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Original Research Paper

HISTOPATHOLOGY SPECTRUM OF LEPROSY IN TERTIARY CARE HOSPITAL

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ABSTRACT:
Leprosy (Hansen's disease) is an infective skin lesion caused by the organism Mycobacteria Leprae. This is a retrospective study of skin biopsies received in the department of Pathology, MGM Medical College, Navi Mumbai between January 2018 to July 2022, which were diagnosed by histopathologic confirmation as Leprosy and its various subtypes. The lesions were evaluated based on the area involved, clinicopathologic presentation and demographic features. A total of 89 cases were identified as Leprosy and its various subtypes by histopathologic confirmation during this period. The lesion occurred most commonly in the age group of 31–40 years with a mean age of 39.5 years. A characteristic male predominance was seen. The most common lesion found was Borderline Tuberculoid with 48 cases (53.93 %) and the least common was histoid leprosy with only 2 cases (2.29 %). The most common site of involvement was the upper limb followed by the back, with hypoesthesia as the main symptom.

Keywords: leprosy, histopathology, skin biopsy, fite-faraco

INTRODUCTION:

Leprosy also known as Hansen's disease, is the oldest disease known to mankind. This disease was first described in Susruth Samhita written in 600 BC in India [(1)]. It is an infective skin disease caused by the organism Mycobacteria Leprae. It is a chronic granulomatous lesion, most commonly affects the skin and peripheral nerves. It is one of the leading causes of physical disabilities. lt may present in different clinicopathologic forms depending on the host's immune status. Leprosy is one of the leading causes of physical disabilities which contributes to intense social stigma resulting in discrimination against patients and their families. India represents 60% prevalence and 75% of new cases worldwide [(2)]. Although in January 2006 leprosy was eliminated in India it is still a public health problem in the country [(3)].

AIM AND OBJECTIVES OF THE STUDY:

To study the incidence of leprosy about age, gender, site of distribution of the lesion and histopathology.

MATERIALS AND METHODS:

STUDY DETAILS:

PLACE OF STUDY:

This study was conducted in the department of Pathology, Mahatma Gandhi Mission's Medical College and Hospital, Navi Mumbai.

STUDY DESIGN:

A Retrospective Study.

STUDY PERIOD:

Four and a half years (Duration: January 2018 to July 2022)

SUBJECT ENROLLMENT:

INCLUSION CRITERIA:

All the skin biopsies that were received for histopathology examination during the study period at Histopathology Section, MGM Medical College, and Hospital, Navi Mumbai.

EXCLUSION CRITERIA:
Patients having inadequate skin biopsies or incomplete histories on requisition forms.

COLLECTION OF SAMPLES:
Patients of all ages were considered in the study. Clinical details of the patient including age, gender, affected site were taken from the requisition forms received in the histopathology laboratory.

METHODOLOGY:
The specimens were received as punch biopsies of skin and were sent in 10% buffered formalin and were processed by routine histopathological techniques[4]. All specimens were subjected to gross and microscopic examination. Sections were cut from the paraffin block, stained with H&E stain, Fite-Faraco stain and examined microscopically.

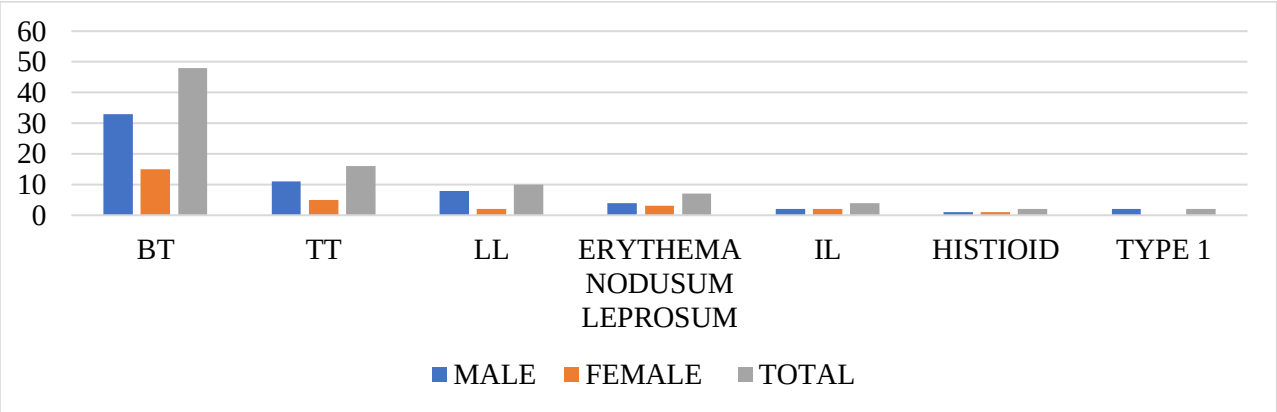
OBSERVATIONS:

