

ORIGINAL ARTICLE

A one year study (October 2016 To October 2017) of Leprosy Cases : Histopathology and Demonstration of Lepra Bacilli

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ABSTRACT

Introduction : The clinical manifestations of leprosy are too varied and diverse and can mimic variety of unrelated diseases. In patients of leprosy the treatment plan differs depending on histopathological subtype and bacillary load. This study aims to decide the incidence of various histopathological subtypes of leprosy with their histopathological subtyping & findings of modified FiteFaraco staining to demonstrate Lepra bacilli.

Materials and Methods : The present study was conducted at Department of Pathology, P.D.U Medical College, Rajkot, Gujarat, for the period of 1 years from October 2016 to October 2017. Skin biopsies from all patients clinically suspected as leprosy were studied to confirm the diagnosis, to classify histopathologically, and to know bacillary load by FiteFaraco staining. The histopathological features and FiteFaraco stain findings were then correlated.

Results : Out of 139 Biopsies from suspected cases of leprosy, 122 were confirmed as leprosy on histopathology. Peak incidence was in 21- 30 years of age group, while M: F ratio was 2.05:1. Maximum number [34.4%] of cases were of lepromatous leprosy (LL).

Conclusion : Leprosy is still prevalent in the region of study, Lepromatous Leprosy being the commonest. Proper histopathological diagnosis with subtyping and demonstration of lepra bacilli on tissue sections are very important in clinical management of all leprosy cases.

INTRODUCTION

- Leprosy is caused by *M. leprae* and predominantly affects the skin and peripheral nerves and results in disabling deformities. Leprosy or Hansen's disease, is a slowly progressive infection.
- Although in January 2006, leprosy has been eliminated as a public health problem in India (Prevalence rate < 1/10,000 population), it is still reported from all over country, with different prevalence in different states¹.

AIM

- The present study is aimed to study the spectrum of various types of leprosy in the period of October 2016 to October 2017 at the Department of Pathology, P.D.U. Medical College, Rajkot and to study the histopathological patterns of various types of leprosy.

MATERIALS & METHODS

- The present study was conducted at Department of Pathology, P.D.U. Medical College, Rajkot, Gujarat over a period of 12 months from October 2016 to October 2017. Punch biopsies were taken from clinically diagnosed new skin lesion of leprosy patient and stained by Hematoxylin-Eosin (HE) and modified Fite Faraco stain.
- History and clinical examinations of patient regarding location of skin lesion, were recorded.
- If leprosy was confirmed on histopathological examination it was further subtyped as per Ridley and Jopling classification, into Lepromatous (LL), Borderline Lepromatous (BL), Midborderline (BB), Borderline Tuberculoid (BT) and Tuberculoid (TT) Leprosy.
- Cases of Histoid Leprosy (a subtype of Lepromatous Leprosy with classic morphology and highest

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bacillary load), Indeterminate Leprosy and Lepra reaction (Erythema Nodosum Leprosum) were also diagnosed.

RESULT

- The present study included total of 139 clinically suspected cases of leprosy.
- The age of the patients varied from 7 years to 82 years with peak incidence (26.9%) in 21-30 years of age group.
- There was a male preponderance, the M: F ratio being, 2.05:1.
- On histopathological examination out of 139 cases, 122 cases were confirmed to be Leprosy, which were further subtyped.

Table I. Distribution of cases of Leprosy on histopathological examination

Type	No of Cases	Percentage
Tuberculoid Leprosy	23	18.8%
Borderline Tuberculoid Leprosy	22	18.0%
Midborderline Leprosy	01	0.8%
Borderline Lepromatous Leprosy	17	13.93%
Lepromatous Leprosy	42	34.4%
Indeterminate Leprosy	01	0.8%
Erythema Nodosum Leprosum	12	9.8%
Histoid Leprosy	04	3.2%

- Thus maximum number of cases 42 (34.4%) were of lepromatous leprosy, followed by 23(18.8%) cases of Tuberculoid leprosy.
- 4(3.2%)cases of Histoid variant of lepromatous leprosy, while 1(0.8%) cases each of Indeterminate leprosy and mid borderline leprosy, were also observed.

