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ORIGINAL RESERCH

Clinico-histological correlation of Hansen's disease at tertiary care centre

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Abstract

Background: Leprosy is a chronic granulomatous, infectious disease present in various clinicopathological forms. Histopathological examination of skin provides confirmatory diagnosis. Ridley and Jopling classification is used to classify leprosy. The objective of study was to identify the clinical pattern of leprosy and performed detail Clinico- histopathological correlation in our institute.

Method: The study was carried out on 85 skin biopsies received in between2021-2023 Biopsies were fixed in 10% formalin, processed, and stained with Haematoxylin and Eosin and Fite Faraco stain, examined and classified histopathologically according to Ridley-Jopling scale and then correlated with clinical diagnosis.

Result: The age of the patients was ranged from 0 to 89 years. The male to female ratio of patients was 3:1. Hypopigmented, hypoesthetic skin lesions were commonly seen.Majority of cases 28(32.9%) were in the age group of50 -59 years. Highest parity was observed in Lepromatous leprosy (69%). Maximum clinical and histopathological correlation between was observed in lepromatous type (69%) and Tuberculoid type (55.5%).

Conclusion: The clinical and histopathological features are useful in arriving definitive diagnosis and classification of the leprosy

Key words: Leprosy, Ridley-Jopling, Histopathology

Introduction

Hansen's disease is a chronic granulomatous infectious disease caused by *Mycobacterium leprae* which mainly affects peripheral nerve and skin.[1]It can affect any age group and both sexes are affected.Histopathological examination of skin or nerve biopsies or the demonstration of lepra bacilli in skin smears are the only laboratory means of confirming a diagnosis of leprosy. [2,3] In 1960s, Ridley and Jopling proposed a histological classification for leprosy as indeterminant (I) leprosy, tuberculoid (TT), borderline tuberculoid (BT), mid-borderline (BB), borderline lepromatous (BL), and lepromatous (LL) leprosy. The diagnosis of leprosy is based on different clinical parameters which involve detailed examination of skin lesions and peripheral nerves along with slit-skin smear examination, histopathological examination, and demonstration of acid-fast bacilli.[4]It is essential to have proper early diagnosis by clinical and histopathological correlation so that complete treatment can be given. The present study was carried out to assess the concordance between clinical and histopathological diagnosis in cases of leprosy using Ridley–Jopling scale. [5,6]

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Material and methods

The present cross-sectional study was conducted in the Department of Pathology at a tertiary health-care teaching institute in central India. Skin biopsies of all suspected cases of Hansen's disease received over a period of 2 years (July 2021–July 2023) were included in the study. Total 85 cases included in this study. The skin biopsies were fixed in 10% formalin, embedded in paraffin wax, and stained with haematoxylin and eosin. In addition, cases were stained by the Fite-Farraco method for acid fast bacilli. The lesions were classified based on histopathological features into tuberculoid (TT), borderline tuberculoid (BT), borderline (BB), borderline lepromatous (BL) and lepromatous leprosy (LL). Clinico-histological correlation was done for all the cases.

Table 1: Distribution of cases according to Histologic types

Type Of Leprosy	Number Of Cases
Tuberculoid (TT)	22
Borderline tuberculoid (BT)	03
Borderline (BB)	00
Borderline lepromatous (BL)	03
lepromatous leprosy (LL)	44
Intermediate leprosy	13
Histoid	00
ENL	01

Table 2: Distribution of 85 leprosy cases according to age

Age In Years	Type Of Leprosy (85)					Total	Percentage (%)
	TT	BT	BL	LL	IL		
0-9	0	0	0	2	2	4	4.7
10-19	3	1	0	2	1	7	8.2
20-29	2	1	0	1	2	6	7.0
30-39	2	0	1	5	1	9	10.5
40-49	5	0	0	12	3	20	23.5
50-59	8	1	1	16	2	28	32.94
60-69	2	0	1	4	2	9	10.5
70-79	0	0	0	1	0	1	1.17
80-89	0	0	0	1	0	1	1.17

Table 3: Correlation between clinical and histological diagnosis

Type of leprosy	Clinical diagnosis	Histological diagnosis						Correlation (%)
		TT	BT	BL	LL	IL	ENL	
TT	18	10	7	0	1	0	0	55.5
BT	05	4	1	0	0	0	0	20
BL	05	0	0	2	2	1	0	40
LL	55	0	1	8	38	8	0	69
IL	1	0	0	0	1	0	0	0
Histoid	0	0	0	0	0	0	0	0
ENL	1	1	0	0	0	0	0	0