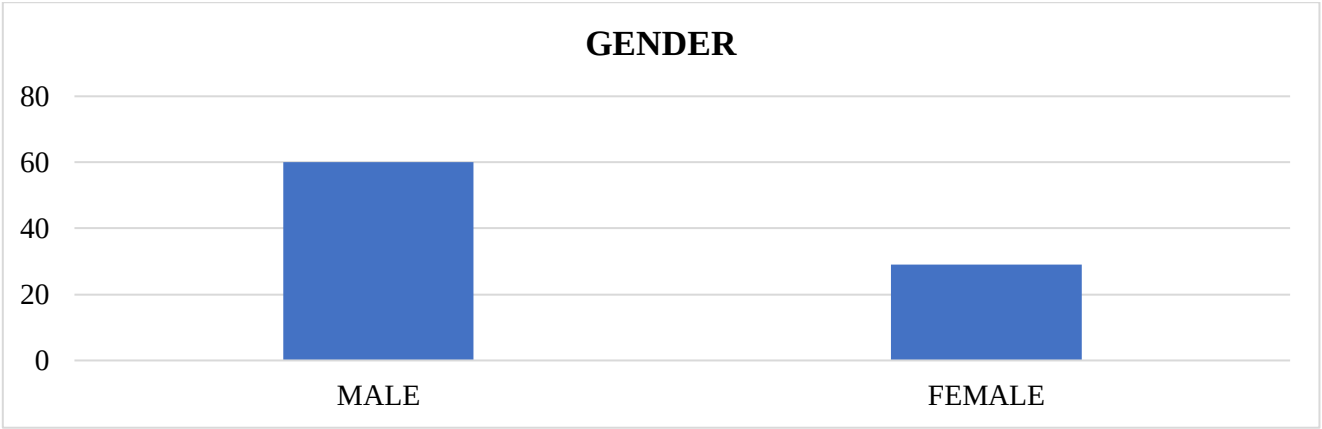
GENDER:
There was a total of 89 cases. 60 (67.41%) were male and 29 (32.58%) were female patients (table 1) with a characteristic male predominance noted with a male-to-female ratio of 2.07:1.

TABLE 1 – SPECTRUM OF LEPROSY WITH GENDER DISTRIBUTION

SR. NO	TYPE	MALE	FEMALE	TOTAL	PERCENTAGE (%)
1	BT	33	15	48	53.93 %
2	TT	11	5	16	17.97 %
3	LL	8	2	10	11.23 %
4	ERYTHEMA NODUSUM LEPROSUM	4	3	7	7.86 %
5	IL	2	2	4	4.49 %
6	HISTIOID	1	1	2	2.24 %
7	TYPE 1 LEPRA REACTION	2	0	2	2.24 %
	TOTAL	61	28	89	100

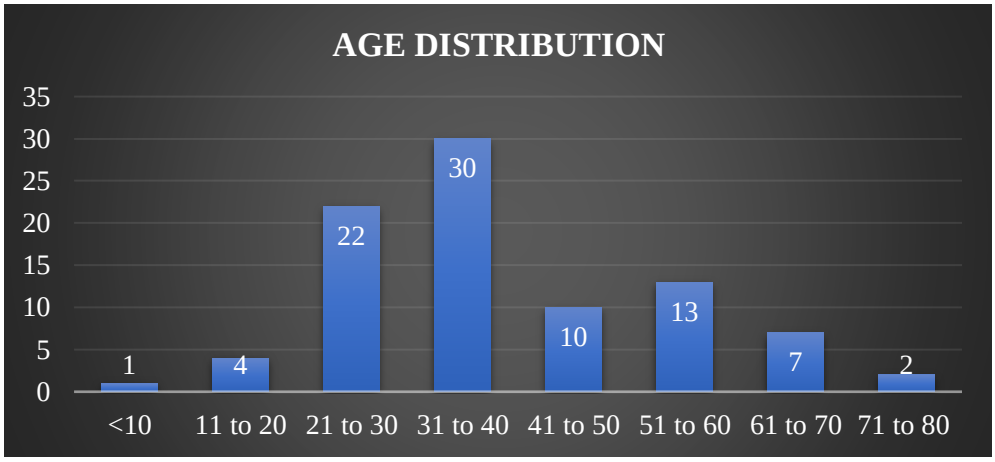
GRAPH 1 – SPECTRUM OF LEPROSY WITH GENDER DISTRIBUTION



