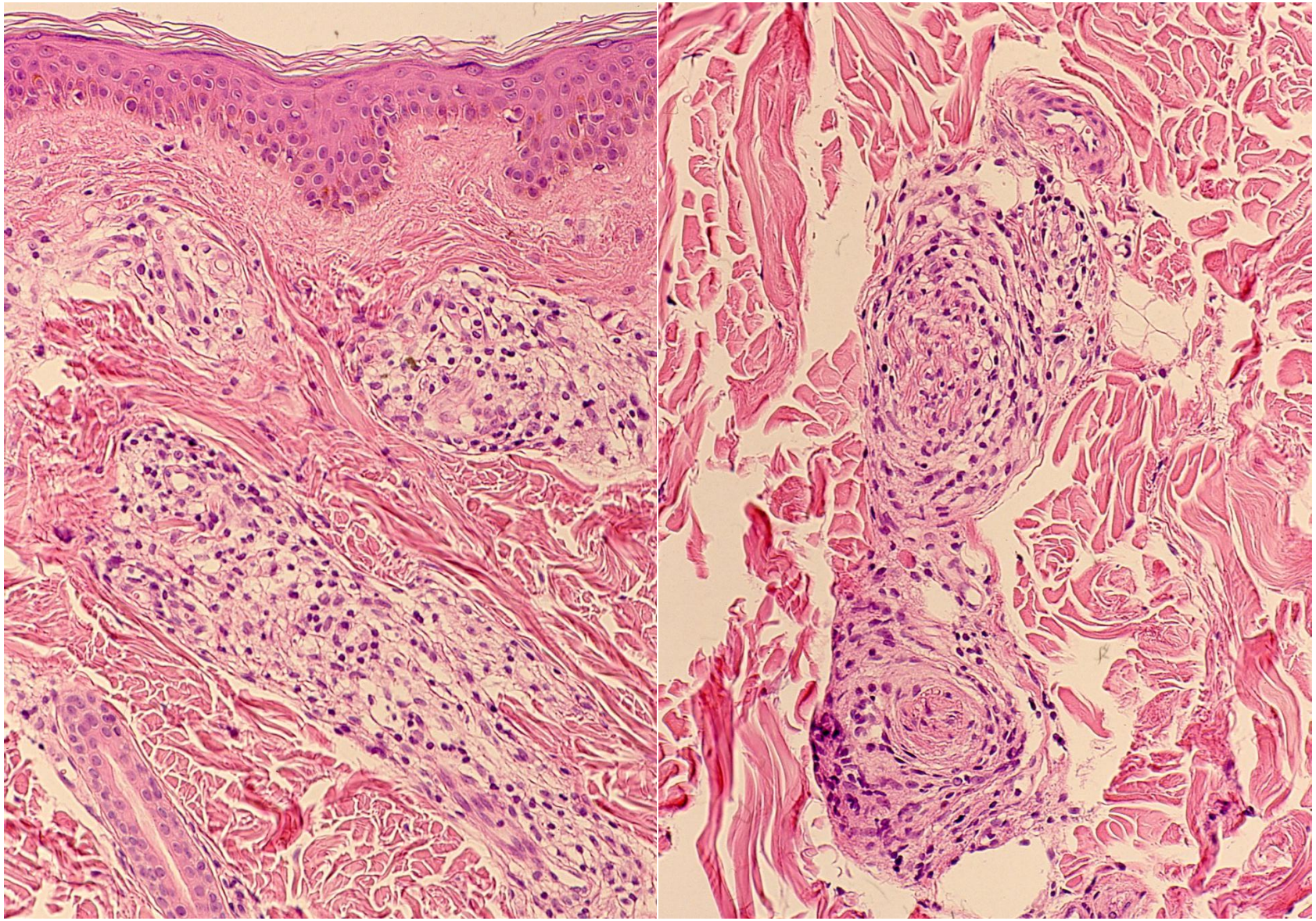
Skin lesions of lepromatous (multibacillary) leprosy (a Peruvian man aged 20's). Indurated erythematous lesion are seen on the cheek (left). The skin indurations are also seen on the arm (center) and the back (right). Depigmentation is noted on the back lesions. Most of the patients reported in present Japan are migrant workers from the South American continent (particularly Brazil, paraguay and Peru).



