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Review Article

An Overview of Leprosy: A Public Health Problem

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A b s t r a c t

Leprosy is common in many countries worldwide and in temperate, tropical and subtropical climates. Leprosy is characterized by disfiguring skin sore, nerve damage and progressive debilitation. Leprosy is a chronic granulomatous disease caused by a bacterium which affects various parts of the body particularly the skin and nerves. Leprosy is difficult to transmit and has a long incubation period. Children are more susceptible than adults. Effective medications exist and isolation of victims in "leper colonies" is unnecessary. The emergence of drug-resistant *M. leprae* as well as increased numbers of cases worldwide has led to global concern about this disease. Early diagnosis reduces leprosy symptoms and complications. The aim of this review is to make people aware of the complications of leprosy which can be prevented by taking preventive measures by educating the people about this disease and gives the idea about the herbal treatment of leprosy that would be beneficial for people.

K e y w o r d s

Granulomatous

Progressive debilitation

Leper colonies.

Mycobacterium leprae

Introduction

Leprosy or Hansen's disease (HD) is a chronic disease caused by the bacteria *Mycobacterium leprae* and *Mycobacterium lepromatosis* named after physician Hansen, leprosy is primarily a granulomatous disease of the peripheral nerves and mucosa of the upper respiratory tract skin lesions are the primary external sign. Leprosy can be progressive causing permanent damage to the skin, nerves, limbs and eyes. The principal manifestations of disease are anaesthetic skin lesions and peripheral neuropathy with peripheral nerve thickening. The clinical form of the disease in any individual depends on the degree of cell mediated immunity expressed by that individual towards *M. leprae*. High levels of cell mediated immunity with elimination of leprosy bacilli produces the tuberculoid form of disease, whereas absent cell mediated immunity results in lepromatous leprosy. The medical complications of leprosy are due to nerve damage, immunological reactions and bacillary infiltration. Nerve damage accompanying leprosy is a particularly serious complication because this will remain with the patient for the rest of their life and causes considerable morbidity. Currently available drug treatments are highly effective in clearing viable bacilli but do not prevent nerve damage. Leprosy has a long history as a deforming disease and

leprosy patients the world over are stigmatised and ostracised. Words such as "leper" should be avoided and naming the disease HD may reduce stigmatisation (Britton, 1993; Saonere, 2011; WHO, 1998).

Leprosy is caused/contracted by the following:

1. Person to person-leprosy spread from person to person through infected respiratory droplets;
2. Parents of someone with leprosy;
3. Children of someone with leprosy;
4. Brothers or sisters of someone with leprosy;
5. The extent of exposure;
6. Genetics and Environmental conditions.

Types of leprosy

- Lepromatous leprosy (LL)
- Tuberculoid leprosy (TL)
- Borderline lepromatous leprosy (BL)
- Borderline tuberculoid leprosy (BT)
- Indeterminate Classification

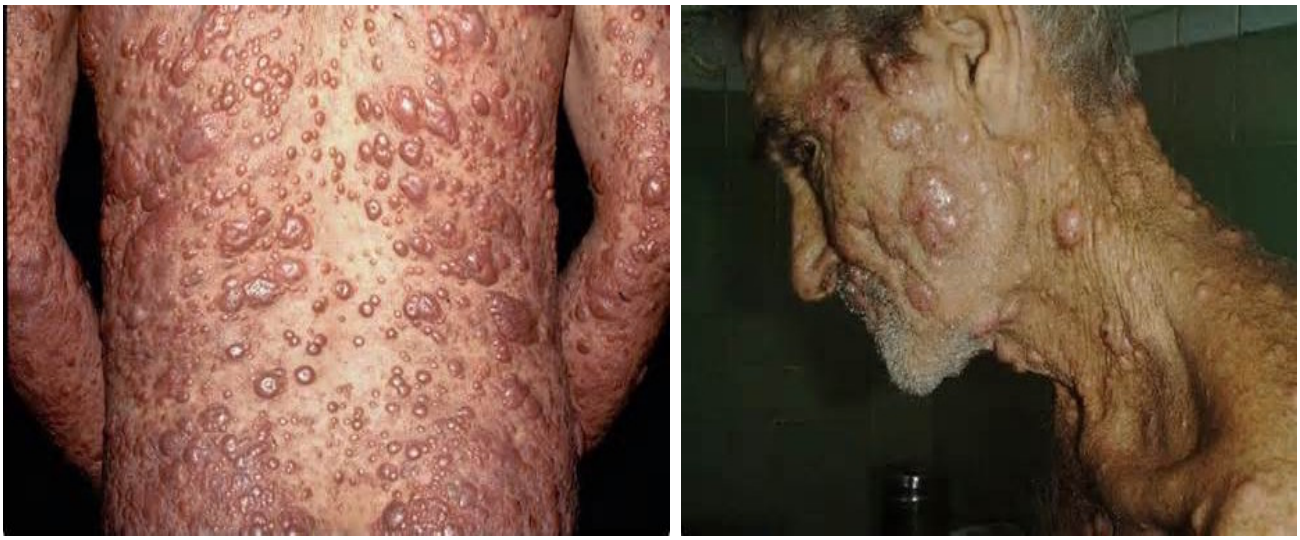
Indeterminate leprosy- A few hypo pigmented macules can heal spontaneously persists or advances to other forms. *Tuberculoid leprosy*- A few hypo pigmented macules, some are large and some become anaesthetic (lose pain, tactile and termic sensation) some neural involvement in which nerves become enlarged spontaneous resolution. *Borderline tuberculoid leprosy*- Lesions like tuberculoid leprosy but smaller and more numerous with less nerve enlargement this form may persist, revert to tuberculoid leprosy or advance to other forms. *Mid-borderline leprosy*- Many reddish plaques that are asymmetrically distributed, moderately anaesthetic with regional adenopathy (swollen lymph nodes) the form may persist, regress to another form or progress. *Borderline lepromatous leprosy*- Many skin lesions with macules (flat lesions) papules (raised bumps) plaques and nodules sometimes with or without anaesthesia the form may persist regress or progress to lepromatous leprosy (Britton, 1993; Colston, 1996; Eiglmeier, 2001).