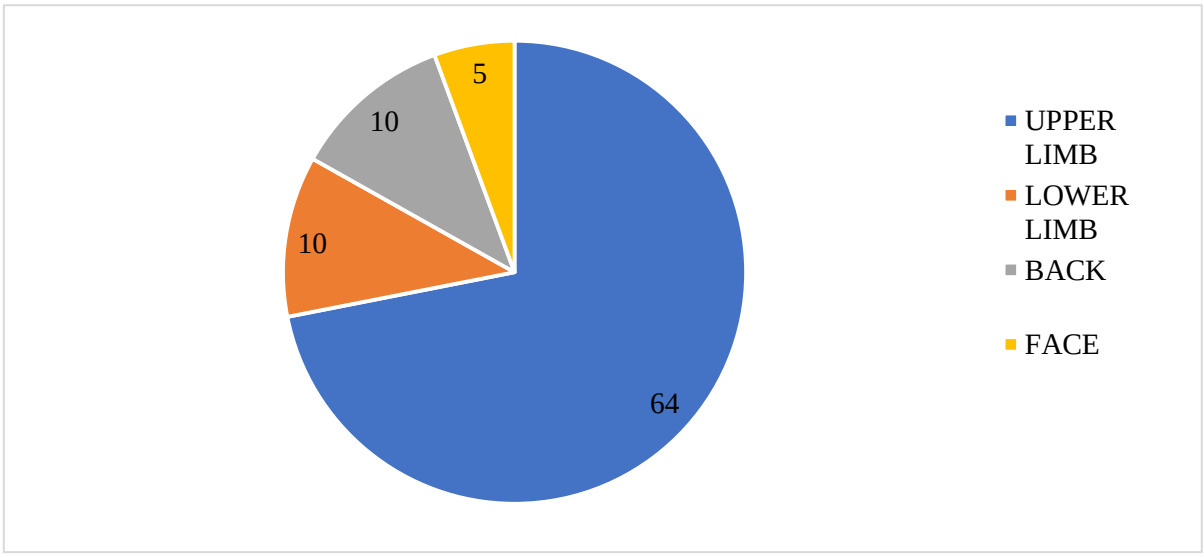


AGE:
The lesion was most frequent in the fourth decade of life with 30 (33.7%) patients belonging to the age group between 31 and 40 years and 22 (24.72 %) patients belonging to the age group between 21 and 30 years [Graph 2]. The mean age was 39.5 years, ranging from 7 to 77 years of life.

SR. NO	AGE GROUP	CASES	PERCENTAGE %
1	<10	1	1.12 %
2	11 to 20	4	4.49 %
3	21 to 30	22	24.72 %
4	31 to 40	30	33.70 %
5	41 to 50	10	11.23 %
6	51 to 60	13	14.60 %
7	61 to 70	7	7.86 %
8	71 to 80	2	2.24 %
	TOTAL	89	100



SITE OF OCCURRENCE:
An assessment of the site of occurrence showed the upper limb to be the most frequent site in 64 cases (71.91 %) followed by the back and face in 10 cases (11.23 %) each and the least common site of involvement was the face with only 5 cases (5.61 %).



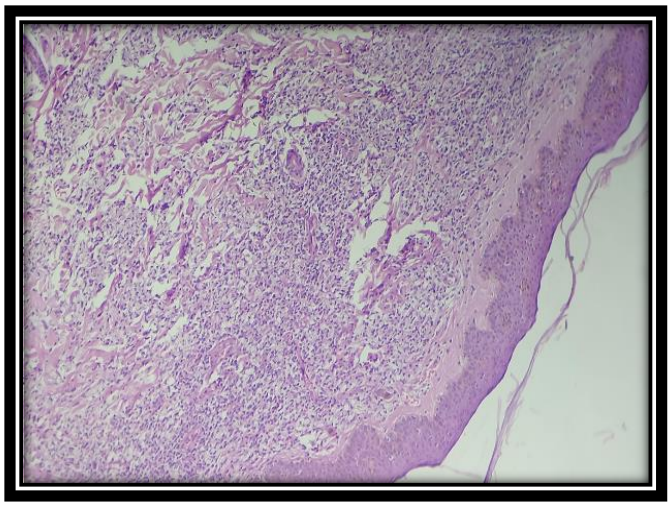
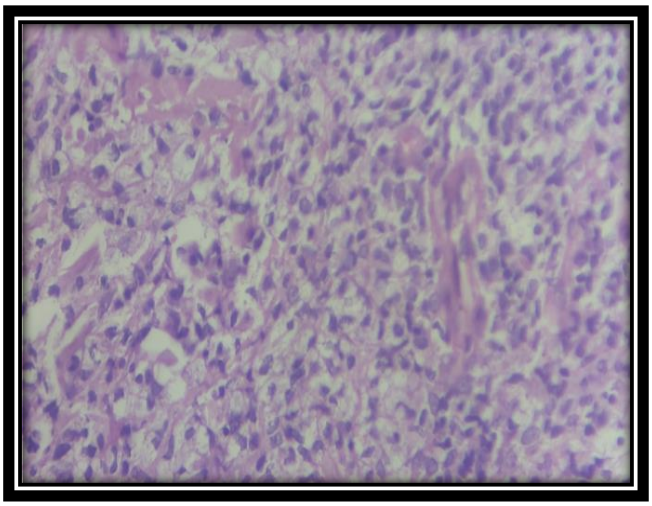