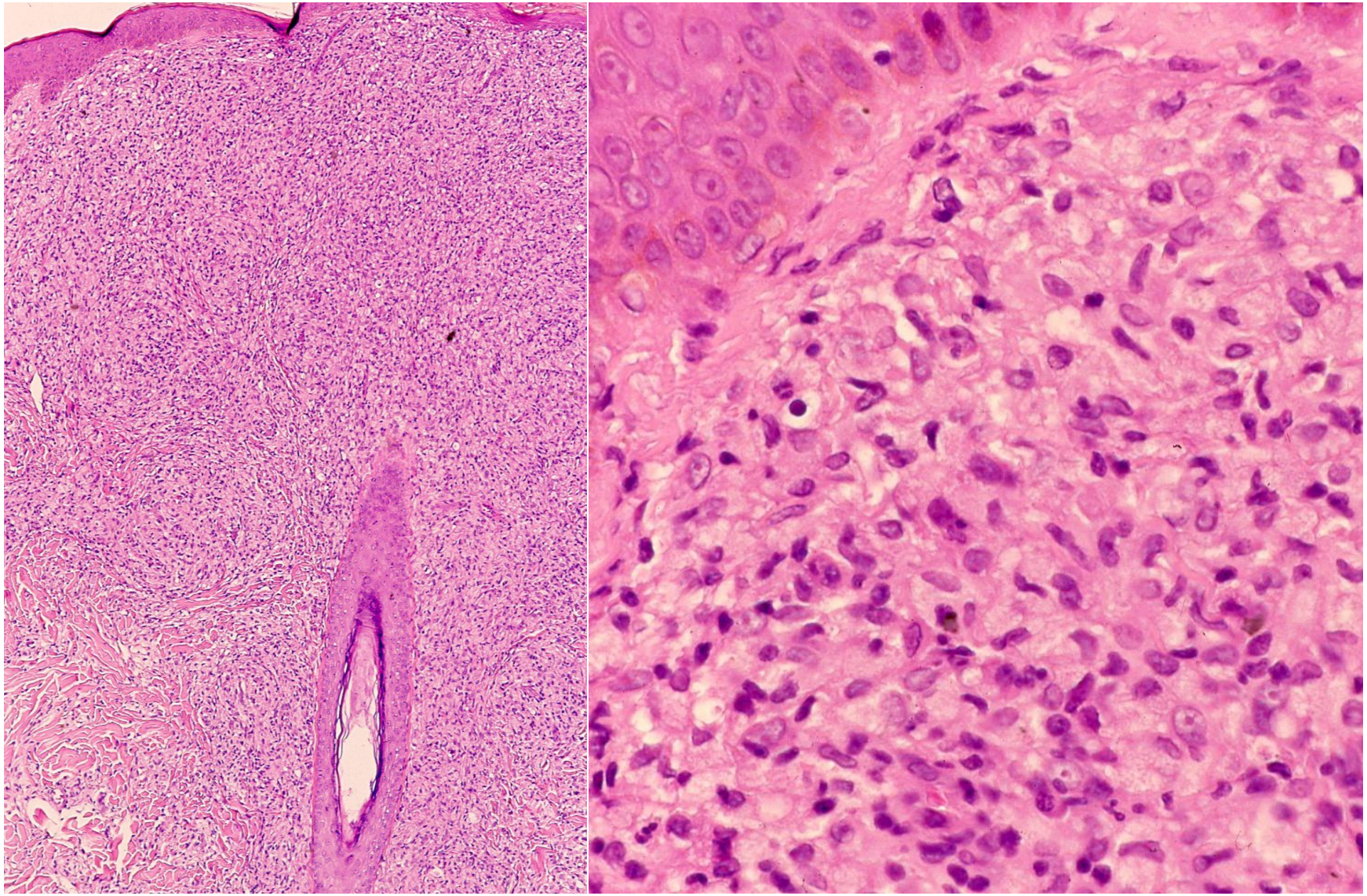
Lepromatous (multibacillary) leprosy seen in a 35 y-o Japanese descent living in Paraguay. Mildly elevated erythematous indurations are observed on the forearm. Crust is attached on the surface. Similar lesions are seen on the face and legs.



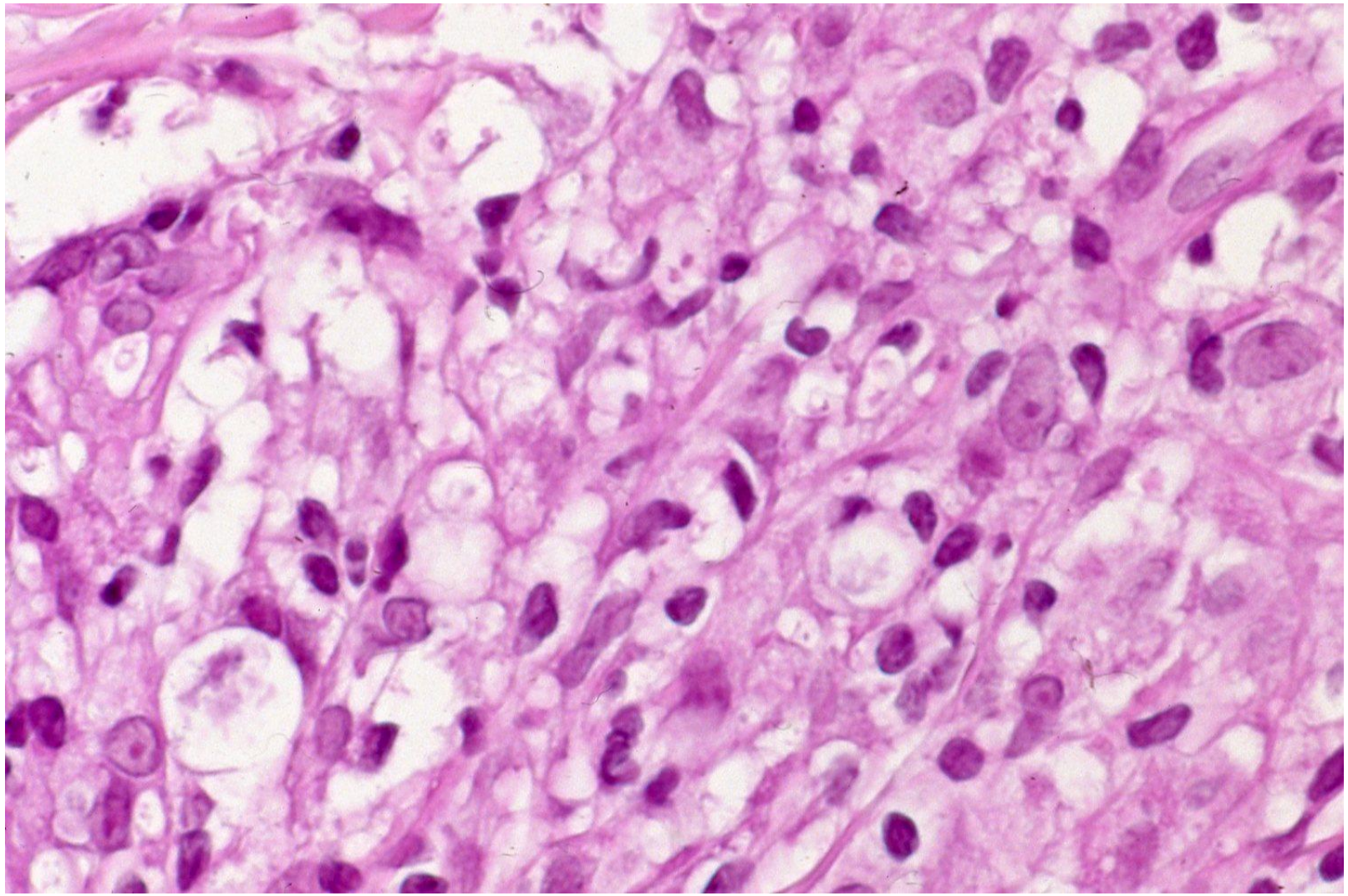
Lepromatous (multibacillary) leprosy seen in a 35 y-o Japanese descent living in Paraguay (H&E). Biopsy taken from the