Volume : 1 | Issue : 5 | Oct 2012 • ISSN No 2277 - 8179

Research Paper

Clinico-Histopathological Correlation in Leprosy

Medical Science

KEYWORDS : Leprosy, Ridley-Jopling Classification, Histopathological Correlation

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ABSTRACT

Globalization has resulted in mobility of people across the borders leading to phenomenal growth in tourism. The cash-starved developing countries pursue tourism as a strategy for their economic development. .For under developed countries, it is a major source of employment and income generation. This research paper examines the impact of globalization, the consequent emerging trends in tourism industry, challenges faced and some strategies to overcome them.

INTRODUCTION:

India reports more than 5o% of all leprosy cases worldwide. Out of all new leprosy cases detected worldwide in year 2010 India contributed about 55.5% of global burden13. As its elimination is not as straightforward, it is still an endemic problem in parts of India12,13. Leprosy, also known as Hansen's disease, is a chronic, infectious disease caused by Mycobactarium leprae that primarily affects the skin and the peripheral nerves 18. Leprosy expresses itself in different clinico-pathological forms depending on the immune status of the host 19 Diagnosis of leprosy is based on different clinical parameters which involves detailed examination of skin lesions and peripheral nerves 17 . Demonstration of acid–fast bacilli in slit skin smears by Ziehl-Neelsen's staining also aids in diagnosis of leprosy 5 . A reliable diagnosis hinges around a good histopathological diagnosis and demonstration of bacilli in histopathological sections10. Modified Fite's procedure has proved most valuable in demonstrating lepra bacilli in tissue sections 4. Clinical classification gives recognition only to gross appearances of the lesions, while the parameters used for the histopathological classification are well defined, precise and take into account the immunological manifestations for typing. Histology also gives indication of progression and regression of disease under treatment15. Ridley and Jopling were the first to suggest a subdivision of leprosy on an immunological basis into five types tuberculoid -TT, borderline tuberculoid -BT, mid borderline (BB), borderline lepromatous -BL & lepromatous -LL 16 Later they further developed this idea and correlated clinical and bacteriological findings in each group with respective immunological and histological findings 17.

MATERIAL & METHODS:

A retrospective study was carried out on the skin biopsies from cases of leprosy seen in the Department of Dermatology and reported in the histopathology section of the Department of Pathology, of our institute, in last six years.

Hematoxylin and Eosin stained sections2 of skin biopsies of all the cases of leprosy were examined for:-

Epidermal atrophy, epithelioid granulomas, number & distribution of lymphocytes, histiocytes & foam cells, Infiltration of nerves, blood vessels and adnexa. Presence or absence of grenz zone.

Sections stained with Ziehl Neelsen's stain 2 and Modified Fite's stain 4 were examined for lepra bacilli in all cases.

Histopathological findings were graded into TT, BT, BB, BL and LL according to Ridley and Jopling scale 17. . The cases in ENL reaction were included in the LL group as it is commonly found in the LL-group 9. Biopsies which did not include the full depth of dermis together with a portion of subcutaneous fat were considered as inadequate and not classified histopathologically. Indeterminate lesion is one which cannot be classified within the Ridley-Jopling spectrum due to lack of distinguishing features, because IL describes patients presenting with very early leprosy lesions that cannot be categorized definitely along the immunopathological spectrum and this happens more often histologically (due to failure to find a granuloma) than clinically9 . IL cases were not taken in the clinic pathological correlation.

Clinical diagnosis of the leprosy cases (as provided by department of Dermatology) using Ridley & Jopling scale was correlated with the results of histopathologic examinaton of their respective biopsies.

Table-1 Histological Type of Leprosy

Histological Type	No of case	% age
TT	32	25.4
BT	16	12.7
BB	4	3.17
BL	28	22.2
LL	40	31.8
Leprosy in Reaction	6	4.76
Total	126	100

TT-Tuberculoid, BT-Borderline Tuberculoid, BB-Mid Borderline, BL-Borderline Lepromatous, LL- Lepromatous

Table-2 Clinico-Histopathological Correlation

Clinical Diagnosis		Histopatho Diagnosis					Parity %
	NO	TT	BT	BB	BL	LL	
TT	29	25	4				86.2
BT	18	6	9	1	2		50
BB	7	1	2	2	2		28.6
BL	30		1		19	10	63.3
LL	36			1	5	30	83.3
Total	120	32	16	4	28	40	70.8

RESULTS:

This study was done on skin biopsies of 126 clinically diagnosed cases of leprosy. Histopathological features of leprosy were observed only in biopsies of 120 cases (Table-I) and 6 biopsies were inadequate or non specific. The distribution of 120 cases on the histological leprosy spectrum based on Ridley-Jopling scale revealed maximum cases 48(38.09%) in borderline group (BT+BB+BL). In polar groups, 32 (25.40%) cases belonged to TT and 40 (31.75%) to LL. Maximum clinico-histopathological correlation was seen in TT (86.21%) followed by LL (83.33%), BL (63.33%), BT (50%) and minimum in BB (28.57%) as shown in table-2. Overall concordance of diagnosis was seen in 70.83% cases. When we considered TT and BT together as one group, and also BL and LL together as other group, clinico-histopathological concordance was high 91.66% for the TT-BT group and 94.11% for BL-LL group. On correlating clinical diagnosis with histological diagnosis only minor disparity (difference of one group) was observed in TT and LL cases with exception of one case of LL showing major disagreement (difference of two or more groups) . However high disparity was seen in borderline spectrum ranging from 33.33% to 57.14%.