FIGURE 1 & FIGURE 2 - Lepromatous leprosy with spindle cells & proliferation of macrophages.

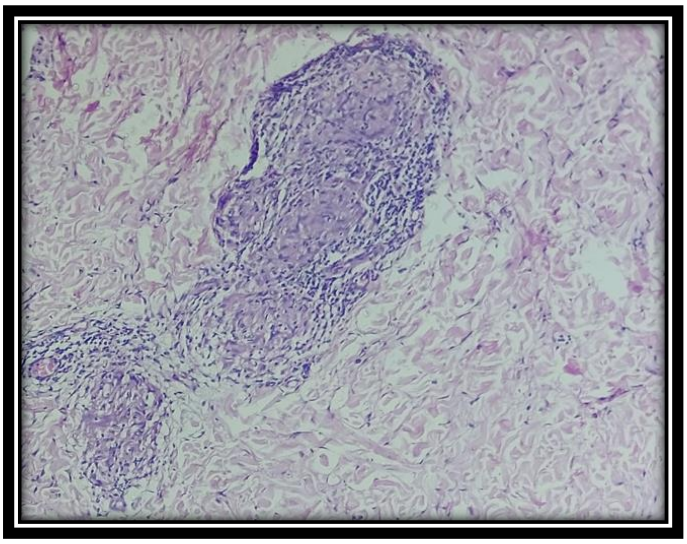
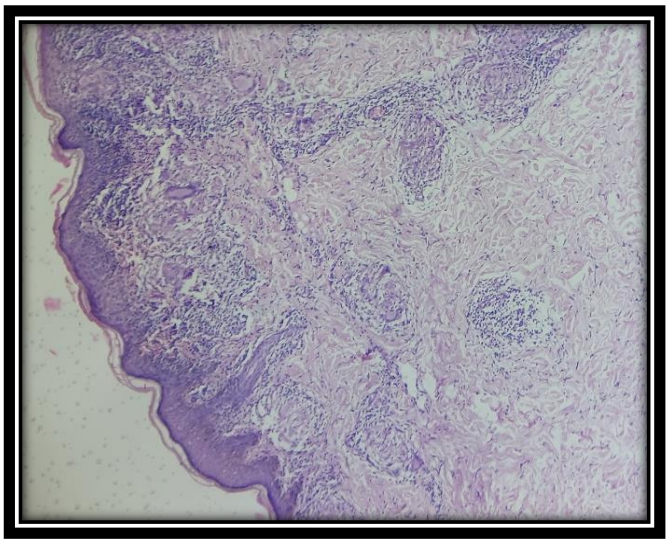