forearm lesion discloses intradermal infiltration of foamy macrophages. Lymphocytic reaction is minimal. The papillary dermis is spared (left). Peripheral nerve involvement is noted in the deep dermis (right).



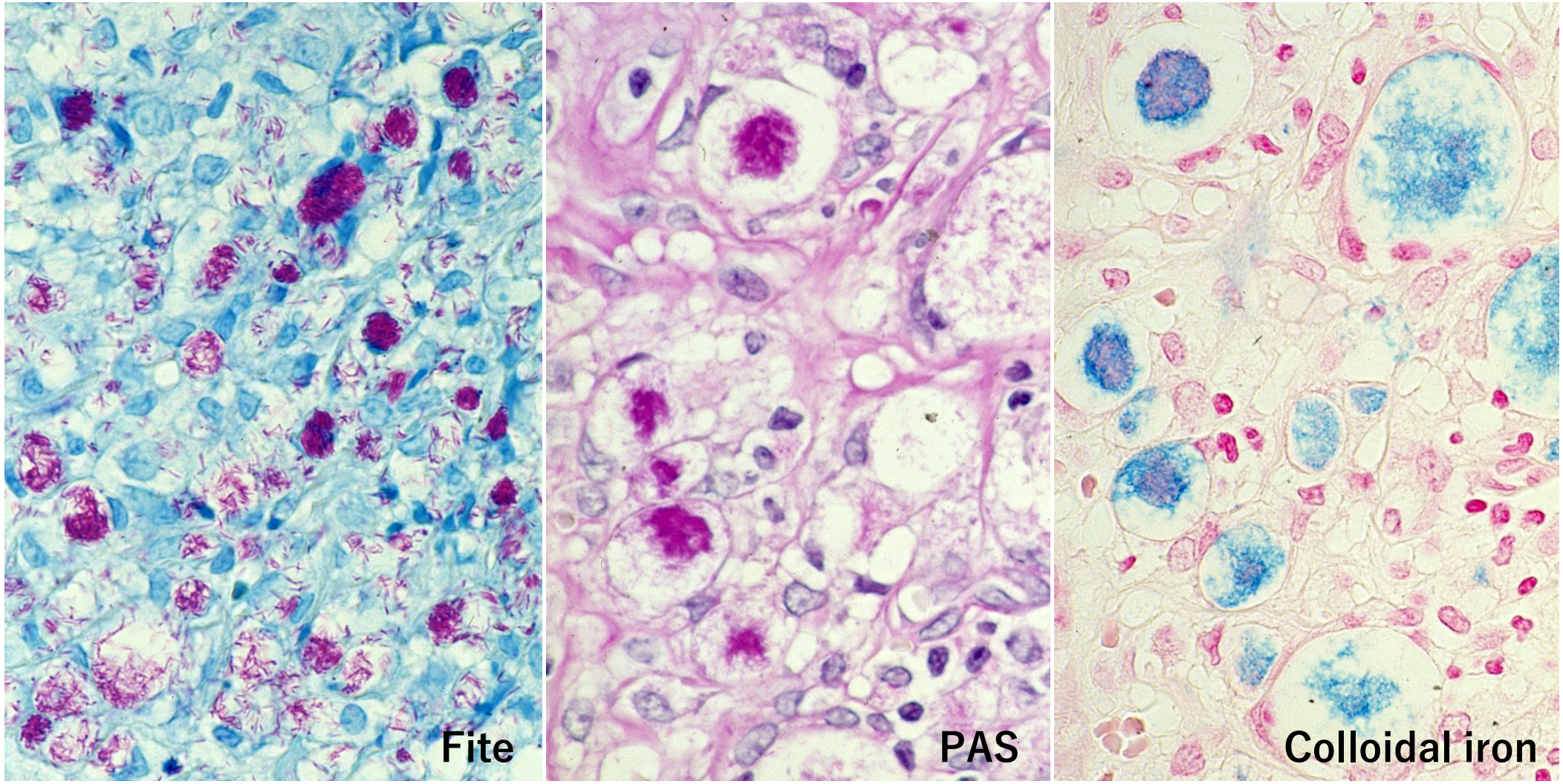
Biopsy from a leg lesion of lepromatous (multibacillary) leprosy in a migrant male worker aged 30's from Brazil (H&E). Multifocal clusters of foamy macrophages are seen in the dermis (left). Focal