

DEPARTMENT OF PATHOLOGY AND MICROBIOLOGY

MYCOBACTERIUM LEPRAE

Morphology - Rod - 5x0.5µm, Pointed, club end, Acid fast, Gram +ve, Singly, clumps, globi, cigar bundles Occur intracellularly or extracellularly Target – schwann cells

MoT- Nasal droplet, Contact with infected soil, Insect vectors, Direct dermal implantation.

INCUBATION PERIOD - 5-7yrs

Portal of entry

Direct inoculation – minute abrasion, cut, mucosa of GIT, RESP tract blood target organs

Pathogenesis

Four ways by which it damages the host

Intra cellular survival- surface phenolic glycolipid resist oxidative killing by macrophages

Peripheral neuritis-due to cell mediated response[T cell]

Bacillary infiltration-except in lungs & CNS

Acute lepra reaction-episode of inflammation in preexisting lesion.

Pathology

Intermediate leprosy

Skin –hypopigmented or erythematous macules, wheal like papules, 1-3cm in dia, 1-4 in nos

Lepromin test –ve

Microscopical; afferent sensory nerve, skin appendages, lymphatics, b.v, in superficial part of dermis are affected, Lymphocytic infiltration. Lesions heal or progress into other forms.

Lepromatous leprosy

Seen where resistance is very low

Skin –symmetrical, marginated, multiple infiltrated nodules and plaques; xanthoma like/ dermatofibroma papules, leonine facies & eyebrow alopecia

Bacilli seen in clumps /globi in blood & nerves, BI-4-6+ Numerous bacilli in skin, nerves, and all organs except lungs and CNS Nerve enlargement and damage are usually symmetric; distal peripheral neuropathy are seen Due to fibrosis nerves can be felt as cords

Microscopical- epidermis atrophied, dense granuloma of foamy cells, Lymphocytes, clear space b/w epi. & granuloma. M.lepra phenolic glycolipid Ab's- 3+

Tuberculoid leprosy

Seen in pts with high degree of resistance, Disease is confined to the skin and peripheral nerves.

AFB are few or absent. Lepromin test +ve BI – 0-3

Skin lesions -up to 3 sharply defined asymmetrical macules or plaques with tendency towards central clearing, elevated borders devoid of hair follicles, dry scaly, anhydrotic. lesions -anesthetic early nerves - asymmetric enlargement of one or several peripheral nerves—most often the ulnar, posterior auricular, peroneal, and posterior tibial nerves, associated with hypesthesia and myopathy.

Microscopic : Nerves completely destroyed, granuloma –epithelioid cells & giant cells lym at prephery focal lesions undergo caseous necrosis, .M.lepra phenolic glycolipid Ab's-1+[60%] asymmetric enlargement of one or several peripheral nerves—most often the ulnar, posterior auricular, peroneal, and posterior tibial nerves, associated with hypesthesia and myopathy.

Microscopic : Nerves completely destroyed, granuloma – epithelioid cells & giant cells, lymphocytes at periphery, focal lesions undergo caseous necrosis, *M. lepra* phenolic glycolipid Ab's-1+ [60%]

	Tuberculoid	Borderline Tuberculoid	Borderline Lepromatous	Borderline	Lepromatous
Skin Infiltrated lesions	Defined plaques, irregular plaques, healing centers	Polymorphic, partially raised edges, satellites	Papules, nodules, punched-out centers	Diffuse thickening	Diffuse thickening
Macular lesions	Single, small	Several, any size	Multiple, all sizes, bizarre	Innumerable, small	Innumerable, confluent
Peripheral Nerve lesions	Solitary, enlarged nerves	Irregular enlargement of several large nerves, asymmetrical patterns	Many nerves involved, symmetrical patterns	Late neural thickening, asymmetrical anaesthesia and paresis	Slow, symmetrical 'glove-and-stocking' anaesthesia

Reactional states

Type I lepra reaction –

type IV hypersensitive reaction- Inf: in skin lesions, - In LL - Preceded by reversal reaction – to TL

Type II lepra reaction-

Type III hypersensitive reaction- painful erythematous reaction in BL & LL

Lucio's phenomenon – type III hypersensitive reaction- untreated LL

Diagnosis

Leprosy diagnosis is usually made clinically & laboratory testing

Health workers diagnose leprosy based on finding at least one of **three cardinal signs** of leprosy:

one or more hypopigmented, anaesthetic skin patch.

one or more thickened peripheral nerve

a positive skin smear

Ab to S – 100 protein.

Immunostaining with S-100

Serological dia.

Ig M serum Ab's against glycolipid

Slit-skin test- ear, chin, elbow- tissue fluid is scraped out using scalpel & smeared

Lepromin test

1916 Mitsuda +ve test in healthy persons **Principle** – delayed hypersensitivity

rendered non viable by exposing it to ⁶⁰Co radiation. Contain 160 million bacilli \ ml

.1 ml is injected Reaction is read at 48 hrs & 21 days Early reaction [Fernandez reaction]

20 mm dia. Appear at 24 hrs & disappear by 3-4 days
Late [Mitsuda]-appear in 7-10 days maximum 3-4 wks, read after 21 days

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