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Table 4: Concordance in clinical and histopathological diagnosis

Clinical diagnosis	cases	Complete parity no. (%)	Disparity no. (%)
TT	18	10	08
BT	05	01	04
BL	05	02	03
LL	55	38	17
IL	01	00	01
HL	00	00	00
ENL	01	00	01
TOTAL	85	51 (60%)	34 (40%)

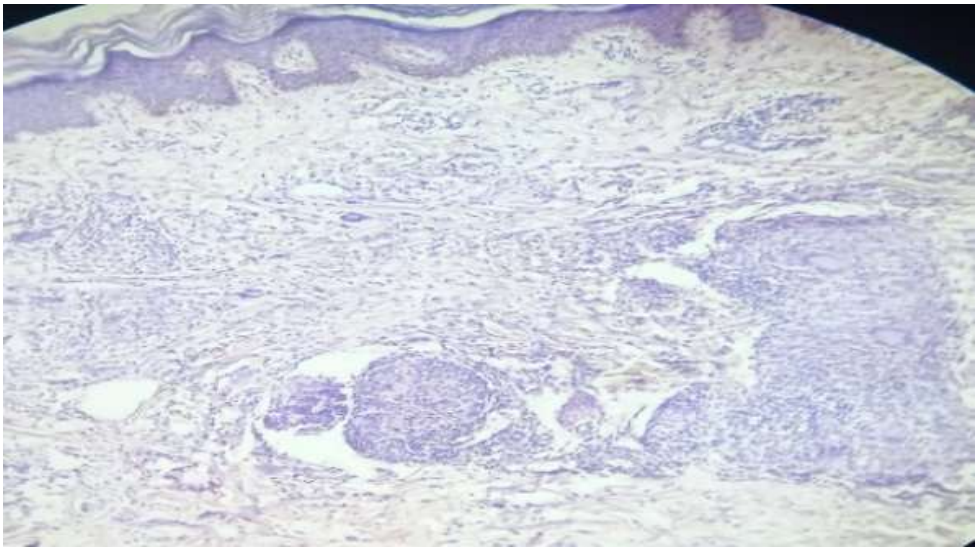

Figure 1 Tuberculoid Leprosy: Erosion of basal layer of epidermis by lymphocytes and epithelioid cells well-formed granuloma and langhan's giant cells seen in papillarydermis (H & E stain, 100X)

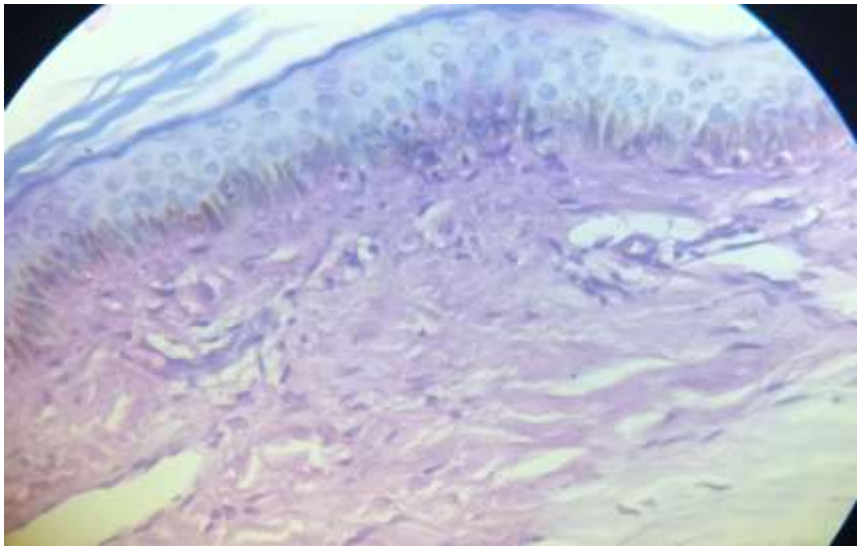

Figure 2: Lepromatous leprosy: Collection of foamy macrophages in the dermis and clear grenz zone under the epidermis, (H&E Stain, 100X)

