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A Study of Histopathological Spectrum of Leprosy

Pathology

KEYWORDS : Leprosy, histopathology

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ABSTRACT

Introduction: *Leprosy is one of the oldest and chronic infectious disease known to human being caused by Mycobacterium leprae.It presents with different clinicopathological forms. The present research was taken to evaluate the importance of skin biopsy an important diagnostic and spectrum defining tool.* ***Aim:*** *To evaluate the importance of skin biopsy in detecting and diagnosing cases of leprosy.* ***Method:*** *This was hospital based one year retrospective study of 105 clinically diagnosed cases of leprosy. Skin biopsies were received ,processed and stained by H & E stain followed by Fite-faraco method to classify histopathological types of leprosy.* ***Results:*** *A total 105 cases were studied out of them 63.8% were male and 36.20% were female. Majority of them 52.39% belonged to 21 -30 years age group. Lepromatous leprosy was noted maximum in 31.43% cases.* ***Conclusion:*** *Histopathology plays an important role in making definite diagnosis of leprosy.*

INTRODUCTION

Leprosy is one of the oldest, chronic, multiple organs granulomatous,infectious diseases having a prolonged incubation period that affects mainly skin and peripheral nerves. Its causative agent is Mycobacterium Leprae which parasitizes macrophages and Schwann cells.[1,2] The disease presents itself in different clinic -pathological forms depending upon the cellular immune system of the host[3] The disease spectrum has been characterised in a number of classification systems, most widely being the Ridley-Jopling classification. Due to its clinical diversity as well as its ability to mimic other diseases, leprosy is sometimes difficult to diagnose clinically, making histopathological examination a helpful diagnostic tool to confirm the diagnosis.[4]A reliable diagnosis hinges around a good histopathological diagnosis and demonstration of acid fast bacilli(AFB) in histopathological sections. [5,6] Modified Fite's procedure has proved to be the most valuable in demonstrating leprae bacilli in tissues sections.[7]

AIMS AND OBJECTIVES

1. We aimed at describing histopathological profile of leprosy.
2. Histopathological examination not only helps in confirmation of diagnosis but also helpful in exact typing of the disease. [8], [9]

MATERIAL AND METHODS

A retrospective one year hospital-based study was conducted in Histopathology Section, Pathology department, P.D.U Medical college and hospital, Rajkot, between June 2015 to June 2016.

Patients of all age groups are included in study.

Skin biopsies were fixed in 10% formalin, following fixation of 12-24 hours and embedded in paraffin.All these biopsies were stained with haematoxylin & Eosin and further stained by modified Fite-faraco stain. The lesions are classified on the basis of histopathological features in to Borderline tuberculoid (BT), Mid-borderline (BB), Borderline Lepromatous (BL), and Lepromatous (LL), Tuberculoid leprosy(TT), Histioid Leprosy and Erythema Nodosum Leprosum (ENL).[10,11] Histopathological criteria used for clinical correlation was the flattening of epidermis, involvement of sub-epidermal zone, character and extent of granuloma formation, density of lymphocytic infiltrate, nerve involvement, presence of M. Leprae and epitheloid cells and other cellular elements in biopsy sections.[11]

RESULTS:

One hundred five cases of leprosy were diagnosed on histopathology included in this study.

Table 1:Distribution of 105 cases according to histopathological type

Serial No	Histopathological Diagnosis	TotalNo.of cases(105)	Percentage (100%)
1	Lepromatous leprosy	33	31.43 %
2	Borderline tuberculoid	17	16.20 %
3	Borderline lepromatous	22	20.95 %
4	Tuberculoid leprosy	21	20.0 %
5	Erythema Nodosum Leprosum	6	5.72 %
6	Histioid leprosy	2	1.90 %
7	Midborderline leprosy	2	1.90 %
8	Indeterminate leprosy	1	0.95 %
9	Tuberculoid Reaction.	1	0.95 %

Table 2: Distribution of leprosy cases among males and females

Type of leprosy	Male (67)	Percentage(100%)	Female (38)	Percentage(100%)
Lepromatous leprosy	23	34.32 %	10	26.32 %
Borderline tuberculoid	6	8.9 %	11	28.95 %
Borderline lepromatous	17	25.40 %	5	13.16 %

Tuberculoid leprosy	13	19.40 %	8	21.05 %
Erythema Nodosum Leprosum	5	7.50 %	1	2.63 %
Histioid leprosy	2	2.98 %	0	0 %
Mid borderline leprosy	1	1.50 %	1	2.63 %
Indeterminate leprosy	0	0 %	1	2.63 %
Tuberculoid Reaction.	0	0 %	1	2.63 %

Table 3: Distribution of Leprosy cases according to Age group in male.