Symptoms

Leprosy symptoms generally appear three to five years after a person becomes infected with bacteria that cause the disease (Fig. 1). The symptoms include:

1. Skin lesions that are lighter than your normal skin colour lesions have decreased sensation to touch, heat or pain and lesions do not heal after several weeks to months.
2. Numbness or absent sensation in the hands, arms, feet, and legs.
3. Muscle weakness, eye problems, skin rash and skin stiffness.

Fig. 1: Affected persons by leprosy.



Exams and tests

Different tests can be employed in the diagnosis of different type of leprosy. The different test includes:

1. Lepromin skin test can be used to distinguish lepromatous from tuberculoid leprosy but is not used for diagnosis.
2. Skin lesion biopsy.
3. Skin scraping examination for acid fast bacteria

Treatment of leprosy

1. Chemotherapy; 2. Patient education;
3. Treatment of reactions;
4. Prevention of disability; 5. Psycho-social issues.

Chemotherapy

The first line anti-leprotic drugs are Rifampicin, Dapsone and Clofazimine and all patients should receive an appropriate multi-drug combination. The modified WHO recommended multi-drug therapy regimes and herbal therapy are given in Table 1 (Lockwood, 2002) and Table 2.

Table 1. Modified WHO recommended multi-drug therapy regimens.

Type of leprosy	Drug treatment		Duration of treatment
	Monthly supervised	Daily self-administered	
Paucibacillary	Rifampicin 600mg	Dapsone 100mg	6 months
Multibacillary	Rifampicin 600mg Clofazimine 300mg	Clofazimine 50mg Dapsone 100mg	24 months
Paucibacillary single lesion	Rifampicin 600mg, Ofloxacin 400mg, minocycline 100mg		Single dose

Table 2. Herbal treatment of leprosy.

Common name of the plant	Botanical name	Part of the plant used	Indication
Neem	*Azadirachta indica*	Seeds, leaves, bark, flower, fruit, root, kernel	Leprosy, anti-inflammatory, antibacterial, antimalaria, Diabetes mellitus, in blood pressure, antirrhythmic, antipyretic, antifungal, spermicidal, diuretic, ulcer, gastrointestinal problems
Psoralea or Babchi	*Psoralea*	Seeds	Leprosy and skin disease
Chaulmoogra oil	*Hydnocarpus anthhelminthica*	Fruits, seeds	Leprosy

Leprosy control programmes

- Case detection
- Chemotherapy
- Contact examination
- Prevention of disability

Good case management includes effective monitoring and supervision. Sustainability issues new options include combined leprosy/TB programmes, dermatology programmes and full integration with general health services; preservation of specialist skills.

Conclusions

Leprosy is a chronic endemic disease which is caused by *M. leprae* bacterium which affects various parts of the body including in particular the skin and peripheral nerves. The long and asymptomatic disease incubation period as well as its insidious symptoms can lead to difficulties in the diagnosis of early and advanced cases.

The early diagnostic is crucial for prevention of deformities and disabilities and also very important for a better quality of life for patients with leprosy. Educating the people regarding this disease and its symptoms and complications can reduce the risk of this disease to spread in future by taking preventive measures educating the people regarding symptoms and treatment of leprosy**.**

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