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Original Research Article

DISTRIBUTION OF LEPRA REACTIONS AND ITS CLINICO-HISTOPATHOLOGICAL CORRELATION: A CENTRAL INDIA STUDY

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Abstract

Introduction: Leprosy is one of the most ancient diseases known to mankind. It is a chronic, debilitating, granulomatous disease caused by Mycobacterium Leprae principally affecting the cooler parts of the body, mainly skin and peripheral nerves. Leprosy reactions are immunologically mediated episodes of acute or subacute inflammation which interrupt the natural course of disease affecting the skin, nerves and others tissues. Reactional states are divided into two forms, called type I and type II reactions. **Material and Methods:** Present study was carried out in patients attending the Outpatient and Inpatient, Department of department of DVL Index Medical College, Indore from January 2015 to December 2018. Gross examinations of biopsies were done and Histopathological features and the bacteriological status were noted and the diagnosis of leprosy was confirmed and classified according to Ridley and Jopling classification. **Results:** Out of total 50 patients, 19 patients were of Type I reaction while 31 of Type II reaction. Among 19 type I reaction patients, 14 were of Borderline Tuberculoid, 03 of Mid Borderline while 2 were of Borderline Lepromatous, thus BT patients had higher incidence of type I reaction. Among 31 type II patients 20 were of lepromatous leprosy while rest 11 of borderline lepromatous. **Conclusion:** In the present study prevalence of type II Lepra reaction was higher than type I Lepra reaction. This study emphasizes the need for detailed history, clinical examination and investigations including biopsy for timely recognition of reactions, in order to halt the progress and prevent the permanent damage it causes.

Keywords: Lepra Reaction, Tuberculoid leprosy, Lepromatous leprosy etc.

INTRODUCTION

Leprosy is one of the most ancient diseases known to mankind. It is a chronic, debilitating, granulomatous disease caused by Mycobacterium leprae principally affecting the cooler parts of the body, mainly skin and peripheral nerves; it also involves muscles, eyes, bones, testis and internal organs(1). Since ancient times Leprosy is known as “Kushtaroga.” The causative agent of leprosy, M. Leprae, was discovered in 1873 by Armauer Hansen (2, 3). Even though, it was discovered early, it has not been cultured as yet.

Leprosy has been declared eliminated (prevalence rate <1/10,000. population) as an important public health problem in our country on January 1, 2006, still cases are being reported with varying prevalence throughout many areas in India (4). India has succeeded in bringing down the prevalence rate to 0.66/10,000 in 2016, despite the above successes, the fact remains that India continues to account for

60% of new cases reportedly globally each year and is among the 22 “global priority countries” that contribute 95% of world numbers of leprosy warranting a sustained effort to bring the numbers down (5). Physical disabilities caused by leprosy often evoke severe social stigma that leads to prejudice against patients and their families (6–8). Hence, for control of communicable disease, identifying and destroying or attacking the causative organism is necessary. Leprosy may presents as an insignificant skin lesion to extensive disease causing profound disability/deformities . Leprosy mainly affects the skin, causing lesions and anaesthesia, along with enlarged and thickened peripheral nerves .

Leprosy is a disease dating back to ancient times before Christ. The most ancient writing are those of Charaka, Shushruta and Vanbhata. 'Shushruta Samhita' was compiled in about 600 B.C.In these ancient books, reference to leprosy are made at two separate places The disease is generally believed to have been common in ancient Egypt. Leprosy is mentioned at several places in the Bible. Leprosy (Hansen's disease) is a chronic disease caused by Mycobacterium leprae, infectious in some cases, and affecting primarily the peripheral nervous system and then skin, and certain other tissues. WHO Classification as modified under NLEP (2009) (9). Characteristic Paucibacillary Multibacillary Skin lesion 1-5 lesion >5lesions Nerve involvedNot involved/01 nerve with 1-5 lesions >1 nerve, irrespective of the number of lesions Skin Smear Always negative Always positive

Leprosy reactions are immunologically mediated episodes of acute or subacute inflammation which interrupt the natural course of disease affecting the skin, nerves and others tissues. Reactional states are divided into two forms, called type I and type II reactions. Type I reactions are delayed hypersensitivity reaction associated with sudden alteration of cell-mediated immunity. Type II reaction (Erythema nodosum leprosum) is an immune complexe syndrome and occur in lepromatous patients (BL, LL). It is a type III hypersensitivity reaction (10). The Lucio phenomenon is a type of reaction observed in untreated, uniformly diffuse shiny infiltrative, non-nodular form of lepromatous leprosy, chiefly encountered in Mexico. This is associated with necrosis of arterioles whose endothelium is massively invaded by M. Leprae. In histopathological feature there is ischemic epidermal necrosis, necrotising vasculitis of small blood vessels in the upper dermis, severe focal endothelial proliferation of middermal vessels, and by presence of large number of AFB in endothelial cells.