involvement of the peripheral nerve fascicle is characteristic (right)



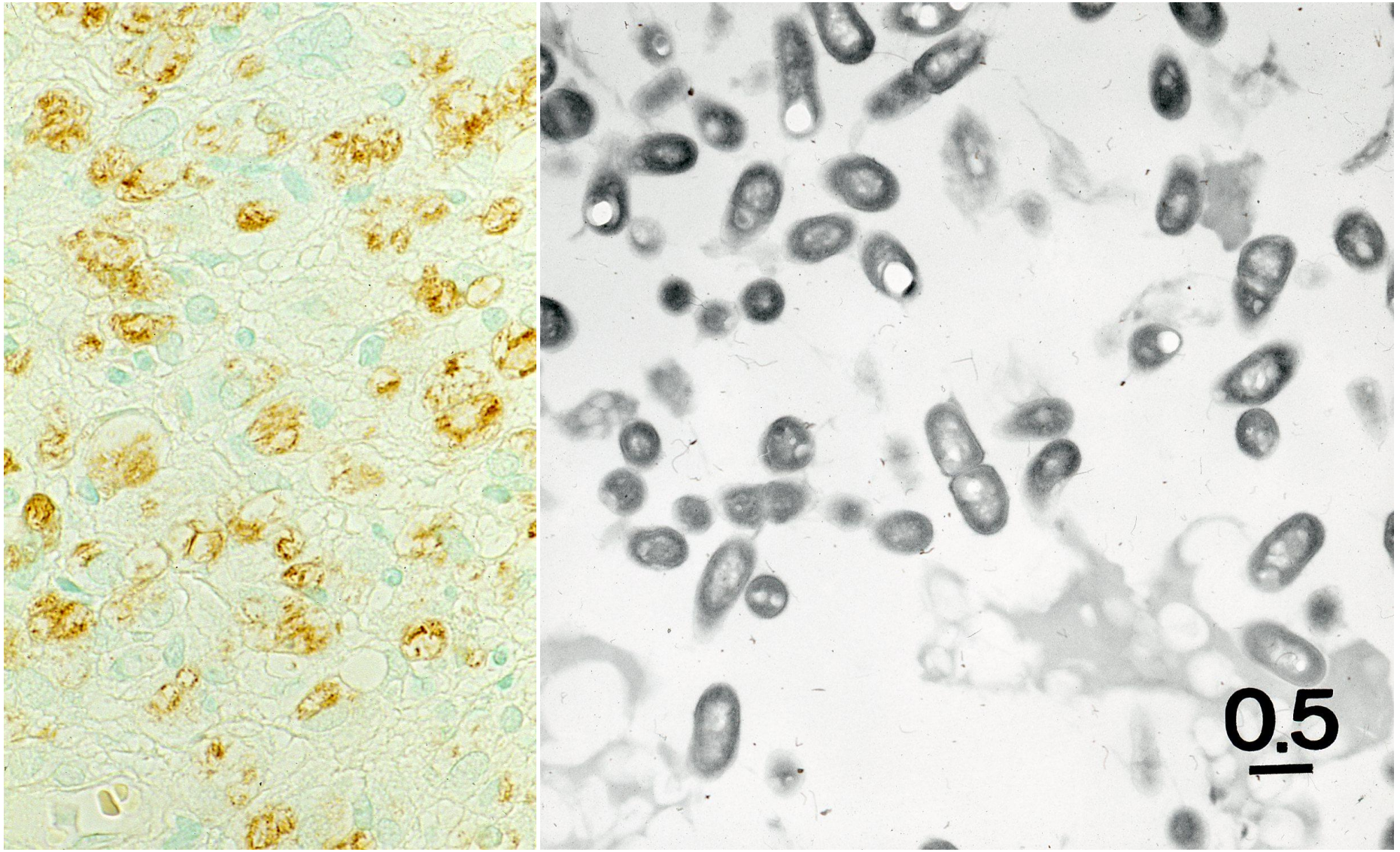
Lepromatous (multibacillary) leprosy seen in a Japanese descent aged 70’s living in Brazil (H&E). Biopsy taken from a large induration on the leg lesion discloses massive intradermal infiltration of foamy macrophages (left). The cytoplasm of macrophages contains vacuoles called "globi" (right). Lymphocytic reaction is minimal.



