CLINICAL AND HISTOPATHOLOGICAL CORRELATION IN HANSEN'S DISEASE

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ABSTRACT: Hansen's disease or leprosy, caused by *Mycobacterium leprae*, is a spectral disease with a variety of clinical manifestations depending on the host immune response. The classification of patients within this spectrum using Ridley and Jopling's criteria is based on clinical diagnosis aided by bacteriological, histological and immunological features. Many a time, the clinical diagnoses do not match the histological features, causing difficulty in proper diagnosis and treatment. Hence in this study an attempt has been made to correlate the clinical finding with the histological features.

KEYWORDS: Hansen's disease, clinico histopathological correlation.

INTRODUCTION: Leprosy is a chronic infectious granulomatous disease caused by *M. leprae*, that primarily affects the skin and the peripheral nerves. It is a global health problem. Although India has achieved elimination of leprosy, with a prevalence rate of 0.69/10, 000 in March 2013 (NLEP), many new cases are detected annually.⁽¹⁾ The principle of reducing the load of infection is the cornerstone of leprosy control by early diagnosis and early adequate drug treatment. So confirmation of diagnosis in doubtful cases is an important indication for histopathological examination.

MATERIAL AND METHODS: One hundred patients of untreated leprosy of both sexes and all ages attending the Dermatology Department of Konaseema Institute of Medical Sciences, Amalapuram, Andhra Pradesh, were selected for this study. The study extended for a period of two years from January 2013- December 2014. The patients were typed according to Ridley Jopling scale into TT, BT, BB, BL and LL. Indeterminate type was also included.⁽²⁾ Polyneuritic types were excluded for the want of nerve biopsy. Wherever possible, the classification was more specific like BB downgrading to BL, or BT upgrading to TT, etc. Bacteriological examination was performed by slit and scrape method. After Ziehl-Neilsen staining, the slides were examined under oil immersion for detection of bacilli. Biopsy specimens were taken by punch biopsy and sent to pathology department and the reports obtained.

OBSERVATION: The study was undertaken on 100 clinically diagnosed, untreated patients of Hansen's disease of both sexes and all ages and examined as per the schedule laid down on the protocol. The ages ranged between 5-75 years. Most of the cases belong to the 2nd and 3rd decade of life, making a 52% of the total number. 17 patients were below 12 years of age and one patient was below 6 years. There were 12 cases in the 4th decade, 9 patients in the 5th and 6th decades and only one patient in the 7th decade of life. The total number of male patients was 60 and female patients were 42. Similar observations relating to age and sex have been seen in other studies.⁽³⁾

Out of 100 patients, 55 were BT followed by LL (29), BL (8), TT (5), BB (2) and only one patient of indeterminate leprosy. Skin smear examination using Ziehl-Neilsen method showed the

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presence of bacilli only for 4 cases of BL and 28 cases of LL. Similar predominance of borderline group was also observed by others.⁽⁴⁾

Out of 100 patients, only 25 showed the presence of AFB in histological sections stained by Fite-Faraco and H&E staining. In 3 patients of BT where the skin smears were negative, tissue sections showed the presence of bacilli. This can be explained in the basis that organisms in borderline tuberculoid leprosy will be very few and may be missed on direct smear examination. 9 of the multibacillary type (LL and BL) which were smear positive did not show any bacilli on tissue section.

Type	Clinical	HP subtype	HP
TT	5		1
BT	55	52+5	57
BB	2	0	0
BL	8	12+8	2
LL	29	9+1+1	11
I	1	9	9

Table 1

From the above table, it can be seen that the largest group was that of BT clinically (55) but there were 57 cases histologically. Out of 29 cases of clinical LL, only 9 were histologically LL. Similarly there were 20 cases of BL histologically against 8 patient clinically. For one case of Indeterminate leprosy clinically, there were 9 cases of Indeterminate leprosy histologically. 5 patients of tuberculoid type showed only histological picture of BT. There was no concordance in the two patients of borderline leprosy clinically and histopathologically.

