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RESEARCH ARTICLE

CLINCO PATHOLOGICAL STUDY OF TUBERCULOID LEPROSY IN NORTHERN KARNATAKA

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ABSTRACT

Leprosy continues to be a public health problem in India. Cases were selected regardless of their age, sex, religion, occupation and socio economic status. Pathological examination helps in confirming the clinical diagnosis. Clinically exact typing of leprosy is difficult and even slit-skin smear yields poor results. Majority of the cases were seen in second and third decade. Patients of both sexes were affected and it was more in males than in females. Patients from different religions were affected among these most of them belonged to Hindu religion.

INTRODUCTION

Leprosy continues to be a major public health problem in Asia and Africa. Control of leprosy mainly based on identifying and destroying the causative organism. For effective treatment and control, the diagnosis of leprosy should be done at the earliest and should be accurate. Pathological examination helps in confirming the clinical diagnosis. Clinically exact typing of leprosy is difficult and even slit-skin smear yields poor results. Thus histopathological examination is necessary for both accurate and exact typing.

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MATERIALS AND METHODS

The present study was undertaken from March 1994, January 2005 in the Department of Pathology, Karnataka Institute of Medical Sciences, Hubli. Histopathological study of 135 skin biopsy specimens of leprosy patients were done. All the biopsy specimens were received along with requisition for histopathological study containing clinical history, signs and symptoms of

skin lesions, results of slit skin smears for AFB with BI in some cases and probable clinical diagnosis.

Cases were selected regardless of their age, sex, religion, occupation and socio economic status. Details of patient history and clinical examination were noted of the patients who clinically presented with hypopigmented/erythematous maculas, plaques, nodules, papules or a combination of these, along with impaired sensation for touch, pain, and temperature and nerve involvement. Biopsy tissues were immediately fixed in 10% formalin for 12-24 hours. The tissue were processed, embedded in paraffin wax and cut into thin sections of 4-5 microns. Sections were stained with routine hematoxylin and eosin along with special staining for AFB by Fite Faraco methods, and Auramine – Rhodamine fluorescent stain, wherever necessary.

H and E staining procedure

1. Wax was removed by placing sections in xylene 3-5 minutes.
1. Two changes of absolute alcohol 1-2 minutes.
2. Washed in running tap water 10 minutes.
3. Slides stained with Harris hematoxylin 10 minutes.
4. Dipped in acid alcohol for differentiation
5. Washed in tap water for 10 minutes (bluing)
6. Counterstained with eosin 2 mins and washed in running tap water for 2 to 3 mins.
7. Sections were dehydrated in alcohol, cleared in Xylene and mounted with DPX.

Special stain for M. Leprae in paraffin section (Fite-faraco stain)

1. Wax was removed over two changes of xylene peanut oil (3:1) mixture 7 mins for each change.
2. Blotted with fine filter paper.
3. Sections washed in running water for 5 mins.
4. Stained with strong carbol fuchsin for 30 mins.
5. Water wash 2 mins.
6. Decolorized in 1% acid alcohol to reach a pale pink colour.
7. Water wash 2 mins.
8. Counter stained in methylene blue 5 to 6 dips.
9. Water wash until section becomes pale blue.
10. Section dehydrated in absolute alcohol 3 changes.
11. Cleared in Xylene 2 changes and mounted in DPX.

Bacterial index (BI)

BI was for study of AFB stain BI was assessed in the same way as in a smear. Using an oil immersion objective the following scale was used.

1+ 1 to 10 bacilli in 100 fields
2+ 1 to 10 bacilli in 10 fields
3+ 1 to 10 bacilli in 1 field
4+ 1 to 100 bacilli in 1 field
5+ 100 to 1000 bacilli in 1 average field
6+ > 1000 bacilli in 1 field.

Auramine - Rhodamine stain

1. Deparaffinisation was done with 1:3 peanut oil : Xylene mixture
2. Auramine – Rhodamine stain was used to flood the slides and kept in the incubator at 65 for 15 mins.
3. Slides were washed in running tap water for 2 mins.
4. De-colorization was done in 0.5% HCL in 70% ethanol for 2 mins.
5. Washed in running tap water for 2 mins.
6. Counterstained with 0.5% aqueous potassium permanganate.
7. Washed in running tap water for 2 mins.
8. Dehydrate in absolute alcohol.
9. Mounted in glycerol with coverslip.
10. Controls – Typical lepromatous leprosy biopsy.

Observations

The present study was carried out in the KARNATAKA INSTITUTE OF MEDICAL SCIENCES, HUBLI, a major referral hospital in North Karnataka from March 1994 to January 2005. During this period 40471 specimens were received in the Histopathology section. Department of Pathology, out of which 782 were skin biopsies. Out of these histopathological study of 135 skin biopsy specimens from skin lesions of leprosy patients was done. The skin biopsies were received from Dept of skin and STD, KIMS, Hubli, and few from other Hospitals in and around Hubli.

Table 1. Showing age and sex distribution in tuberculoid leprosy

Age (yrs)	Sex		Total	Percentage
	M	F		
0--09	04	01	05	12.80
10--19	07	01	08	20.51
20—29	08	02	10	25.64
30—39	03	02	05	12.80
40—49	02	02	04	10.26
50—59	02	02	04	10.26
60 & above	02	01	03	07.69
Total	28	11	39	100.00

Table 2. Showing distribution of tuberculoid leprosy in different religions

Sl.No	Religion	No. Of cases	Percentage
1	Hindu	32	82.05
2	Muslim	05	12.82
3	Christian	02	05.13
	Total	39	100.00

Hindus were affected most with 32 (82.05%). Muslims 5 (12.82%) and Christians 2 (5.13%) cases.