FIGURE 3 & FIGURE 4 Showing granuloma formation

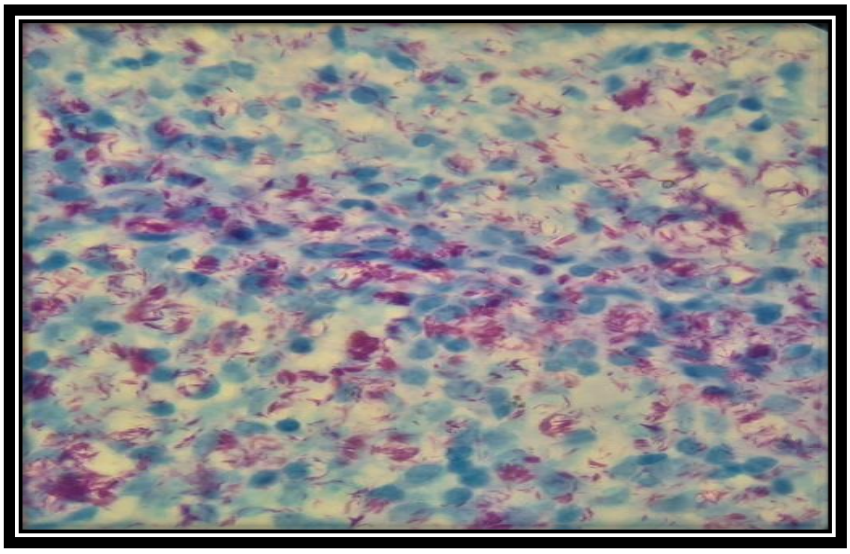


FIGURE 5 – Skin Biopsy stained with Fite-Faraco stain showing multi-bacillary lepra. formation is noted in varying degrees. ll

MICROSCOPIC FEATURES[4]:

Histopathology sections varied depending on the stage of the disease and when the biopsy was taken.

Indeterminate Leprosy – Sections of ID show mild perivascular and perineural lymphocytic and macrophage accumulation. Also, no presence of epithelioid cell granulomas is seen. The diagnosis is done based on the presence of one or more Acid-fast bacilli.

Lepromatous Leprosy – Sections of LL reveal an extensive cellular infiltrate separated from the epidermis by a grenz zone of collagen. There is no macrophage activation to form epithelioid cell granulomas. Lymphocyte infiltration is uncommon, but sometimes may be present.

Histoid Leprosy – Sections of histoid leprosy show the maximum number of Acid-fast bacilli. There is the presence of macrophage activation and the cells become spindle-shaped and oriented in a storiform pattern.

Borderline tuberculoid Leprosy – Sections of BT show epithelioid cell granulomas around neurovascular bundles and sweat glands. There is the presence of Langhans giant cells with scanty Acid-fast bacilli.

Tuberculoid Leprosy - Sections of TT reveal large epithelioid cells arranged in compact granulomas along with neurovascular bundles with dense peripheral lymphocyte accumulations. Langhans giant cells and Acid-fast bacilli are usually absent.

DISCUSSION:

SR. NO	TYPE OF LESION	OUR STUDY	SHIVASWAMY ET AL. [5]	SHENORI ET AL. [6]	MURTHY ET AL. [7]	ASHOK KUMAR ET AL[8].
1	BT	53.93	38.4 %	50 %	72.3 %	47.83 %
2	TT	17.97	17.5%	22 %	6.9 %	4.35 %
3	LL	11.23	12.6 %	6%	2.68 %	4.35 %
4	IL	4.49	15.8 %	11 %	6.72 %	30.43 %
5	HISTIOID	2.24	--	10 %	--	--

The most common lesion in the present study was Borderline Tuberculoid Leprosy which was in concordance with Shivaswamy et al., Senori et al., Murthy et al., and Ashok kumar et al. The most common age group affected was 31 to 40 years which is in concordance with Shivaswamy et al., though other studies found it in a younger age group. In the present study, a preponderance of males was seen with the Male: Female ratio being 2.27:1 which was in concordance with most of the studies except Murthy et al. The most common site affected was the upper extremities with the most common symptom being decreased nerve sensation.

CONCLUSION:

Males were more commonly affected than females with a maximum number of cases being in the 31 to 40 age group. The most common site affected was the upper extremities with the most common symptom being decreased nerve sensation. Depending upon the patient's immunological status, the lesion type differs. The most common lesion in the present study was Borderline Tuberculoid Leprosy. Exact typing of leprosy is sometimes clinically not possible, hence histopathological examination is essential in all suspected cases to find the type of leprosy.

CONFLICTS OF INTEREST: None.

AUTHOR CONTRIBUTION:

Dr. Stanley Samuel: Corresponding author, Design, Supervision, Materials, Data collection/processing, Analysis, Literature review, Writer.

Dr. Ushakiran Raina: Conception, Design, Supervision, Materials, Data collection/ processing, Analysis, Literature review, Writer, Critical Review.

Dr. Reeta Dhar: Literature review, Writer, Critical Review.

Dr. Shilpi Sahu: Literature review, Writer, Critical Review.

AUTHOR DECLARATION:

• Financial or Other Competing Interests: None

• Was Ethics Committee Approval obtained for this study? Yes

• Was informed consent obtained from the subjects involved in the study? NA
• For any images presented appropriate consent has been obtained from the subjects. YES

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