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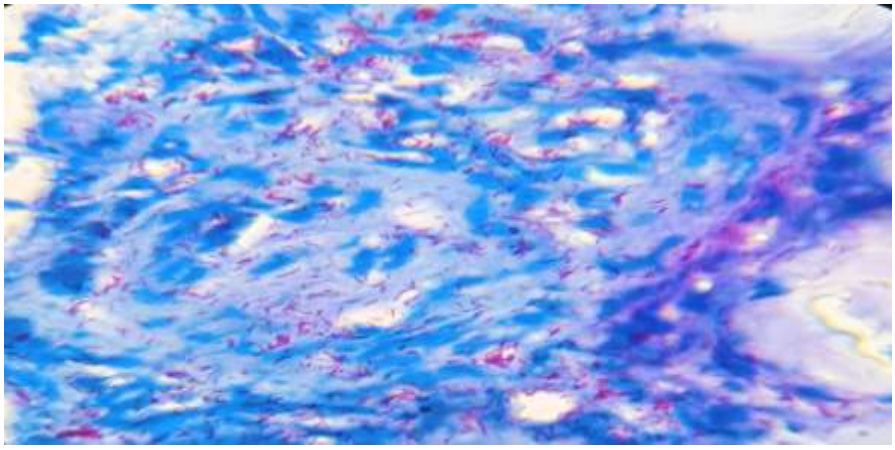

Figure 3: Lepromatous leprosy showing Acid fast bacilli in Fite Faraco stain, 1000X

Results

Eighty-five clinically and histopathologically diagnosed cases of leprosy were included in the study.The common clinical presentations were macules, nodules, and plaques. The age distribution of patients varied between 0-89 years. Majority of the patient were between the age groups of 50- 59 years followed by 40- 49 years (table 1). Out of total 85 cases 64 were males and 21 females, with male to female ratio 3:1. The frequency of the cases was based on the histopathological diagnosis. Most common Histological type of leprosy was lepromatous group of leprosy (44%) followed by Tuberculoidtype (22%) as shown in table 1. Most common clinical type of leprosy was lepromatous leprosy seen in 55 (69%) cases followed by Tuberculoidleprosy 18 (55.5 %) cases as shown in table 3. The Clinico-histological correlation in BT and BL was 20% and 40%, respectively. One case was clinically diagnosed as ENL; on histopathology, it came out as TT. The correlation in ENL (1/85) was 0%. Maximum clinical and histopathological correlation was observed in lepromatous type (69%) and Tuberculoid type (55.5%). Fite-Faraco stain was positive in 43/85 cases. Out of 85 cases no case of Histoid leprosy found.

Discussion

In the present study, Ridley-Jopling classification was used to classify leprosy histopathologically in all cases. Most common age group affected in leprosy was 50-59 years followed by 40-49 years. In the present study, male predilection was observed with M:F ratio of 3:1.SimilarlyGiridhar et al showed increased prevalence of leprosy in males compared to female.[7]In our study, the most common histological subtype was lepromatous leprosy followed by Tuberculoid , this findings were similar to the study done by G K Dubey et al in 1981.[8] The excellent Clinico-histological correlation was observed for the polar spectra of leprosy .[9]There was complete agreement between the clinical and histopathologic diagnosis in 60 % of the cases. Differentiation between leprosy subtypes is sometimes difficult. So different studies were performed regarding Clinico-histopathological correlation, and showed variable results. [10] Percentage of complete agreement between clinical and histopathological diagnosis reported by different authors ranges from 33-82% shown in below table:

Various studies	Number of cases	Clinicohistopathological concordance
Present study, 2023	85	60%
Sehgal VN et al[11]	95	33%
Moorthy BN et al[12]	372	62.6%
Pandya AN et al[13]	50	58%
Ridley DS et al[6]	82	68.3%

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Nadkarni NS et al[14]	2640	81.8%

Conclusion

The spectrum of leprosy is very much overlapping hence histopathological examination should be done for confirmation of diagnosis and typing of disease in all cases before starting treatment. The disparity could be due to the occurrence of reaction or due to type and site of lesion from where biopsy was taken. [15] It is very difficult for dermatologist to diagnose early lesion of leprosy, so definitive diagnosis may be possible only by histopathological examination.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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