IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

TO STUDY ON ETIOLOGY, PATHOPHYSIOLOGY, RISK FACTORS AND MANAGEMENT OF LEPROSY

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ABSTRACT

Leprosy, also known as Hansen's disease (HD), is a long-term infection by the bacteria Mycobacterium leprae or Mycobacterium lepromatosis. Infection can lead to damage of the nerves, respiratory tract, skin, and eyes. This nerve damage may result in a lack of ability to feel pain, which can lead to the loss of parts of a person's extremities from repeated injuries or infection through unnoticed wounds. An infected person may also experience muscle weakness and poor eyesight. Leprosy symptoms may begin within one year, but, for some people, symptoms may take 20 years or more to occur.

Leprosy is spread between people, although extensive contact is necessary.Leprosy has a low pathogenicity, and 95% of people who contract M. leprae do not develop the disease. Spread is thought to occur through a cough or contact with fluid from the nose of a person infected by leprosy. Genetic factors and immune function play a role in how easily a person catches the disease.Leprosy does not spread during pregnancy to the unborn child or through sexual contact.Leprosy occurs more commonly among people living in poverty.There are two main types of the disease – paucibacillary and multibacillary, which differ in the number of bacteria present. A person with paucibacillary disease has five or fewer poorly pigmented, numb skin patches, while a person with multibacillary disease has more than five skin patches.The diagnosis is confirmed by finding acid-fast bacilli in a biopsy of the skin.

KEYWORDS:-LEPROSY,MYCOBACTRIUM, DISEASE,BACTERIA.

LEPROSY

Leprosy, also known as Hansen's disease (HD), is a long-term infection by the bacteria Mycobacterium leprae or Mycobacterium lepromatosis.Infection can lead to damage of the nerves, respiratory tract, skin, and eyes. This nerve damage may result in a lack of ability to feel pain, which can lead to the loss of parts of a person's extremities from repeated injuries or infection through unnoticed wounds. An infected person may also experience muscle weakness and poor eyesight.

ETIOLOGY:-

It is caused by a bacterium, Mycobacterium leprae.

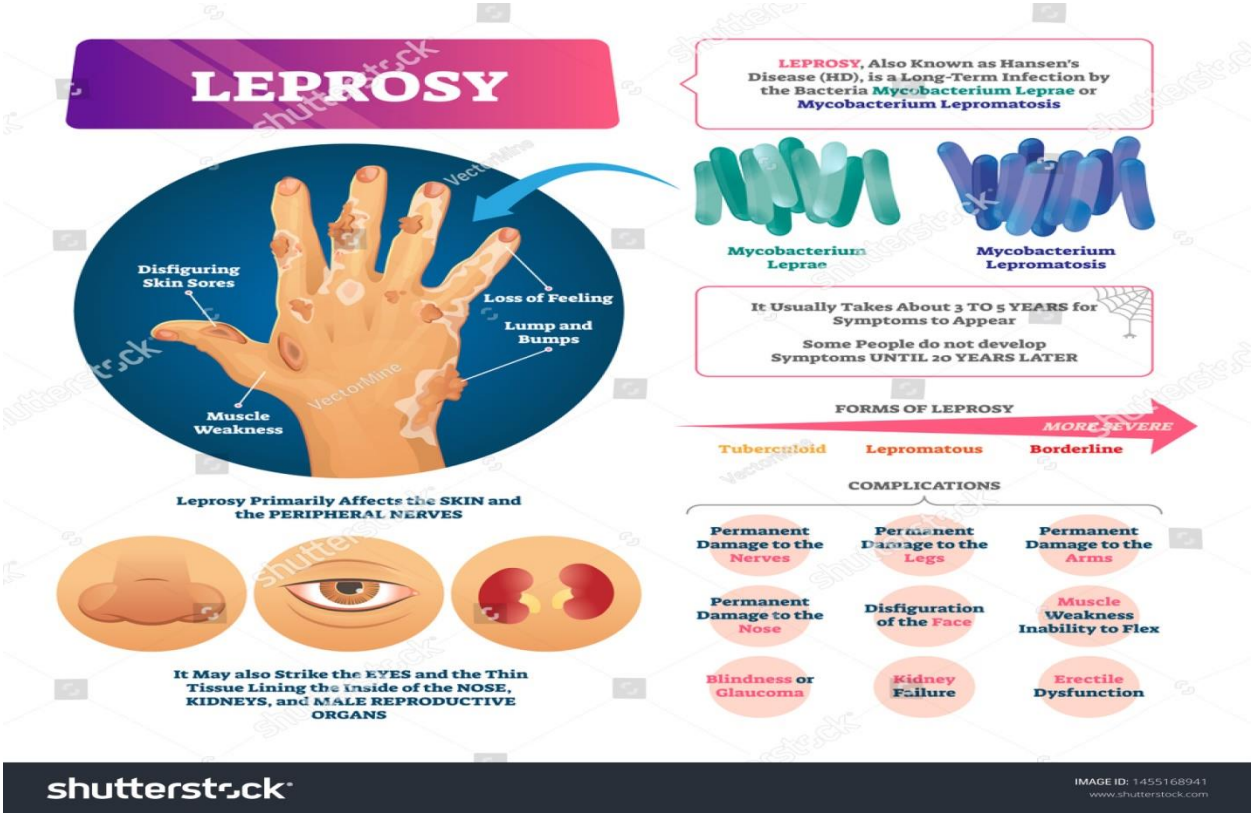
Leprosy was once feared as a highly contagious and devastating disease, but now we know it doesn't spread easily and treatment is very effective. However, if left untreated, the nerve damage can result in crippling of hands and feet, paralysis, and blindness.Mycobacterium leprae and Mycobacterium lepromatosis

