Journal homepage: www.ijcbr.com

INTERNATIONAL JOURNAL OF CLINICAL AND BIOMEDICAL RESEARCH

Original Article

# A STUDY ON THE CLINICO-HISTOPATHOLOGICAL CORRELATION IN HANSEN'S DISEASE

**REKAM ANUSHA[1], *JYOTHI JAYARAMAN[2]**

## AUTHOR DETAILS

[1]Final year post graduate, [2]Senior Resident, Dermatology venerology and leprosy, Father Muller Medical College, Mangalore, India.

## ARTICLE INFO

Received: 11th Nov 2015,
Accepted: 13th Dec 2015.

*Corresponding author email:
derm.jyo@gmail.com,
lucky.anuu@gmail.com.

## ABSTRACT

**Introduction**: Leprosy, caused by Mycobacterium leprae, is widely prevalent in India and presents with different subtypes. However, there exists a great variation in the interpretation of clinical and histopathological examination of these lesions. The present study was carried to correlate clinical diagnosis of leprosy cases with histopathological diagnosis. **Methodology**: A retrospective Hospital-based study was conducted in patients of Leprosy, who attended Dermatology Out Patient Department for a period of 18 months. Clinical diagnosis was noted and the biopsies were processed as per standard protocol in the Department of Pathology. The clinical and histopathological concordance was calculated using percentage parity. **Results & Conclusion**: In a total of 52 cases, 29(55.7%) were males and 23(44.2%) were females. The histopathological diagnoses from our study showed agreement with clinical diagnoses in 27 (57.69%) cases. Clinico-histopathological agreement was noted maximum in LL (80%), followed by BT (57.14%), BL (50 %), BB (50%), TT (46.2 %), and least in IL (42.8 %).

## KEYWORDS

Leprosy, Ridley-Jopling, Acid Fast bacilli, skin lesions

## INTRODUCTION

Leprosy is one of the oldest chronic infectious diseases, prevalent in most parts of Asia, especially India.[1,8] The disease manifests in various morphological and histological types depending immunity status of the host. Before confirming a case of Leprosy of particular type, the clinical features should be correlated and confirmed with histological examination along with bacteriological index and start the multidrug treatment.[3] The Ridley-Jopling classification based on immunopathological data has been widely accepted to classify the disease spectrum in Leprosy.[2] Though, clinical diagnosis is based on the characteristic skin lesions, anaesthesia and presence of Acid Fast bacilli (AFB) in the slit skin smear, great disparity has been noticed in the interpretation both clinically and histopathologically.[3]

The present study is carried to assess the concordance in different clinical types of leprosy and the histopathology of the skin biopsies.

## MATERIAL AND METHODS

A retrospective Hospital-based study was conducted in 52 patients of Leprosy, who attended Dermatology Out Patient Department, Father Muller Medical College Hospital, Mangalore between December 2013 and May 2015 (i.e., 18 months). All the newly diagnosed cases were selected regardless of their age, sex, occupation and socioeconomic status. **Inclusion criteria:** All the newly diagnosed cases were selected regardless of their age, sex, occupation and socioeconomic status. Patients already treated with antileprosy medications in any time earlier and 3 patients diagnosed as reactions clinically and pathologically were excluded.

The spectrum of the disease is diagnosed clinically and graded into Tuberculoid Type (TT), Borderline Tuberculoid (BT), Mid-borderline (BB), Borderline Lepromatous (BL), Lepromatous Leprosy (LL) and Indeterminate type (IDL) as per Ridley-Jopling classification which is accepted worldwide[9] . Skin biopsies were obtained from the lesions after taking informed consent. An approval from the Ethical Committee of the institution was obtained and the biopsies processed as per standard protocol in the Department of Pathology. The sections thus obtained were stained with hematoxylin and eosin. AFB were demonstrated using Fite Faraco stain. The clinical and histopathological concordance was calculated using percentage parity.

## STATISTICAL ANALYSIS

Statistical analysis is done using range, frequency, percentage, chi square test.

