INTRODUCTION

Leprosy is one of the oldest human bacterial diseases recognized by a Norwegian scientist Armauer Hansen working in Bergen in 1873. Leprosy is still one of the infectious diseases and major health problem of developing countries. Leprosy is caused by *Mycobacterium leprae*. *M. leprae* is pleomorphic, straight or slightly curved, rod shaped gram positive bacteria. It is strong acid fast bacilli and occur in the human host intracellularly. The present case control study was carried out with aim to study the suspected cases of indeterminate leprosy in clinically diagnosed patients in our patients department (OPD) of Gandhi memorial and associated hospitals. Department of Medicine at King George’s Medical College, Lucknow.

The present case control study was carried out with aim to study the efficacy of Lepromin test in suspected cases of indeterminate leprosy in clinically diagnosed patients. We have collected all suspected subjects from the skin out patients department (OPD) of Gandhi memorial and associated hospitals. Department of Medicine at King George’s Medical College, Lucknow.

MATERIAL AND METHODS

Study group consisting of 75 cases of indeterminate leprosy, 100 subjects of other groups of leprosy spectrum, i.e., tuberculoid leprosy to lepromatous leprosy (TT - LL), taken as disease control in this study. This study find the effectiveness of Lepromin Test in diagnosis of Indeterminate Leprosy.

**ABSTRACT**

Leprosy is one of the oldest human bacterial disease recognized by a Norwegian scientist Armauer Hansen working in Bergen in 1873. Leprosy is still one of the infectious diseases and major health problem of developing countries. Leprosy is caused by *Mycobacterium leprae*. *M. leprae* is pleomorphic, straight or slightly curved, rod shaped gram positive bacteria. It is strong acid fast bacilli and occur in the human host intracellularly. The present case control study was carried out with aim to study the suspected cases of indeterminate leprosy in clinically diagnosed patients in our patients department (OPD) of Gandhi memorial and associated hospitals. Department of Medicine at King George’s Medical College, Lucknow. Study group consisting of 75 cases of indeterminate leprosy, 100 subjects of other groups of leprosy spectrum, i.e., tuberculoid leprosy to lepromatous leprosy (TT - LL), taken as disease control in this study. This study find the effectiveness of Lepromin Test in diagnosis of Indeterminate Leprosy.

**Key Words:**

*Mycobacterium leprae*, indeterminate leprosy, Lepromin Test

**ARTICLE INFO**

**Article History:**

Received 06th May, 2019
Received in revised form 14th June, 2019
Accepted 23rd July, 2019
Published online 28th August, 2019

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**INTRODUCTION**

About 85% of Leprosy reported are in Asia and it is found that the majority (50% or more) of these cases are being detected at the stage when the only visible sign of the disease is a single lesion (Gupta, 1996; Peat et al., 1995; WHO, 1996). Present day knowledge of the diagnosis of the early stages of leprosy is still deficient. This fact explains the many attempts which have been and are still being made to resolve the complexity of the problem. The long and uncertain incubation period, which is devoid of specific clinical symptoms, makes this task even more difficult. While the situation is far easier in lepromatous leprosy, the neural type in its early manifestation is often a clinical puzzle. Various laboratory methods have been devised for this reason, among them the lepromin test is one of the earliest diagnostic methods for Leprosy. The lepromin test was first used by Mitsuda in 1916 in Zensei Hospital, near Tokyo, Japan, in the investigation of the leprosy problem. (Bates et al 1979; Mitsuda, 1933).

The present case control study was carried out with aim to study the efficacy of Lepromin test in suspected cases of indeterminate leprosy in clinically diagnosed patients. We have collected all suspected subjects from the skin out patients department (OPD) of Gandhi memorial and associated hospitals. Department of Medicine at King George’s Medical College, Lucknow.

*Corresponding author: Archana Singh*

Department of Zoology, National PG College, Lucknow, Uttar Pradesh, India

*DOI: http://dx.doi.org/10.24327/ijrsr.2019.1008.3857*
It is chloroform-ether extracted suspension of Mycobacterium leprae; used to produce the lepromin test.