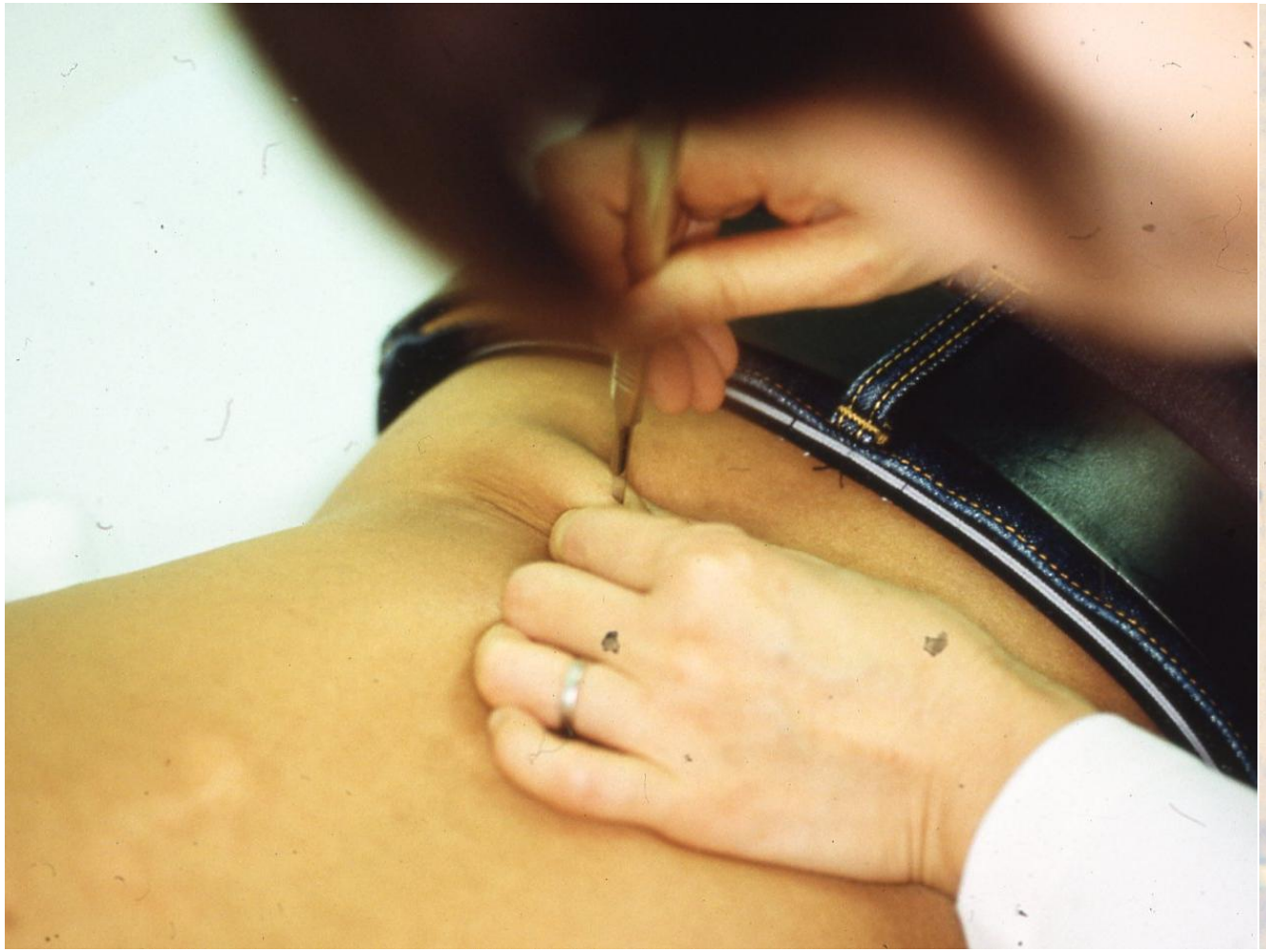
Lepromatous (multibacillary) leprosy seen in a Japanese descent aged 70’s living in Brazil (H&E). Biopsy was taken from a large induration on the leg lesion. High-powered view discloses "globi" filled with *Mycobacterium leprae* in the cytoplasm of macrophages. Lymphocytic reaction is minimal.

