

A STUDY OF CLINICO-PATHOLOGICAL CONCORDANCE IN PATIENTS WITH HANSEN'S DISEASE ACROSS THE SPECTRUM

Lakshmy R¹, K. Abdul Samad², G. Nandakumar³, Joan Felicita Samson⁴

¹Junior Resident, Department of Dermatology and Venereology, Government Medical College, Trivandrum, Kerala.

²Additional Professor, Department of Dermatology and Venereology, Government Medical College, Trivandrum, Kerala.

³Additional Professor, Department of Pathology, Government Medical College, Trivandrum, Kerala.

⁴Professor, Department of Dermatology and Venereology, Dr. Somervell Memorial CSI Medical College, Karakonam, Trivandrum, Kerala.

ABSTRACT

BACKGROUND

Leprosy is a disease showing wide variations in its clinical presentations and disparities between clinical and histopathological presentations.

The aim of this study was to assess the extent of correlation between clinical and histopathological diagnosis in cases diagnosed with leprosy.

MATERIALS AND METHODS

The primary objective was to study the concordance between clinical and histopathological presentations of Hansen's disease across the spectrum and to assess the rate of concordance between them. It was a descriptive study done in the Department of Dermatology and Venereology, Medical College, Thiruvananthapuram for a period of 1½ years (From November 2012 to May 2014). All new (Untreated) cases of Hansen's disease who attended the department during the study period were included in the study.

RESULTS

A total of 45 patients were included in the study, but since one patient showed inconclusive histopathological features of leprosy he was eliminated and statistical analysis was done in 44 cases. In general, clinico-pathological concordance was observed in 63.6% of cases and discordance was observed in 36.4% of cases; 100% concordance was seen in indeterminate and tuberculoid cases and 100% discordance was observed in borderline lepromatous and histoid cases. Concordance rate was high in borderline tuberculoid (77.8%) and discordance rate was high in lepromatous cases (57.1%).

Limitation- The main limitation of this study was the small sample size, as many cases in this part of the country were treated at peripheral centres and there were no facilities for co-ordination with such centres for a more elaborate study.

CONCLUSION

The overall concordance was 63.6% and discordance was 36.4%, which was similar to most of the previous studies; 100% concordance was observed in indeterminate and tuberculoid cases, whereas 100% discordance was observed in borderline lepromatous and histoid cases. Wide variations in clinico-pathological correlation was shown by borderline lepromatous cases, where the histopathological types showed features of borderline tuberculoid. Variations in clinico-pathological correlation was shown by borderline lepromatous cases, where the histopathological types showed features of borderline tuberculoid and mid borderline.

KEYWORDS

Leprosy, Clinico-Pathological Concordance.

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BACKGROUND

Leprosy is a classic "spectral disease" being manifested in a variety of clinical forms related to the type and strength of the immune response.¹ The causative organism, *Mycobacterium leprae* (*M. leprae*) was discovered by Gerhard Henrik Armauer Hansen, a Norwegian Leprologist in 1873.²

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Corresponding Author:

Dr. Abdul Samad K,

Additional Professor,

Department of Dermatology and Venereology,

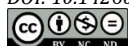
Government Medical College,

Trivandrum-695011,

Kerala, India

E-mail: drsamad_1961@yahoo.co.in

DOI: 10.14260/jemds/2017/809



Clinical presentation varies from a few to widespread lesions. Histopathology of skin lesions varies from compact granulomas to diffuse infiltration of dermis, which largely depends upon the immune status of the patient and may not be in agreement with the clinical diagnosis. However, clinical and histopathological disparities are seen due to varied clinical manifestations even in established leprosy and individual lesions may differ microbiologically and histologically.³

The present study was undertaken to assess the extent of correlation between clinical and histopathological diagnosis in cases diagnosed with leprosy.

MATERIALS AND METHODS

This study was conducted with the primary objective to study the concordance between clinical and histopathological presentations of Hansen's disease across the spectrum and to

assess the rate of concordance between them. The secondary objective was to find out the possible determinants of discordance. A total of 45 cases were included in the study. It was a descriptive study done in the Department of Dermatology and Venereology, Medical College, Thiruvananthapuram for a period of 1-½ years (from November 2012 to May 2014). All new (untreated) cases of Hansen’s disease who attended the department during the study period were included in the study. Clinical diagnosis was arrived at after independent examination by two different specialists and the histopathological features were analysed with the help of the expert dermatopathologist in the institution. Statistical analysis was done by applying appropriate statistical tools. The data were entered in Microsoft Excel and analysed using the computer software, Statistical Package for Social Science (SPSS).