Age group in years	LL	BT	BL	TL	ENL	Histiod	MB	INDETERMINATE	TUBERCULOID REACTION
1-10	0	0	1	0	0	0	0	0	0
11-20	2	1	0	0	0	0	0	0	0
21-30	7	1	6	5	1	1	0	0	0
31-40	3	2	2	3	2	0	0	0	0
41-50	4	0	4	1	1	1	1	0	0
51-60	3	1	2	3	0	0	0	0	0
61-70	2	1	2	0	0	0	0	0	0
71-80	2	0	0	1	1	0	0	0	0
TOTAL(67)	23	6	17	13	5	2	1	0	0

Table 4:Distribution of Leprosy cases according to Age group in female.

Age group in yrs	LL	BT	BL	TL	ENL	Histiod	MB	INDETERMINATE	TUBERCULOID REACTION
1-10	0	0	0	0	0	0	0	0	0
11-20	2	1	0	0	1	0	0	0	0
21-30	4	1	0	2	0	0	0	1	0
31-40	1	2	0	1	0	0	0	0	0
41-50	2	4	1	3	0	0	1	0	1
51-60	3	2	4	2	0	0	0	0	0
61-70	0	1	0	0	0	0	0	1	0
71-80	0	0	0	0	0	0	0	0	0
TOTAL (38)	10	11	5	8	1	0	1	1	1

Table 5: Distributionof FF Stain positivity cases among male and females

Type of leprosy	Male (33)	Female (09)
LL	22	8
BT	0	0
BL	5	0
TL	0	0
Histioid	2	0
ENL	2	1
ENL with LL Or BL	2	0
TOTAL(42)	33	9

DISCUSSION

Despite having such an accurate classification, the results of different studies have not been uniform and showed so many diversities between the clinical and histopathological features. [11]In the present study most common type of leprosy is the **lepromatous leprosy (33%)** followed by borderline leprosy. Male predominance was seen in **63.80**% cases in our study with similar results from Giridhar M et al. [13] and Manandhar et al. [12] may be due to better awareness amongst them than their counterparts. Most common age group affected was **21-40 years,** which was comparable with the study of manadhar et al.[12] 80 % cases were from lower socioeconomic class. Most frequent (84%) skin lesion was single or multiple reddish lesions with loss of sensations over the affected area. Most common sites chosen for biopsies were **Back (55%),**forearm (20%) arm (11%),thigh (6%),leg (5%), face or abdomen (3%).Modified fitefaraco stain positivity was in **40%**which was comparable to the study of Manandhar et al [12] and Tiwari et al[14] AFB positivity strongly correlated with lepromatous pole (100%).Out of **49 c**ases 27(**55.1%)** were male and 22(44.9%) were female. Majority of them were in **40-60** years of age

Table 6:A COMPARATIVE STUDY 0F SPECTRUM OF LEPROSY BY VARIOUS AUTHORS WITH PRESENT STUDY

	Present study	Tiwari et al[14] (2015)	Moorthy et al (2001)	Mathur et al[16] (2011)	Kumar et al[15] (2014)	Nadia et al[17] (2015)	Brazil [18] (2016)
No of cases	105	53	372	156	423	118	49
MALE	67	31	242	84	298	76	7
FEMALE	38	22	130	72	125	42	7
AGE GROUP	21-40	20-40	20-29	21-30	21-30	31-40	12
TT	21	4	26	43	80	17	7
LL	33	2	10	21	42	25	12
BT	17	22	269	39	40	41	11
BL	22	8	40	22	30	7	0
IL	1	14	25	8	34	5	0
BB	0	3	40	7	106	19	0
HL	2	0	25	0	15	4	0
MB	2	0	2	0	0	0	0
ENL	6	0	0	0	76	0	0
NON SPECIFIC	1	0	0	16	0	0	5
TOTAL	105	53	372	156	423	118	49