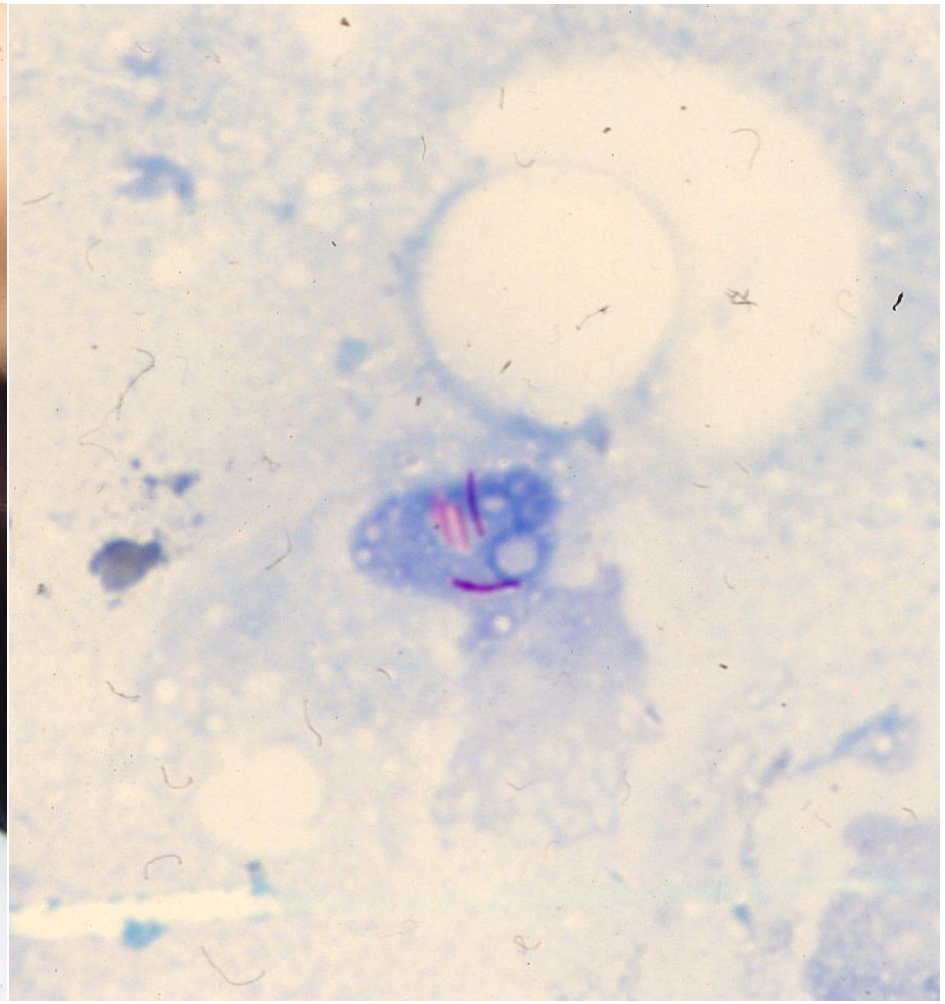


Globi formed in the cytoplasm of foamy macrophages in lepromatous leprosy is filled with acid-fast bacilli (left: Fite method of Ziehl-Neelsen stain). The globi are also stained with PAS (center) and colloidal iron (right). *M. leprae* uses hyaluronic acid for the growth. The globi richly contain colloidal iron-reactive hyaluronic acid. To demonstrate *M. leprae* in paraffin sections, Fite method is needed: Fite method utilizes oil xylene for deparaffinization, and ethanol is not used for staining.

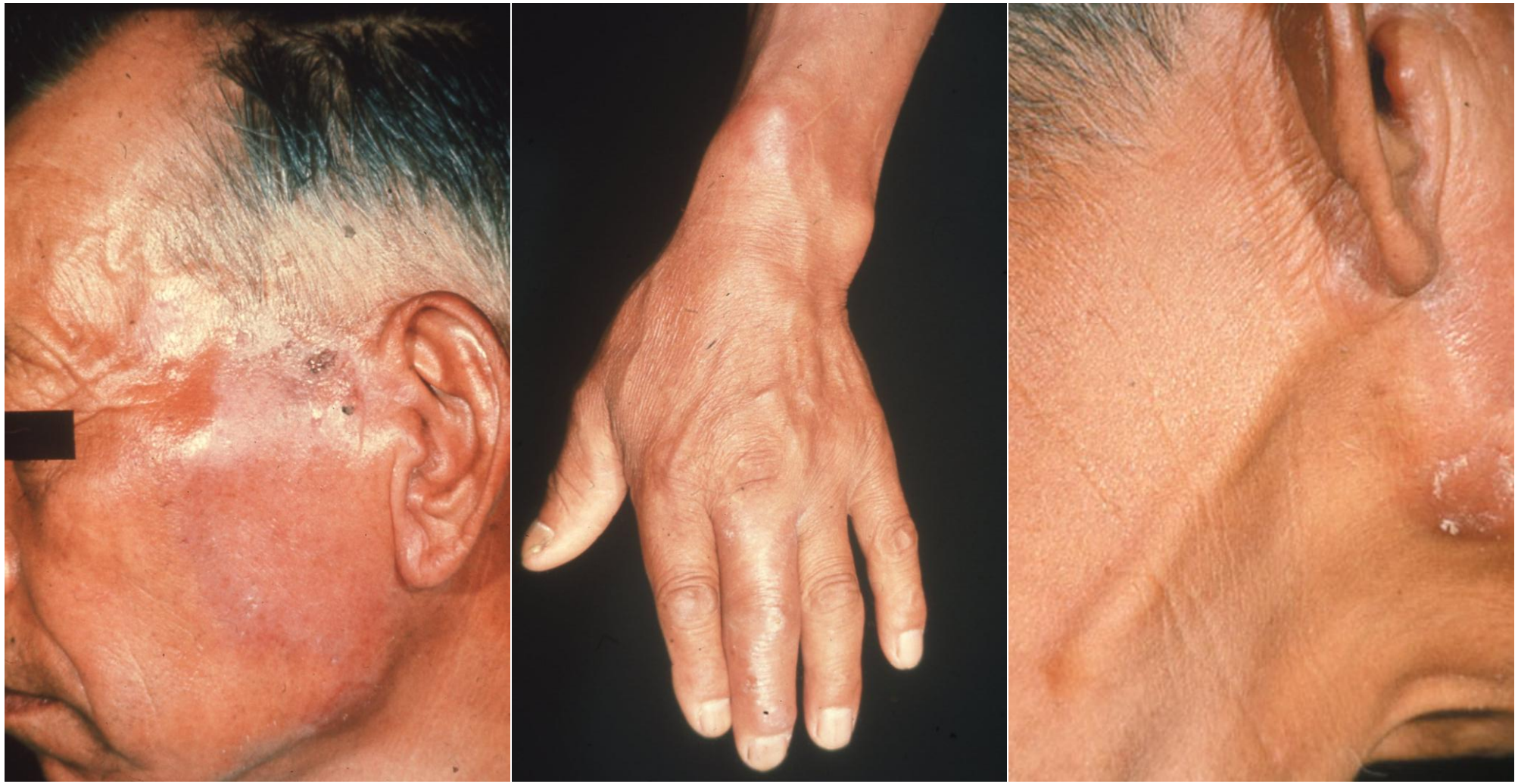


Immunostaining using BCG antiserum. The globi are immunoreactive for BCG antigens. The pre-embedding immunoelectron microscopy using an immunostained paraffin section discloses rods positively labeled with DAB in the cytoplasm of the macrophage.