M. leprae, one of the causative agents of leprosy: As an acid-fast bacterium, M. leprae appears red when a Ziehl–Neelsen stain is used.

M. leprae and M. lepromatosis are the mycobacteria that cause leprosy.M. lepromatosis is a relatively newly identified mycobacterium isolated from a fatal case of diffuse lepromatous leprosy in 2008.M. lepromatosis is indistinguishable clinically from M. leprae.

M. leprae is an intracellular, acid-fast bacterium that is aerobic and rod-shaped.M. leprae is surrounded by the waxy cell envelope coating characteristic of the genus Mycobacterium.

Genetically, M. leprae and M. lepromatosis lack the genes that are necessary for independent growth. M. leprae and M. lepromatosis are obligate intracellular pathogens, and cannot be grown (cultured) in the laboratory.The inability to culture M. leprae and M. lepromatosis has resulted in a difficulty definitively identifying the bacterial organism under a strict interpretation of Koch's postulates.



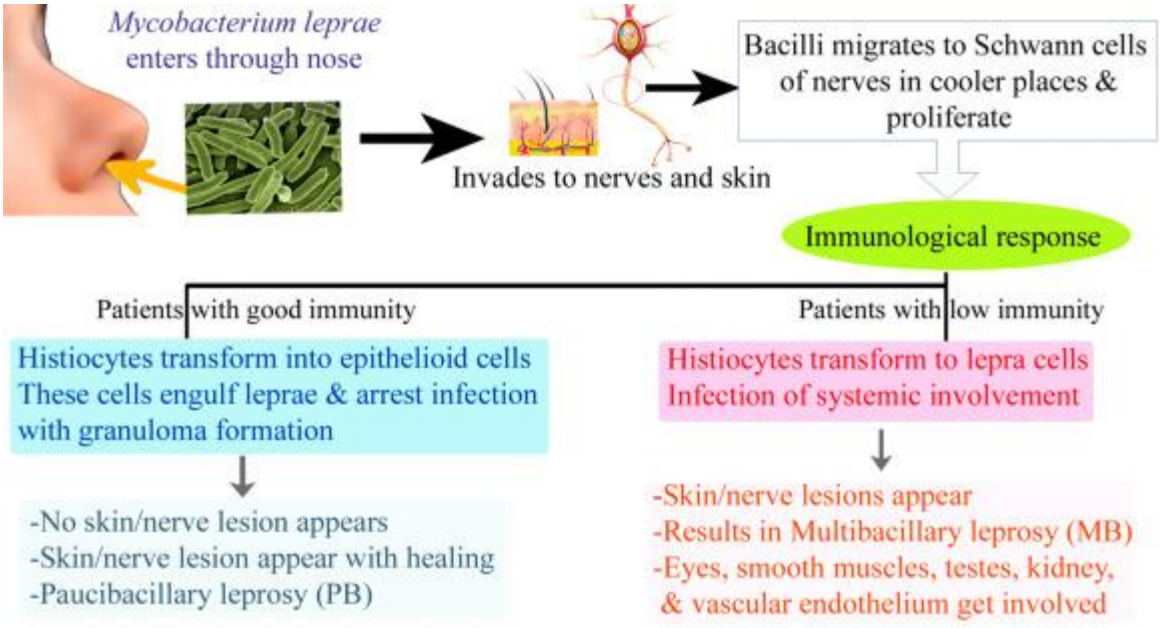
While the causative organisms have to date been impossible to culture in vitro, it has been possible to grow them in animals such as mice and armadillos.