Histological patterns observed in our study were epidermal changes in the form of thinning and atrophy (50%), followed by normal epidermis (45%) and ulcerative changes (5%). Epitheloid cell granuloma (41.66%) and gaint cells (18.33%) were more common towards tuberculoid pole whereas foamy macrophages (26.66%) with clear sub epidermal grenz zone (42.5%) were more common towards lepromatous pole.[12]

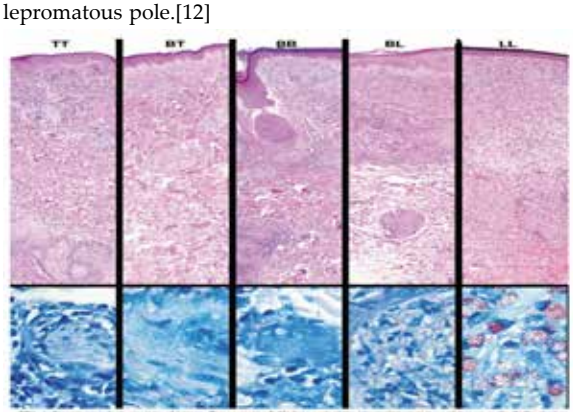

Fig 1:Histopathological spectrum of leprosy presented in the upper panel,(40x) in H & E stained sections and fite stained in lower panel.(100x)

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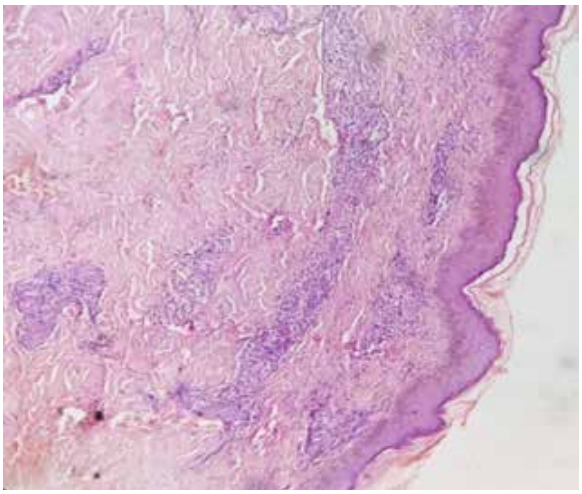

Fig 2: Erythema Nodosum Leprosum

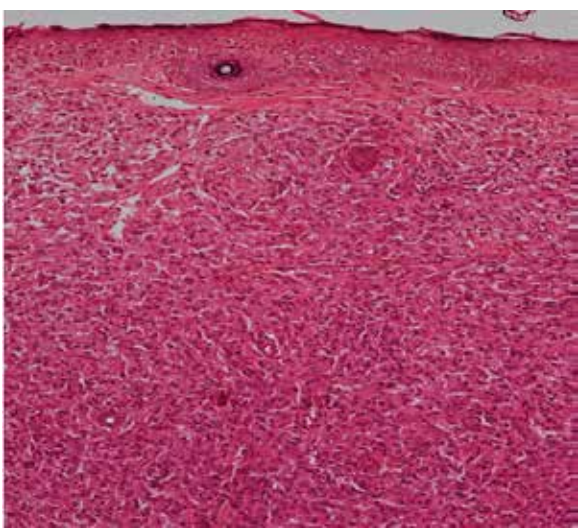

Figure 3: Histioid Leprosy

CONCLUSION:

Diagnosis and treating solely on clinical basis still poses a problem in developing countries where advanced diagnostic techniques are lacking and reliability solely on slit skin smear may lead to poor diagnosis increasing false negative diagnosis. Henceforth histopathology confirmation of suspected cases of leprosy helps in making definitive diagnosis. Skin biopsy remains the gold standard even today in these situations. This study shows a good correlation between clinical & histopathological findings in skin biopsy of clinically diagnosed cases of leprosy. It not only helps in leprosy control rather it prevents the deformity and transmission of disease further the society.

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