Correlation among the various classifications (11)-

Indeterminate leprosy technically falls outside the spectrum of the Ridley–Jopling classification and is included in paucibacillary type in the 1982 World Health Organisation system. In other system of classification (the Madrid, and the original Indian classification) it is recognised as such. Tuberculoid leprosy falls under the paucibacillary and non lepromatous grouping of WHO and lepromatous vs. non–lepromatous systems respectively (12). Macular tuberculoid of the Madrid system roughly corresponds to maculoanesthetic in the Indian classification, TT or BT of the Ridley–Jopling and BT of the Job–Chacko classification. Both minor and major tuberculoid leprosy in the Madrid system are considered tuberculoid in the original Indian classification and TT or BT in the Ridley-Jopling and Job-Chacko classification. Borderline or dimorphous leprosy in the Madrid classification can be either paucibacillary or multibacillary in the World Health Organization system depending on the bacterial index (13). It is considered borderline in the original Indian classification, BT, BB or BL in the Ridley-Jopling and BL or BT in the Job-Chacko classification (14).

Objective: Analysis of association between types of Lepra reactions and its histopathological findings.

Materials and Methods:

Present study was carried out in patients attending the Out patient and Inpatient, Department of department of DVL Index Medical College Indore from January 2015 to December 2018. Method of Collection of Data : 50 patients of leprosy in reaction belonging to all age groups and both sexes were randomly selected and included in the study after taking their consent. In each case detailed history, thorough general physical, local and systemic examination with reference to epidemiology and clinical features of leprosy reactions were done. In all cases necessary investigations and skin biopsy for histopathological examination was done with their consent. Biopsies were taken from representative lesions by the Dermatologists and sent to histopathology section in glass or plastic vials containing 10% formalin solution. A detailed clinical history, examination findings indicating signs and symptoms of the skin lesions and provisional clinical diagnosis were collected. Gross examinations of biopsies were done and Histopathological features and the bacteriological status were noted and the diagnosis of leprosy was confirmed and classified according to Ridley and Jopling classification. Indeterminate and Cases of Histoid leprosy- a rare variant of lepromatous leprosy were also included in this study.

Selection Criteria

Inclusion Criteria- Clinically diagnosed case of Lepra reaction type I or II having fresh episode.

Exclusion Criteria - Patient not willing to participate in study and patient currently on any immunosuppressant drugs or taking medication for previous episode of Reaction.

Result

Table 1: Distribution of reaction types

Showing distribution of patients Out of total 50 patients, 19 patients were of Type I reaction while 31 of Type II reaction.

Types of reaction	No. of patients	Percentage
Type I reaction	19	38%
Type II reaction	31	62%
Total	50	

Table -02 Reaction in different type of leprosy

Leprosy Type	Type I reaction Patients	Type II reaction Patients	Percentage
TT	00	00	
BT	14	00	28%
BB	03	00	06%
BL	02	11	26%
LL	00	20	40%
Total	19	31	

Among 19 type I reaction patients, 14 were of Borderline Tuberculoid, 03 of Mid Borderline while 02 were of Borderline Lepromatous, thus BT patients had higher incidence of type I reaction. Among 31 type II patients 20 were of lepromatous leprosy while rest 11 of borderline lepromatous.

Table -03 Histopathological correlation Type I reaction

Diagnosis by clinical methods	Type I reaction on HPE	Not Type I reaction on HPE	Total
Type I reaction	17	02	19
Not Type I reaction	03	28	31
Total	20	30	

Table -04 Histopathological correlation Type II reaction

Diagnosis by clinical methods	Type II reaction on HPE	Not Type II reaction on HPE	Total
Type II reaction	28	03	31
Not Type II reaction	02	17	19
Total	30	20	

In present study there was substantial agreement between diagnosis by clinical & Histopathological methods.

Discussion

Fine et al showed in their report that there could be inter-observer variations in histopathological diagnosis of clinically suspected leprosy due to subjective interpretation and similar variations could also exist in diagnosing a Lepra reaction (8). Correlation of clinical and histopathologic features appears to be more useful for accurate typing of Lepra reaction than considering any one of the single parameter alone.

Conclusion

In the present study prevalence of type II Lepra reaction was higher than type I Lepra reaction. This study emphasizes the need for detailed history, clinical examination and investigations including biopsy for timely recognition of reactions, in order to halt the progress and prevent the permanent damage it causes. As majority of the patients had borderline leprosy which is the usual scenario, type I reaction was more among them. Similarly the higher incidence of type II reaction among LL patients is an established fact. Erythema and swelling of the skin lesions, neuritis and oedema of hands and feet were common features of Type I reaction. Fresh crops of tender evanescent nodules, joint pain, neuritis and fever were common in Type II reaction. Lepra reactions occur frequently during the course of disease and it's treatment and they sometimes may show clinicopathologic discordance.

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