Table 3. Showing clinical features in tuberculoid leprosy

Sl.No.	Clinical Features	No. Of cases	Percentage
1	Hypo pigmented patches	20	51.28
2	Erythematous patches	16	41.03
3	Combined (Hypo pigmented & Erythematous)	3	7.69
4	Macules	16	41.03
5	Plaques	7	17.95
6	Papules	3	7.69
7	Nodules	-	-
8	Combination of (cutaneous lesions)	13	33.33
9	Well defined	18	46.15
10	Ill defined	21	53.84
11	<5 Patches	38	97.43
12	>5 Patches	1	2.57
13	Loss of sensation	35	89.74
14	Thickened nerves	30	76.91

Table 4. Showing histopathology of epidermis in tuberculoid leprosy

Sl.No.	Epidermis	Tuber culoid	Percentage
1	Atrophy	39	100
2	Unremarkable	00	-
3	Grenz Zone	00	-

In the present study there were 39 cases of tuberculoid leprosy, of these the most common age group affected was 20-29 years consisting of 10 (25.64%) cases, followed by 10-19 years 8 (20.51%), 5 (12.80%) cases each in 0-9 years and 30-39 years, 4 (10.26%) each in 40-49 years and 50-59 years, and 60 years ;and above was seen in 3 (7.69%). Males were affected most with 28 (71.00%) and females with 11 (29%) cases. Hindus were affected most with 32 (82.05%). Muslims 5 (12.82%) and Christians 2 (5.13%) cases.

The commonest presenting feature in tuberculoid leprosy was hypo pigmented patches with 20 (51.28%) patients, followed by erythematous patch with 16 (41.03%), and combined were 3 (7.69%). The most common cutaneous lesions observed were macules in 16 (41.03%) cases, followed by plaques in ;7 (17.95%) and papules in 3 (7.69%). Various combinations of these were seen in 13 (33.33%). The margins of the cutaneous lesions were ill defines in 21 (53.84%) cases and well-defined in 18 (46.15%). Patients showing less than five lesions all over the body were 38 (97.43 %) and more than 5 in 1 case (2.57%). Loss of sensation was seen in 38 (97.43%) and thickened peripheral nerves were present in 30 (76.91%). On histopathological examination of 39 biopsies of tuberculoid leprosy, epidermis was atrophic in all the cases.

Table 5. Histopathology of dermis in tuberculoid leprosy

Sl.No.	Dermis	TT	Percentage
1	Lymphocytes	39	100
2	Lympho-histiocytic aggregates	21	53
3	Epitheloid cells	39	100
4	Well formed granulomas	39	100
5	Langhans giant cells	39	100
6	Macrophages	-	-

In all the 39 biopsies there were will-formed granulomas with Langhans giant cells and lymphocytic infiltration. Lympho-histiocytic aggregates were seen in 21 (53.0%) cases.

DISCUSSION

In the present study the most affected age group was 20-29years constituting 10 (25.64%) and the second peak in the age group of 10-19 years with 8 (20.51%) which are similar to the observations 108 and 80 (27% and 20% respectively). Patients in the

age group of 40-49 years constituted 4(10.26%) cases, 30-39 years 5 (12.80%), similar results were observed 307 and 196 (18.48% and 11.8% respectively). Patients less than 9 years 5 (12.80%) and more than 50 years 4 (10.26%) were affected least; similar results were seen in the studies of 43(2.59%) and 123 (7.41%) respectively, and 25(6.2%) and 52(13%) respectively. In the present study there was male predominance with 2:1 male to female ratio which is similar to observation made by (1.72:1) and (4.39:1) while the study done by showed female preponderance with a ratio of 1:1.33. In the present study almost all patients had skin lesions. Among which hypopigmented patches were seen in 20 (51.28%) and erythematous patches were seen in 16 (41.03%), which were similar to in the study done with 88 in 14(72.5% and 51.6% respectively). Loss of sensation was seen in 35 (89.74%) of cases in the present study while observed 31 and 14 (25.8% and 97% respectively).

Conclusion

Histopathological study of biopsy specimens, which were taken from skin lesions of the patients suspected to be suffering from leprosy, which constituted 0.34% of all biopsies evaluated. All the age groups were affected. Majority of the cases were seen in second and third decade. Patients of both sexes were affected and it was more in males than in females. Patients from different religions were affected among these most of them belonged to Hindu religion. The most common type of leprosy histopathologically diagnosed was borderline tuberculoid leprosy followed by tuberculoid and intermediate leprosy.

REFERENCES

Guha, P K. 1981. Age of onset of leprosy. Leprosy in India, 53(1): 83-87.

Seghal, V N. 1990. slit skin smear in leprosy. International Journal of Dermatology, 29: 9-16.

Chaturvedi, R M. 1988. Epidemiological study of leprosy in Malwani Suburb of Bombay, Leprosy Review, 59:113-120.

Kar, P K. 1994. A clinic Pathological study of macular lesions in leprosy, Indian Journal of Leprosy, 66(4):435-442.

Verma, O P. 1976. Some epidemiological features of leprosy in a rural area in Hoogly district in India 48(4): 371-381.

Nadkarni, N.S. 1999. Significance of histopathological classification in leprosy, original article. *Indian Journal of Lepros*y, 71(3): 325-332.

Shenoi S D. 1988. Correlation of clinical and histopathological features in untreated macular lesions of leprosy- A study of 100 cases, Indian Journal of Leprosy, 60(2):202-205.

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