Naturally occurring infection has been reported in nonhuman primates (including the African chimpanzee, the sooty mangabey, and the cynomolgus macaque), armadillos, and red squirrels. Multilocus sequence typing of the armadillo M. leprae strains suggests that they were of human origin for at most a few hundred years. Thus, it is suspected that armadillos first acquired the organism incidentally from early European explorers of the Americas.This incidental transmission was sustained in the armadillo population, and it may be transmitted back to humans, making leprosy a zoonotic disease (spread between humans and animals).

Red squirrels (Sciurus vulgaris), a threatened species in Great Britain, were found to carry leprosy in November 2016. It has been suggested that the trade in red squirrel fur, highly prized in the medieval period and intensively traded, may have been responsible for the leprosy epidemic in medieval Europe. A pre-Norman era skull excavated in Hoxne, Suffolk, in 2017 was found to carry DNA from a strain of Mycobacterium leprae, which closely matched the strain carried by modern red squirrels on Brownsea Island,

PATHOPHYSIOLOGY:-

In leprosy, the nerve is often thickened and involves areas proximal to the entrapment site. Motor weakness and wasting are often more severe in leprosy than in a carpal tunnel syndrome. Idiopathic entrapment neuropathy must not be misdiagnosed as neuritic leprosy (ie, leprosy without skin lesions).



Risk Factors

Those living in endemic areas with poor conditions such as inadequate bedding, contaminated water, and insufficient diet, or other diseases that compromise immune function are at highest risk for acquiring M. leprae infection. There has been concern that coinfection with HIV might exacerbate the pathogenesis of leprosy lesions and/or lead to increased susceptibility to leprosy as it is seen with tuberculosis. However, HIV infection has not been reported to increase susceptibility to leprosy, impact on immune response to M. leprae, or to have a significant effect on the pathogenesis of neural or skin lesions to date . On the contrary, initiation of antiretroviral treatment has been reported to be associated with activation of subclinical M. leprae infection and exacerbation of existing leprosy lesions (type I reaction) likely as part of immune reconstitution inflammatory syndrome.

The greatest risk factor for developing leprosy is contact with another person infected by leprosy.People who are exposed to a person who has leprosy are 5–8 times more likely to develop leprosy than members of the general population. Leprosy also occurs more commonly among those living in poverty.Not all people who are infected with M. leprae develop symptoms.

Conditions that reduce immune function, such as malnutrition, other illnesses, or genetic mutations, may increase the risk of developing leprosy. Infection with HIV does not appear to increase the risk of developing leprosy.Certain genetic factors in the person exposed have been associated with developing lepromatous or tuberculoid leprosy.

MANAGEMENT:-

A number of leprostatic agents are available for treatment. A three-drug regimen of rifampicin, dapsone and clofazimine is recommended for all people with leprosy, for six months for paucibacillary leprosy and 12 months for multibacillary leprosy.

Multidrug therapy (MDT) remains highly effective, and people are no longer infectious after the first monthly dose. It is safe and easy to use under field conditions because of its presentation in calendar blister packs.Post-treatment relapse rates remain low.Resistance has been reported in several countries, although the number of cases is small.People with rifampicin-resistant leprosy may be treated with second line drugs such as fluoroquinolones, minocycline, or clarithromycin, but the treatment duration is 24 months because of their lower bactericidal activity. Evidence on the potential benefits and harms of alternative regimens for drug-resistant leprosy is not available.

For people with nerve damage, protective footwear may help prevent ulcers and secondary infection. Canvas shoes may be better than PVC boots. There may be no difference between double rocker shoes and below-knee plaster. Topical ketanserin seems to have a better effect on ulcer healing than clioquinol cream or zinc paste, but the evidence for this is weak. Phenytoin applied to the skin improves skin changes to a greater degree when compared to saline dressings.

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