RESULTS

Age

Maximum number of patients were in the age group 31 - 40 years (18 patients, 40%). The youngest patient was 12 years old and the eldest patient was 71 years old.

Gender

Out of the 45 patients, 33 were males (73.3%) and 12 (26.7%) were females.

Duration of Symptoms

Duration of the presenting complaints was more than 1 year in 20 patients (44.4%). This was the largest group. In 13 patients (28.9%) the duration was less than 6 months and in 12 patients (26.7%) the duration was between 6 months and 1 year.

Duration of Symptoms	Frequency	Percentage
< 6 months	13	28.9
6 months - 1 year	12	26.7
> 1 year	20	44.4
Total	45	100.0

Table 1. Duration of Symptoms

Clinical Diagnosis

A clinical diagnosis of HD-Indeterminate was made in 3 patients (6.7%), HD-TT in 1 patient (2.2%), HD-BT in 28 patients (62.2%), HD-BL in 5 patients (11.1%), HD-LL in 7 patients (15.6%) and Histoid leprosy in 1 patient (2.2%). There was clinical evidence of nerve abscess in a patient who was clinically diagnosed as HD-BT (Table 2).

Clinical Diagnosis	Frequency	Percentage
HD-I	3	6.7
TT	1	2.2
BT	28	62.2
BL	5	11.1
LL	7	15.6
Histoid	1	2.2
Total	45	100.0

Table 2. Clinical Diagnosis

Lepra Reactions

There was clinical evidence of lepra reaction in 5 patients (11.1%), in which type 1 lepra reaction was present in 3 patients (6.7%) and type 2 lepra reaction in 1 patient (2.2%). One patient (2.2%) had clinical evidence of both type 1 and type 2 lepra reactions.

Histopathological Diagnosis

Histopathological diagnosis of Hansen’s disease-Indeterminate was made in 5 patients (11.4%), HD-TT in 5 patients (11.4%), HD-BT in 24 patients (54.5%), HD-BB in 3 patients (6.8%), HD-BL in 3 patients (6.8%) and HD-LL in 4 patients (9.1%) (Table 3). One patient had an inconclusive biopsy report and hence he was excluded from further analysis of concordance.

Histopathological Diagnosis (n=44)	Frequency	Percentage
HD-I	5	11.4
TT	5	11.4
BT	24	54.5
BB	3	6.8
BL	3	6.8
LL	4	9.1
Total	44	100.0

Table 3. Histopathological Diagnosis

Histopathological Evidence of Reaction

There was evidence of type 1 lepra reaction (dermal oedema) in the dermis, which was seen in 2 patients (4.5%) and type 2 lepra reaction in 1 patient (2.3%).

Correlation between Clinical and Histopathological Diagnosis

As the biopsy of one patient showed inconclusive features only, this case was not taken for calculating concordance. So out of the other 44 cases, clinical and histopathological diagnoses were concordant in 28 cases (63.6%) and discordant in 16 cases (36.4%).

Details of Correlation

The details of clinicopathological correlation are as shown in Table 4.

Clinical Diagnosis	No. of Cases	Histopathological Diagnosis						
		I	TT	BT	BB	BL	LL	Histoid
HD-I	3	3						
HD-TT	1		1					
HD-BT	27	2	4	21				
HD-BB	0							
HD-BL	5			3	2			
HD-LL	7				1	3	3	
Histoid	1						1	

Table 4. Details of Correlation

Based on this observation it was found that among the different types of Hansen’s disease, the type which showed maximum discordance was HD-BL and Histoid leprosy followed by HD-LL. In HD-BT out of the 27 cases diagnosed clinically, 6 cases showed discordance. The details are summarised in the following table (Table 5).

Clinical Diagnosis	Total No. of Cases	Histopathological Diagnosis Consistent with Clinical Diagnosis	Percentage of Concordance	Histopathological Diagnosis not Consistent with Clinical Diagnosis	Percentage of Discordance
HD-I	3	3	100%	0	0
HD-TT	1	1	100%	0	0
HD-BT	27	21	77.8%	6	22.2%
HD-BB	0	-	-	-	-
HD-BL	5	0	0	5	100%
HD-LL	7	3	42.9%	4	57.1%
Histoid	1	0	0	1	100%
Total	44	28	63.6	16	36.4%

Table 5. Correlation between Clinical and Histopathological Diagnosis

Thus, it was observed that HD-I and HD-TT showed 100% clinicopathological concordance and on the other hand, concordance rate in HD-LL was 42.9%. There was 100% discordance in HD-BL and Histoid types.