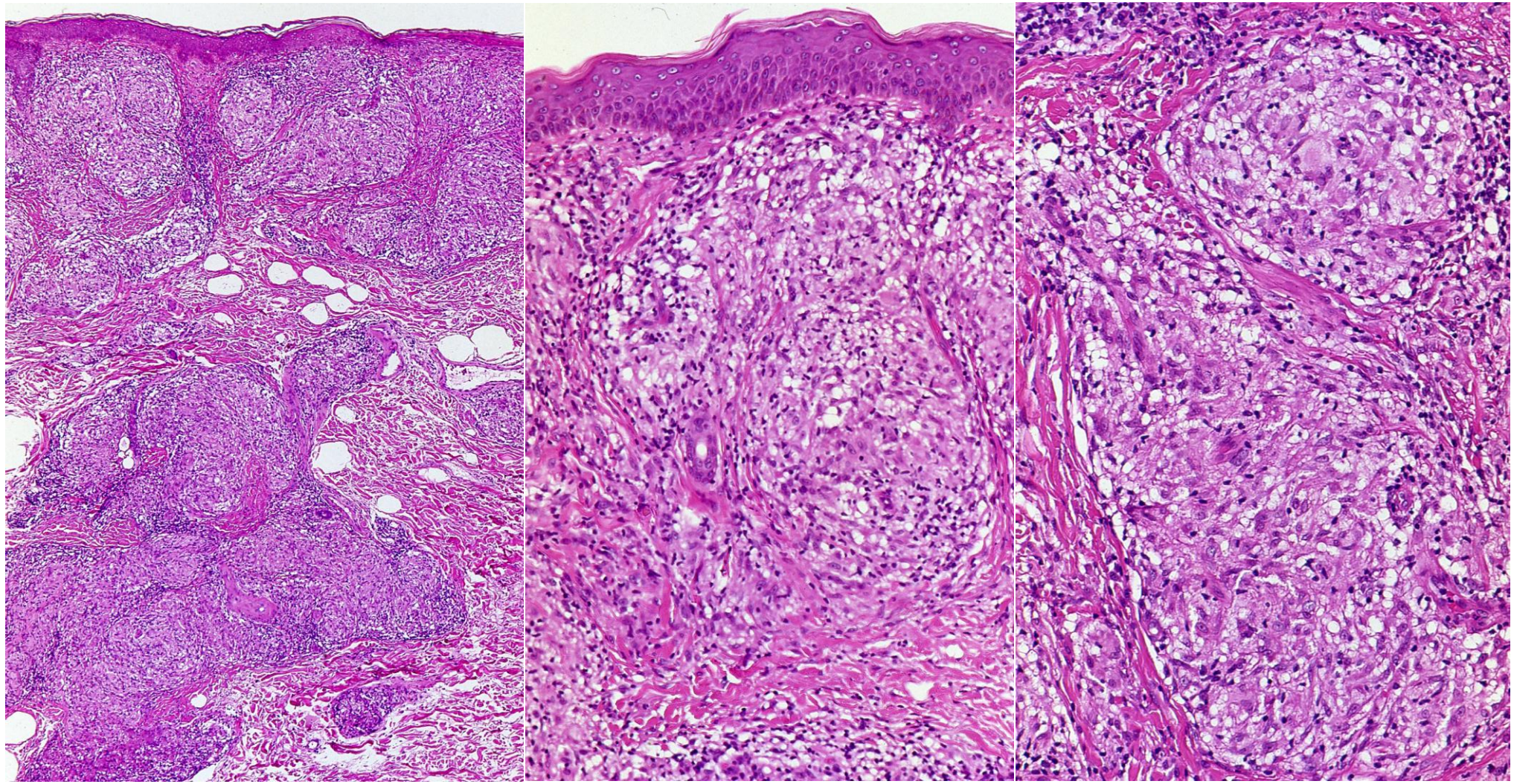




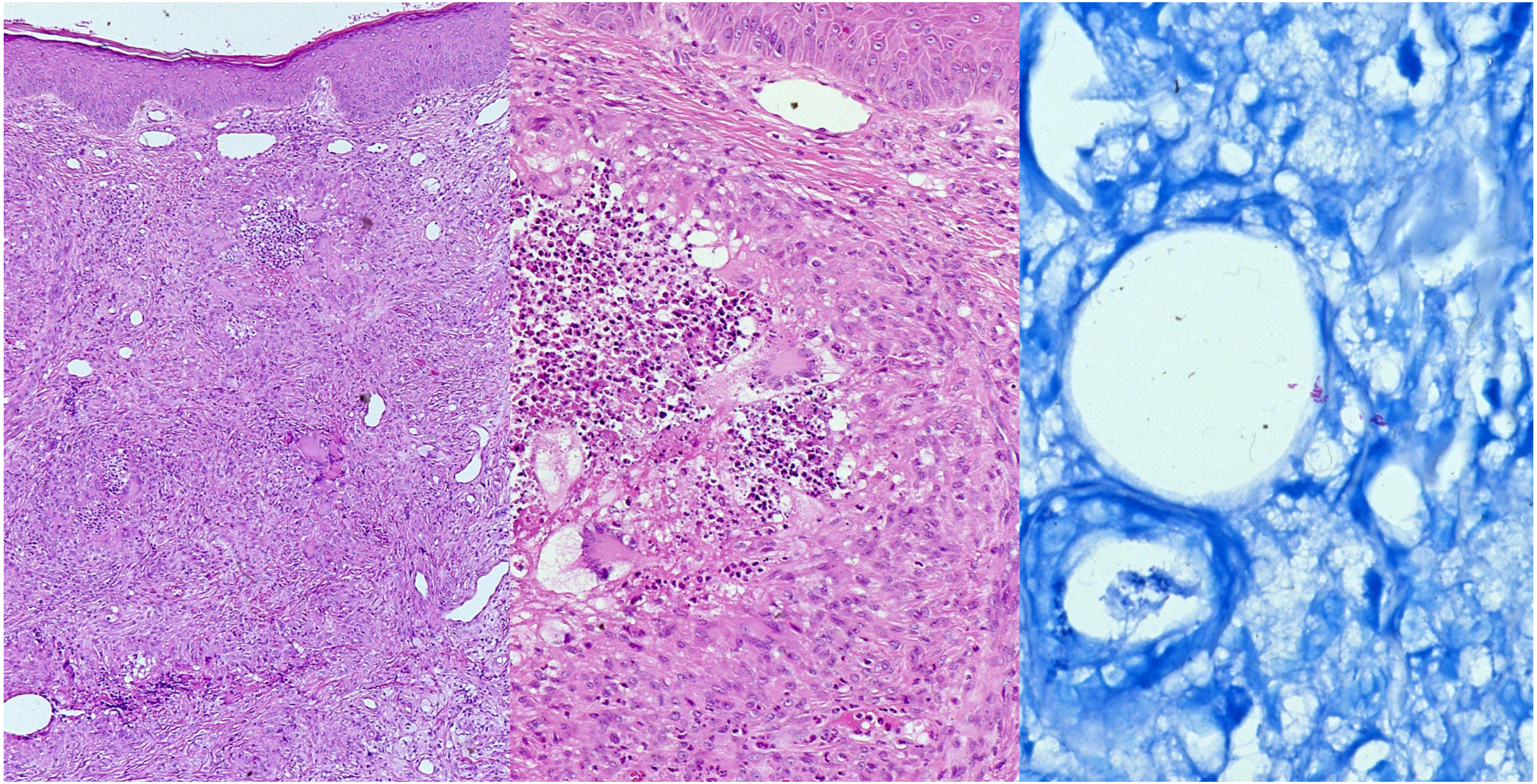
The leprosy skin lesion is painless because of the peripheral nerve involvement. Needle puncture is performed to get aspirated tissue fragments for the diagnosis (left). A cluster of large-sized acid-fast bacilli are detected with Ziehl-Neelsen’s stain (right).



Tuberculous (paucibacillary) leprosy seen in a 74 y-o Japanese male farmer living in Kanawaga Prefecture adjacent to Tokyo. Involvement of the facial skin is evident (left). He complained of numbness of the hand. The erythematous fingers are swollen (center). The nerve fascicles on the dorsum of the hand (center) and right neck (right) are markedly swollen.



Biopsy specimen from the lesion of tuberculoid (paucibacillary) leprosy seen in a 74 y-o Japanese farmer (H&E). Epithelioid granulomas occupy the dermis. The papillary dermis is involved. Multinucleated giant cells of Langhans type are scattered. No caseous necrosis is seen. Lymphocytic reaction is mildly associated. Peripheral nerve fibers are involved.



Biopsy specimen from another lesion of tuberculoid (paucibacillary) leprosy seen in a migrant from Brazil aged 40's (left & center: H&E, right: Fite method). Epithelioid granulomas occupy the dermis. Multinucleated giant cells of Langhans type are scattered. Necrosis is focally seen. Ziehl-Neelsen's stain, Fite method, discloses a few acid-fast bacilli in the lesion.