Dharmendra antigen is a suspension of defatted leprosy bacilli first reported by Dharmendra in 1941-1942. But it was further standardised by bacterial count by Sengupta et al 1989. This antigen evokes an early as well as late reaction with an intradermal dose of 0.1ml.

METHOD

0.1 ml of lepromin is injected intradermally usually on the forearm. Positive reaction is observed at two different times: 48 hours and 21 days after the injection.

Early Reaction (Fernandez): The 48 hour reaction or the early reaction is seen as a wheal with slight edema and induration. The diameter of the wheal and induration is measured by a pair of calipers. The reaction is a manifestation of the classical delayed type hypersensitivity and is weak with Mitsuda lepromin. Induration of 5 mm and above with erythema of 10 mm or more was considered as positive.

Late Reaction (Mitsuda): The 21 day reaction or the late reaction is seen as a local induration of skin producing a nodule like firm swelling. In a strong reaction the nodule often ulcerates. The diameter of the induration is measured. The reaction is strong with Mitsuda lepromin but weak with Dharmendra preparation. On histological examination, the nodule shows collections of numerous lymphocytes with epithelioid cells and occasionally giant cells. The picture corresponds to that of tuberculoid type of leprosy.

Study Group

Group A : Cases (indeterminate leprosy) (n = 75)
Group B : Controls

B.I. Disease control (n = 100), B.I.i. Tuberculoid leprosy (n = 20), B.I.ii. Borderline tuberculoid (n = 20), B.I.iii. Borderline lepromatous (n = 20), B.I.iv. Lepromatous leprosy (n = 20)

Observations and Findings

The lepromin test may be either negative or positive. Indeterminate leprosy is usually self-limiting or self-healing, but may progress to other forms of leprosy (ie. tuberculoid, borderline tuberculoid, midborderline, borderline lepromatous or lepromatous leprosy) (Table 1).

<table>
<thead>
<tr>
<th>Study Group</th>
<th>Cases (indeterminate leprosy) (n = 75)</th>
<th>Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.I. Disease control (n = 100)</td>
<td>B.I.i. Tuberculoid leprosy (n = 20)</td>
<td>B.I.ii. Borderline tuberculoid (n = 20)</td>
</tr>
</tbody>
</table>

CONCLUSION

It was concluded that Lepromin test show variable result in diagnosis of indeterminate leprosy and not useful in diagnosis of indeterminate leprosy in Paucibacillary Leprosy as well as Mutibacillary Leprosy. Difficulty in diagnosis of Indeterminate Leprosy severely affect the effective management of the disease (Sadeghi et al 2000). The variable result of Lepromin test necessitated the use of more advanced serological and histopathological techniques in case of Leprosy in general and indeterminate leprosy in particular.

References

7. WHO. Progress towards the elimination of leprosy as a public Health Problem. WHO Weekly Epidemiological Record.71(18):149-156,1996
8. WHO. Weekly Epidemiological Record.14,2000

Table 1 Response of Lepromin test in different type of Leprosy

<table>
<thead>
<tr>
<th>Disease Type</th>
<th>Indeterminate (Idt)</th>
<th>Tuberculoid (TT)</th>
<th>Borderline tuberculosis (BT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indeterminate</td>
<td>Unpredictable and variable</td>
<td>Strongly positive ($^+$)</td>
<td>Weakly positive ($^+$)</td>
</tr>
<tr>
<td>May regress or progress to other definite type of leprosy</td>
<td>Relative benign and stable type of leprosy; prognosis is good.</td>
<td>Unstable</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Study Group</th>
<th>Indeterminate (Idt)</th>
<th>Tuberculoid (TT)</th>
<th>Borderline tuberculosis (BT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usually negative may be doubtful ($^+$)</td>
<td>Negative</td>
<td>Negative</td>
<td></td>
</tr>
<tr>
<td>May be progressively down-grading or upgrade during reversed reaction prognosis is variable</td>
<td>BL may upgrade to lepromatous leprosy or upgrade during reversal reaction</td>
<td>Most bacilli ferrous, most infectious, principal source of infection, prone to lepra reaction, if untreated prognosis is good.</td>
<td></td>
</tr>
</tbody>
</table>