Table II. Correlation of clinical and histopathological classification in leprosy cases

Type	Clinically diagnosed cases	Histopathological Classification									Percentage of parity
		TT	BT	MB	BL	LL	IL	ENL	HL	No evidence of leprosy	
TT	15	12	01	00	00	00	00	00	00	02	80%
BT	26	06	17	00	01	01	00	00	00	00	69.2%
MB	04	00	02	01	01	00	00	00	00	00	25%
BL	23	03	01	00	13	01	00	00	00	05	56.5%
LL	55	02	01	00	02	40	00	00	00	10	72.7%
IL		-	-	-	-	-	01	-	-	-	-
ENL	12	00	00	00	00	00	00	12	00	00	100%
HL	04	00	00	00	00	00	00	00	04	00	100%
Total	139	23	22	01	17	42	01	12	04	17	87.7%

- In the present study, it was observed that the overall concordance between clinical and histopathological classification was 87.7%.
- Maximum concordance was seen in the in HL and ENL (100%), followed by TT (80%), LL(72.7%),BT(69.2%) and BL (56.5%). It was least in MB (25%).

Table III. Percentage distribution of Fite Faraco Stain positivity among various types of leprosy

Type	No of cases	No of positive cases	Percentage
TT	15	00	00%
BT	22	01	4.54%
MB	01	00	00%
BL	17	16	94.11%
LL	42	40	95.23%
IL	01	01	100%
ENL	12	11	91.6%
HL	04	04	100%
TOTAL	122	73	59.83%

Out of 122 histopathologically confirmed Leprosy cases, 73 cases(59.83%) were F.F stain Positive.

- All cases of HL & IL and most of the cases of LL, BL and ENL showed presence of FiteFaraco stain positive lepra bacilli. The Bacillary index was high (+5 or +6). Few cases of BT also showed F.F. positivity with low bacillary index ranging from +1 to +4.
- None of the case of TT Leprosy showed F.F. positivity.

Image-I Lepromatous leprosy (B) 10X (C) FiteFaraco stain(BI =6)

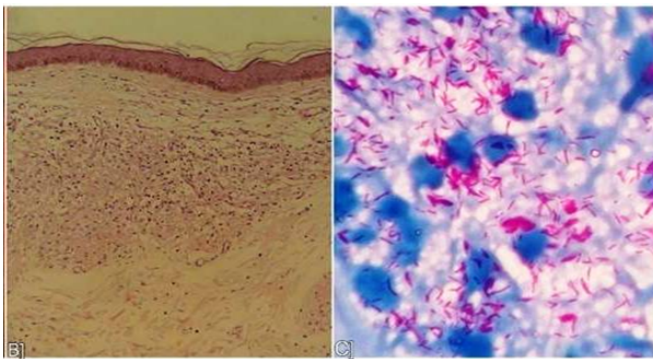
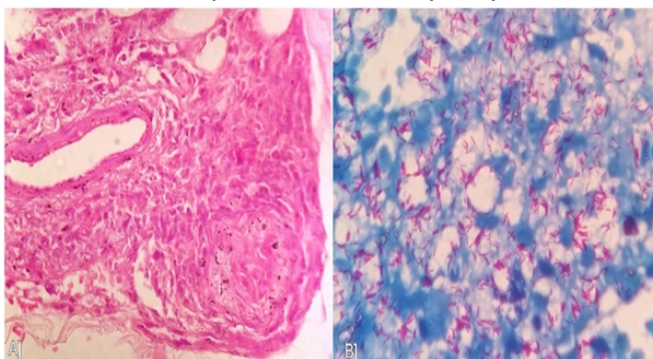


Image-II Borderline lepromatous leprosy; (A) 10X (B)FiteFaraco stain(BI=4)



DISCUSSION

- Leprosy still continues to be prevalent in all parts of India including Gujarat. Accurate diagnosis is of fundamental importance in all aspects of leprosy including epidemiology, management and prevention of disability.

- The attitude of society, methods of case detection, type of personnel carrying out survey, method and frequency of examination, the criteria adopted for diagnosis and type of classification of disease, are some variables that affect the description of the condition³.