DISCUSSION: In this study there was a good deal of discrepancy between the clinical diagnosis and histopathological findings as shown in the table below:

Clinical type	No. of cases	Histopathological disagreement Type wise	Histopathological disagreement total	Correlation
TT	5	BT- (5)	5	0
BT	55	TT-1 BB-1 BT BL -3 BL-4 BL LL-1 I -4	14	41
BB	2	BT-2	2	0
BL	8	BT-3 LL-1	4	4
LL	29	BL-10 BT-4 BB-1 I-5	20	9
I	1	BT-1	1	0
Total	100		46	54

Table 2: Showing correlation and disagreement

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All the 5 TT cases diagnosed clinically turned out to be BT histologically, this is always possible because of minor difference between TT and BT clinically and this variation is a minor disagreement. Though there is 100% disagreement in all 5 cases, it is of not much significance except that from the practical point of view it is safer to err on the side of BT than TT.

Out of 55 cases of BT diagnosed clinically, one case turned out to be TT histologically showing typical localised granuloma with Langhan's giant cell. Clinically, it was BT in reversal. Four cases turned out to be BL histologically. Three of them diagnosed clinically as BT & one was BT in reversal. Three cases were showing features of both BT & BL and so diagnosed as BT downgrading to BL. Surprisingly one case which showed no bacilli in smear as well as in tissue section showed feature of BL downgrading to LL. Clinically the patient was a young adult male with a single erythematous plaque with ill-defined margins in the elbow. This is surprising & difficult to explain, but the possibility of the patient developing multiple lesions with lepromatous feature may be forewarned histologically in a given case. The variation histologically in TT & BT cases was observed earlier by other authors.⁽⁵⁾ All these incidences showed that wherever possible histopathological examination at different times during the evolution of the lesions will help in correct typing.⁽⁶⁾

Out of the eight cases diagnosed as BL, 3 cases showed features of BT. On tissue section, they were negative for AFB and weakly positive on direct smear. Possibly they were clinically also BT but because of numerous lesions and bilateral distribution they were diagnosed as BL. One case was LL histologically and this is understandable. But more number of cases have to be studied before a proper conclusion could be drawn.

Out of 29 LL cases clinically, 10 cases turned out to be BL. This is possible because of two reasons. The patient could have downgraded from BL to LL and the lesion biopsied was BL. It is sometimes very difficult to differentiate BL and LL cases clinically specially in dark skinned individuals. What is unexplainable is the finding that 4 of LL cases were histologically BT and 5 indeterminate. In the 3 cases diagnosed as histoid HPE did not support the diagnosis. Understandably, 1 indeterminate case clinically in our study showed histopathology of BT which is not a serious disagreement.

On the whole, out of 100 cases, 46 cases showed disagreement i. e 46% and serious disagreement was in 21% and minor disagreement in 25%. In other words there is total, clinical and histopathological correlation in about 54%. Our study correlates very well with the study of Ridley & Jopling (1966) where there was complete agreement in 56 out of 82 cases studied and minor disagreement in 21 patients.⁽⁷⁾

The table III below shows a comparative study of clinicopathological correlation of different workers with our study.

Type of Leprosy	Bhatia A.S et al 1993	Moorthy et al 2001	Sharma A et al 2008	S Thakkar et al 2014	Present study
TT	50%	46.15%	47.37%	71.4%	0%
BT	77%	66.34%	53.01%	50%	74.54%
BB	26%	50%	37.35%	33.3%	0%
BL	43%	70%	58.82%	60%	50%
LL	91%	80%	75.86%	80%	31%
IL	36%	20%	100%	100%	0%

Table 3

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In our study there was no correlation between clinical and histological findings in TT, BB and Indeterminate in comparison to others this is probably due to the very few number of patients of this type in our study.

SUMMARY AND CONCLUSIONS: One hundred untreated cases comprising all varieties of leprosy were classified clinically using Ridley-Jopling's criteria. Skin smear examination was done for all cases; all the cases were also subjected to histopathological study, including acid fast staining of tissue sections for bacilli. The degree of correlation of clinical and histological diagnosis was carried out. The results were evaluated and compared with those of others who have undertaken similar study before.

1. The correlation without immunological assessment can never be 100%. But properly applied, with the 3 parameters alone namely, clinical, bacteriological and histological about 50-80% correlations can be achieved.
2. Histopathological study in this series has certainly raised awareness, in that some of the clinically tuberculoid cases showed definite LL change thereby giving a warning to undertake careful follow up.
3. All clinically diagnosed Hansen's disease should be submitted to histopathology whenever possible, so that it will help in determining the type of the disease and duration of treatment.

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