## RESULTS

A total of 52 cases were included in our study out of which 29 (55.7%) were males and 23 (44.2%) were females as shown in Table 2. The age group of the patients ranged from 10 years to 74 years (Table 1). The majority of the cases belonged to

the age group of 31-50 years i.e., 26 (53.1%) cases and the least affected group was children below 15 years i.e., 4 (7.69%). Clinically, BT was the most common type of leprosy with 28.6% (14) followed by TT in 26.5%(13), IDL in 14.3 %(7), BB in 12.2%(6), LL in 10.2%(5) and BL in 8.2%(4). Histopathologically, majority of the cases i.e., 36.7%(18 ) belonged to BT followed by TT in 24.5%(12), BB in 10.2%(5), IDL in 10.2%(5) and LL in 10.2%(5) patients each and BL being 8.2 %(4) (Table 3).

**Table 1. Showing age distribution in the subjects**

| Age group(years) | No. Of cases | percentage |
|---|---|---|
| **Below 30** | 14 | 28.6% |
| **31-50** | 26 | 53.1% |
| **Above 50** | 9 | 18.4% |
| **Total** | **49** | **100%** |

**Table 2. Showing frequency and percentage of gender distribution**

| | Frequency | %age |
|---|---|---|
| **Females** | 22 | 42.30% |
| **Males** | 30 | 57.69% |
| **Total** | **52** | **100** |

**Table 3. Showing clinical and histopathological distribution of leprosy**

| Type of leprosy | No. of clinical cases | %age of clinical cases | Histopathological cases | |
|---|---|---|---|---|
| | | | No. | % age |
| **TT** | 13 | 26.5 | 12 | 24.5 |
| **BT** | 14 | 28.6 | 18 | 36.7 |
| **BB** | 6 | 12.2 | 5 | 10.2 |
| **BL** | 4 | 8.2 | 4 | 8.2 |
| **LL** | 5 | 10.2 | 5 | 10.2 |
| **IDL** | 7 | 14.3 | 5 | 10.2 |
| **Total** | **49** | **100.0** | **49** | **100** |

**Table 4. AFB positivity in various types of leprosy**

| Type of leprosy | No. of positive cases | % age |
|---|---|---|
| **TT** | 0 | - |
| **BT** | 4 | 28.57 |
| **BB** | 1 | 16.66 |
| **BL** | 1 | 25.00 |
| **LL** | 5 | 100 |
| **IDL** | 0 | - |
| **Total** | **12** | **24.49** |

**Table 5. Clinico histopathological concordance in leprosy**

| Type of leprosy | No. of clinical cases | Histopathological breakup among clinically diagnosed cases | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | TT | BT | BB | BL | LL | IDL | % age parity |
| **TT** | 13 | 7 | 4 | - | - | - | 2 | 53.84 |
| **BT** | 14 | 3 | 8 | 1 | 1 | 1 | - | 57.14 |
| **BB** | 6 | 3 | - | 1 | 1 | 1 | - | 50.0 |
| **BL** | 4 | - | 1 | 1 | 2 | - | - | 50.0 |
| **LL** | 5 | - | - | - | 1 | 4 | - | 80.0 |
| **IDL** | 7 | 2 | 2 | - | - | - | 3 | 42.85 |
| **Total** | **49** | **15** | **15** | **3** | **5** | **6** | **5** | **55.10** |

**P<0.05, significant**

## DISCUSSION

Leprosy is a chronic granulomatous disease widely prevalent in India. It affects the skin, peripheral nervous system and other visceral organs There were 0.83 lakh leprosy cases with prevalence rate of 0.68 per 10,000 (NLEP 2012-13)[1,7]. Accurate classification of leprosy is needed as it is present in different clinicopathological forms. The most widely accepted classification system is that of Ridley- Jopling.[2] However, many diversities are seen between the histopathological and clinical features.

Mathur MC et al conducted a study which showed 53.8% males and 46.1% females out of 156 leprosy patients and the majority of them were in between 21-30 years with 1 child below 10 yrs being least affected.[2] Bijjaragi S et al also conducted a similar study which showed male preponderance of 64.3%. [5]

The distribution of these cases showing clinical and histopathological distribution as per Ridley-Jopling classification is shown in table 3.

