**Leprosy**

Leprosy is a chronic infection with Mycobacteria leprae. Affecting primarily skin and peripheral nerves. Mode of transmission of leprosy is still not proven, but current evidence favors respiratory route.

**Epidemiology:**

It is found primarily in tropical and subtropical countries mostly in Indian subcontinent. Infection usually occurs in childhood. The incubation period is 2-10 years. Most patients develop adequate immunity so that relatively few patients develop clinical findings. Chronic exposure appears essential.

**Pathogenesis:**

Leprosy reflects an interplay between the immune status of the patients and the virulence of the mycobacteria. Therefore, there are two poles of leprosy (tuberculoid and lepromatous leprosy) although many patients lie somewhere between these extremes.

As a comparison, tuberculoid leprosy characterized by high immune status and hence low number of bacteria. Clinically, this pole characterized by asymmetrical skin lesions with sharp borders. On other hand, lepromatous leprosy characterized by low immune status and hence high number of bacteria. Clinically, this pole characterized by symmetrical skin lesions with vague borders.

**Clinical features:**

The initial cutaneous manifestations of leprosy is subtle and non-specific, this stage is known as*indeterminate leprosy*, it is characterized initially by erythematous patches that may appear pale in dark skin individuals; most cases resolve, some advance into more severe disease. The differential diagnosis include vitiligo, pityriasis alba, and tinea versicolor.

*Tuberculoid leprosy*is characterized by one or multiple erythematous or scaly, well-demarcated macules or patches; usually hypo or anesthetic. All patients have nerve involvement. Inflammation of Schwann cells leads to thickening of peripheral nerves. The course is generally benign.

*Borderline leprosy*is characterized by more lesions, more widespread and less sharply defined than in tuberculoid form. Usually symmetrical on trunk but may be asymmetric on face. Less likely to have scale. Nerve involvement less prominent.

*Lepromatous leprosy*is characterized by papular and nodular lesions symmetrically distributed. Often start on nose and ears, later involve hands, arms, buttocks. Facial lesions can be markedly swollen (leonine faces) with loss of eyebrows. Later, destruction of nasal cartilage with mutilation. Nasal secretion is rich in organisms. Complications include orchitis, facial mutilation, neurotrophic ulcers, flexion contractures of hands, and foot drop.

**Diagnostic approach:**

Skin biopsy; histological examination; Ziehl-Neelsen stain works well in lepromatous leprosy. For paucibacillary forms, PCR is available. Nasal smear or scraping from tissue fluid from ear in lepromatous leprosy reveals numerous organisms on Ziehl-Neelsen stain. Neurological examination (anesthetic patches, enlarged nerves). Lepromin test (Mitsuda test): injection of an extract from lepromatous tissue; positive response is development of nodule after 3-4 weeks in tuberculoid leprosy.

**Therapy:**

Current WHO recommendations:

* Paucibacillary disease (no bacilli on smears or biopsy; five or fewer lesions; indeterminate and tuberculoid leprosy): Dapsone 100mg daily unsupervised and rifampicin 600mg monthly supervised for 6-9 months.
* Single lesion paucibacillary disease (tuberculoid or indeterminate): **r**ifampicin 600mg, **o**floxacin 400mg, and **m**inocycline 100mg all as single dose (ROM treatment).
* Multibacillary disease (BT, BB, BL, and LL; more than five lesions; any bacilli seen on smears or biopsies): dapsone 100mg daily; clofazimine 50mg daily; clofazimine 300mg monthly supervised, and rifampicin 600mg monthly supervised for 12 months.
* For patients intolerant of clofazimine, an alternative regimen is rifampicin 600 mg, ofloxacin 400 mg, and minocycline 100 mg, all once monthly for 24 doses.
* An alternative for the patient intolerant or resistant to rifampin or dapsone is clofazimine 50 mg daily, ofloxacin 400 mg daily, and minocycline 100 mg daily for 6 months followed by clofazimine 50 mg daily plus either ofloxacin 400 mg daily or minocycline 100 mg daily for 18 months.

Notes:

* After the first dose, patients are no longer infectious to others.
* Children and spouses should be examined at least once a year.
* Dapsone (bacteriostatic) causes mild hemolysis and methemoglobinemia (MetHb), manifested as cyanosis, it is usually not a problem since the level does not exceed 12%. Dapsone is safe to use during pregnancy.
* Rifampicin (bactericidal), hepatotoxic, banal red urine, liver enzyme inducer (may decrease the effect of other drugs).
* Clofazimine (bacteriostatic) causes red to brown to purple skin discoloration.

**Leprosy reactions:**

Defined as an acute inflammation that appears suddenly during treatment.

Clinical features:

*Type I reaction:* occur in patients with borderline leprosy (BT, BB, BL), the reaction represent an increase in cell-mediated (type IV) immunity with flaring (swelling and tenderness) of existing nerve or skin lesions. There is no systemic symptoms. Type one reaction is an emergency. Treated by systemic corticosteroid (prednisone 20-60 mg daily).

*Type II reaction (Erythema nodosum leprosum):* occurs in patients with LL and BL. It is due to an increase in circulating immune complexes with vasculitis. It is characterized by systemic symptoms (fever, myalgias, arthralgias, anorexia). Skin lesions are erythematous nodules occur widely. Existing leprosy lesions are not involved. Treatment is by systemic corticosteroids with or without clofazimine.

**Abbreviations:** PCR: polymerase chain reaction; BT: borderline tuberculoid; BB: borderline; BL: borderline lepromatous; LL: lepromatous; TT: tuberculoid.

**References:**

* Dermatology. Sterry W, Paus R &Burgdorf W. 6th edition, 2006, Georg Thieme Verlag KG, Stuttgart, Germany.
* Clinical Dermatology. Andrew’s Diseases of the Skin. James WD, Berger TG & Elston DM. 11th edition, 2011, Elsevier Inc. Philadelphia, USA.