DISCUSSION

It was observed that maximum number of patients were in the age group 31 - 40 years (40%). In several other studies, the majority of patients were in the 21 - 30 years' age group, which is slightly lesser than seen in this study.⁴ There was a male preponderance (73.3%) noted in the study, male-to-female ratio being 2.8:1. This is in agreement with the rates observed in a study done by Bhushan et al in 2008, where the male-to-female ratio was 2.61:1 and also with the rates described in literature.^{5,6}

The most common duration of the presenting complaints was more than 1 year, which was present in 20 patients (44.4%). The shortest duration was 10 days and the longest duration was 10 years. In a study done by Reddy et al, it was noted that the duration of symptoms ranged from 1 month to 14 months.⁷

Clinically, BT was the most common type of leprosy with 28 patients (62.2%) and TT was the least diagnosed type with 1 patient (2.2%). This is similar to the study done by Giridhar et al (BT 44%). Mehta et al (BT 29%) and the least were BB (6%).⁸ These observations were dissimilar from that of the study done by Kalyani Mitra et al, where majority of the cases were TT.⁹

There was evidence of type 1 lepra reaction in 2 patients (4.5%) and type 2 lepra reaction in 1 patient (2.3%). Patnaiket et al found histologic findings of type 1 reaction in only 67.5% (27/40) patients with clinical features of reaction, but on the other hand found features of reaction in 20% (10/50) of patients who had no clinical findings suggestive of a reaction.¹⁰

Overall, concordance was seen in 28 cases (63.6%) and discordance in 16 cases (36.4%). This finding was similar to a study done by Moorthy et al and Giridhar et al, where an overall clinico-pathological concordance of 62.63% and 60.23% were noted respectively.^{11,4} In another study by Ankur Kumar et al also, the overall correlation was 62.9%.¹² In similar studies done by Mitra et al, Francisco Vargas-Ocampo et al and Nitesh Mohan et al, the overall correlation was 53%, 42.9% and 56.4% respectively.^{9,13,14} Thus, the concordance rate is in agreement with that of many similar studies.

Maximum concordance was observed in HD-I and HD-TT, where there was 100% correlation. In the study by Ankur Kumar et al,¹² the highest correlation was in indeterminate leprosy (93.5%). But in studies done by Mathur et al,³

Shivaswamy et al¹⁵ and Giridhar et al, maximum correlation was observed in LL type which were 95.2%, 84.2% and 93.75% respectively. Maximum discordance (100%) was observed in BL and Histoid leprosy. Out of the 5 cases clinically diagnosed as BL none showed typical histopathological features of BL, instead they showed features of BT in 3 cases and BB in 2 cases. This is similar to the study by Ankur Kumar et al, where maximum disagreement was in BL (78.7%).¹² Borderline tuberculoid showed a high concordance rate of 77.8% and lepromatous cases showed a high discordance rate of 57.1%. From this study, it becomes obvious that the following factors may be attributable as causes for discordance-

1. The high immunological instability in borderline cases.
2. Biopsies taken from morphologically different lesions of various stages of progression of the disease in borderline cases.
3. The variation in the site of biopsy within the same lesion.
4. Differences in the age of the lesions biopsied.

Limitations

The main limitation of this study was the small sample size as many cases in this part of the country were treated at peripheral centres and there were no facilities for co-ordination with such centres for a more elaborate study.

CONCLUSION

This prospective descriptive study on leprosy to find out the concordance between clinical and histopathological diagnoses revealed that the overall concordance was 63.6% and discordance was 36.4%, which was similar to most of the previous studies; 100% concordance was observed in indeterminate and tuberculoid cases, whereas 100% discordance was observed in borderline lepromatous and histoid cases. Wide variations in clinico-pathological correlation was shown by borderline lepromatous cases where the histopathological types showed features of borderline tuberculoid and mid borderline. This points to the necessity of applying clinical judgement by the observer taking into account the relevant aspects in both clinical and histopathological features in arriving at the final conclusion.

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