In our study, clinically, BT was the most common type of leprosy with 28.6% (14) followed by TT in 26.5%, IDL in 14.3 %, BB in 12.2% ,LL in 10.2% and BL in 8.2%. Clinico histopathological features of leprosy in reaction were seen in 3 patients (table 5). Histopathologically, majority of the cases i.e., 36.7 % (18) belonged to BT followed by TT in 24.5% (12). BB, IDL and LL cases were observed in 10.2% (5) patients each and least being 8.2 % (4) was seen in BL. Overall agreement in the diagnosis was seen in 27 (55.10%) cases. The maximum concordance of 80% was seen in LL cases followed by BT (57.1%), BL (50%), BB (50%), TT (46.2%) and major discordance was observed in IDL (42.9%) cases. Similar results were obtained by Mathur MC et al[2] , Nitesh Mohan et al [3] and Moorthy BN et al[6] . These results suggest the importance of histopathological examination in the diagnosis of lepromatous leprosy. However, there was incongruity between the clinical and histopathological diagnosis among other types (BL + BB) of leprosy which may be due to occurrence of some degree of overlap among various types and inter observer variation both clinically and histopathologically. The discordance seen in IDL type may be due to its nonspecific and unstable histology as it is found in

patients whose immune status is yet to be determined thus progressing to other determinate forms of leprosy.

Limitations: Our study is a record based retrospective study. A prospective study and larger sample size could give better results. Inter observer variations regarding the clinical and histopathological analysis exists.

## CONCLUSION

Study of different types of leprosy lesions contribute a great deal in understanding the disease .A gold standard method for the diagnosis of type of leprosy cannot be established since the tissue response differs depending on the immunity of the host [10]. However, biopsy of the skin lesion is a useful tool in confirming the clinical diagnosis and hence should be carried out for all suspected cases of leprosy to determine the spectrum of the disease and initiate multidrug therapy as per the treatment category.

## ACKNOWLEDGEMENT

I acknowledge the support and help of Dr. Ramesh Bhat, Dr. Nandakishore B, Dr. Sukumar D, Department of Dermatology, Dept of Pathology, MRD staff, Mrs. Sucharitha (for statistical support) and my colleagues, Father Muller Medical College, Mangalore, India.

## CONFLICT OF INTEREST

None.

## REFERENCES

1) Kumar B. World Leprosy Day 2015: Renewing commitment for a leprosy free world! Indian J Med Res [Internet]. Medknow Publications and Media Pvt. Ltd.; 2015 Jan 1 [cited 2015 Nov 20];141(1):1.
2) Mathur MC, Ghimire RB, Shrestha P, Kedia SK. Clinicohistopathological correlation in leprosy. Kathmandu Univ Med J (KUMJ). 2011 Oct-Dec;9(36):248-51.
3) Nitesh Mohan, Nitin Mishra. Clinico Histopathological Correlation Within The Spectrum Of Hansen's Disease: A Multicentric Study In North India. Int J Med Res Health Sci 2013; 2(4):887-92.
4) Giridhar M, Arora G, Lajpal K, Chahal KS. Clinicohistopathological concordance in Leprosy- A Clinical, Histopathological and Bacteriological study of 100 cases. Indian J Lepr 2012;84:217-25.
5) Bijjaragi S, Kulkarni V, Suresh KK, Chatura KR and Kumar P. Correlation of clinical and histopathological classification of Leprosy in post elimination era. Indian J Lepr 2012;84:271-5.
6) Moorthy BN, Kumar P, Chatura KR, Chandrasekhar HR, Basavaraja PK. Histopathological correlation of skin biopsies in leprosy. Indian J Dermatol Venereol Leprol [Internet]. Medknow Publications; 2001 Jan 1 [cited 2015 Nov 27];67(6):299–301.
7) Badhan, R. , Kundal, R. K. , Raj, R. T. , Bahl, R. K. , & Bal, M. S. (2014). A Clinico-Pathological Correlation Study of Leprosy in a Tertiary Care Teaching Institute in Northwest Punjab, India. American Journal of Medical Sciences and Medicine, 2(5), 99-108.
8) Mohite RV, Mohite VR, Durgawale PM Differential Trend of Leprosy in Rural and Urban Area of Western Maharashtra. Indian J Lepr. 2013;85:11-18.
9) Jopling WH, Mc Dougall. The disease. In: Jopling WH, Mc Dougall. (Authors) Handbook of leprosy. Fifth edition. CBS Publishers and distributors (India)2008;10-53.
10) Kar PK, Arora PN. Clinicopathological study of macular lesions in leprosy. Indian J Lepr 1994;66:435-41.