Table IV. Comparison of spectrum of leprosy by various authors with present study

Type	Present study Rajkot (2017)	Tiwari et al ⁵ New Delhi (2015)	Kumar et al ³ Chandigarh (2014)	Nadia et al ⁶ Dehradun (2015)
TT	18.8%	7.5%	18.9%	14.4%
BT	18.0%	41.5%	9.4%	34.7%
MB	0.8%	0	0	0
BB	13.93%	5.7%	25.0%	16.1%
BL	13.93%	15.0%	7.0%	5.9%
LL	34.4 %	3.8%	9.9%	21.1%
IL	0.8%	26.4%	8.0%	4.2%
ENL	9.8%	0	17.9%	0
HL	3.2%	0	3.5%	3.4%
TOTAL	122	53	423	118

- The male preponderance observed in present study (2.05:1) is comparable to other studies^{4,5,6,7} which reported M: F ratio ranging from 2.1:1 to 1.4:1.
- In the present study most common type of leprosy was the lepromatous leprosy(26.3%) followed by tuberculoid leprosy (18.8%) while in other studies

TT or BT were commoner^{4, 6, 7} this might be due to higher prevalence rate of leprosy (0.98/10000) in Gujarat as compared to states of other studies with lower prevalence rate, as number of infective cases (LL) are more common in Gujarat state including the region of present study.

- In the present study overall clinicohistopathological correlation was found in 87.7% of cases, while in other studies, which ranged from 80.4% to 60.2%.^{2,3,7}
- Out of 122 patients, which were diagnosed by histopathological examination into different forms of leprosy, Modified FiteFaraco stain positivity was seen in 59.83% cases was somewhat higher than other studies of Manandhar et al⁸ and Tiwari et al⁶. This might be due to more cases of LL in present study. Two cases of LL are negative for FiteFaraco stain, which might be due to some technical errors.
- The findings of present study showing peak incidence at 21 – 30 years of age group, is comparable to that of Kumar et al while Mathur et al⁵ (Gwalior) reported peak incidence in somewhat later age group.
- Increased number of cases in older age group and decreased cases in children indicates decreasing incidence of leprosy.

CONCLUSION

- Though Leprosy is eliminated as a public health problem in India in 2006, cases are still reported from all part of country, with somewhat higher incidence rate in Gujarat.
- Cases of lepromatous leprosy are commoner in the region of present study as compared to other regions.
- For proper management and control of further transmission of disease, early diagnosis, correct histopathological subtyping and correlation with bacillary index is of utmost importance.

REFERENCES

1. NLEP – Progress Report for the year 2015-16, Central Leprosy Division Directorate General of Health Services Nirman Bhawan, New Delhi.
2. Shantaram B, Yawalkar SJ. Leprosy – Differential Diagnosis. In: Valia RG, Valia AR editors, Textbook and Atlas of Dermatology, Bombay, Bhalani Publishing House; 1994. p.1385-91.
3. Almeida J.O. Serology in leprosy. Bull WHO 1970; 42(5):673-702.
4. AnkurKumar, S.R.Negi, KusumVaishnav: A study of clinicohistopathological study of leprosy in western district of

Rajasthan: Journal of medical and dental science vol 2 issue 3 July-September 2014; 43-8.

5. Mathur, M.C., Ghimire, R.B.K., Shrestha, P., Kedia, S.K, Clinico-histopathological correlation in leprosy. Kathmandu Univ. Med. J, 2011;36(4): 249-252.
6. Tiwarimamta, sabinranabhat, sushnamaharjan, clinohistopathological correlation of leprosy, Chitwan medical college, International journal of medical Research and practice.vol-2.issue 1:2015;2(1):8-11.
7. ShiraziNadia, JindalRashmi, AhmadShoib: Clinopathological study of leprosy north India: Int J Med Res Health Sci, 2015(2):350-4.
8. Manandhar U, Adhikari RC, Sayami G. Clinico-histopathological correlation of skin biopsies in leprosy. J Pathol Nepal, 2013(3):452.