A disease like leprosy needs an appropriate classification be-

Volume : 1 | Issue : 5 | Oct 2012 • ISSN No 2277 - 8179

cause of its varied manifestations. The most commonly accepted classification by research workers is that of Ridley and Jopling 17 which is primarily based on immunity but has been correlated with clinical, histopathological and bacteriological findings. Despite having such an accurate classification, leprosy cases showed so many diversities between the clinical and histopathological features.

Clinical spectrum of leprosy cases in the present study revealed maximum cases (40%) in borderline group (BT+BB+BL). The histopathological characteristics were consistent with the clinical diagnosis in 85 (70.83%) cases. Similar highest percentage of agreement between clinical and histopathological diagnoses of lepromatous leprosy and tuberculoid leprosy cases is also observed by Kar et al8, Kalla et7 al, Anuja et al1 and Moorthy et al11 in their respective studies.

Least agreement was seen in cases of mid borderline leprosy in this study, which is in concordance to the observations recorded by Moorthy et al11 , Anuja et al1and Kalla et al 7

Table-3 Disparity in Clinical and Histopathological Diagnosis

Clinical Cases		Complete Parity		Minor Disparity		Major Disparity	
Type	NO	NO.	% age	NO.	% age	NO.	% age
TT	29	25	86.21	4	13.79		
BT	18	9	50	7	38.89	2	11.11
BB	7	2	28.57	4	57.14	1	14.29
BL	30	19	63.33	10	33.33	1	3.33
LL	36	30	83.33	5	13.89	1	2.78
Total	120	85	70.83	30	25	5	4.17

Table-4 Comperision with other studies.

Type of leprosy and parity %	Present Study %	**Kar *et al* %**	**Kalla *et al* %**	**Moorthy *et al* %**
TT	86.21%	87.50%	75.60%	46.15%
BT	50.00%	60.90%	44.20%	66.34%
BB	28.57%	54.50%	37.00%	50.00%
BL	63.33%	53.81%	43.70%	70.00%
LL	83.33%	71.47%	76.70%	80.00%

Maximum discordance between clinical and histopathological diagnosis was observed in mid borderline group of present study and same was also noted by Anuja et al1.

SUMMARY:

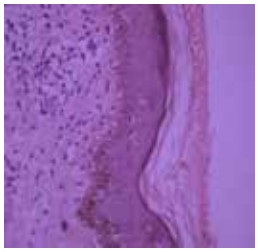
Midborderline leprosy is immunologically the least stable and variety of clinical lesions. It is therefore necessary to relate the histological features with the clinical characteristics presented by the particular morphological lesion subjected to biopsy. If this is done carefully, it may be possible to achieve a better correlation of clinical with the histological changes.

When we combined TT and BT cases in one tuberculoid group and LL and BL cases in single lepromatous group for the purpose of analysis, we noted better clinico-histopathological correlation. Similar rise in clinico-histopathological concordance of tuberculoid and lepromatous group was also noted by Bhatia et al 3 TT and BTleprosy often overlap clinically, histologically and immunologically but differ only in degree and same is true for borderline LL & BL. Therefore, combining these two groups (TT-BT and BL-LL) does not affect the chemotherapy and outcome of the disease.

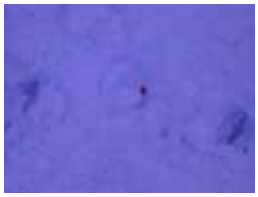
The disparity between clinical and histological observations was anticipated because the parameters used for the histopathologic classification are well-defined, precise and also take into account the immunologic response of the tissue, while the clinical classification gives recognition only to the gross appearances of the lesions which is due to the underlying pathological change.

Moreover, a sizable proportion of leprosy cases (BT+BB+BL) are in a continuously changing immunological spectrum and histological classification gives a better indication for any recent shift of a case position in the spectrum.. If a biopsy is taken at an early stage, there is likely to be discordance between the clinical and histopathological observations.

As disparity depends upon the -lesion biopsied and time of taking biopsy thus serial biopsies from the same lesion, or biopsies from paired lesions, should be studied for a better clinico-histopathological correlation.



LL- Collection of foamy macrophages in dermis-40x



FF Stain - leprabacilli

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