Original Article

Clinicopathological correlative study of different spectrum of Hansen's disease

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Abstract

The Hansen's disease (Leprosy) is at present under control. The WHO goal of containing the disease 1/ 10,000 population was achieved by India in 2005. But still the disease is prevalent in some pockets of India like chengalpet, North and South Arcot Districts of Tamilnadu[1]. The present study (a prospective and retrospective one) covering a period of 2 years from May 2013-April 2015. The study was conducted in a rural tertiary hospital, Government Tiruvarur Medical College Hospital, involving Department of Pathology and Dermatology. Total of 59 patients were studied.
Keywords: Hansen's disease/Clinicopathological correlation of Hansen's.

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INTRODUCTION

Hansen's disease is a chronic granulomatous inflammation caused by Mycobacterium leprae which affects predominantly skin and peripheral nerves even though the leprosy can be considered as a systemic disease. The disease affects all age group individual from early infancy to very old age. The Male: Female ratio is 2 : 1. The incubation period ranges from 2.9 to 5.3 years[2].The mode of transmission of leprosy is unknown, but it is probably inhalation of bacilli, which may be excreted from the nasal passages of a multibacillary patient, or possibly implanted from organisms in the soil.[3,4]The cardinal clinical signs of the disease are hypopigmentedanaesthetic patch, thickened and /or tender peripheral nerves. The Acid fast bacilli can be demonstrated in skin and / or nasal smear[5].According to Ridley and Jopling, leprosy is classified as TT (tuberculoid), BT (borderline tuberculoid), BB (midborderline), BL (borderline lepromatous), and LL (lepromatous)[6,7].

MATERIALS AND METHOD

This is a perspective and retrospective study where age and sex incidence of Hansen's Disease, Histomorphological spectrum of lesions as well as Clinical and histopathological concordance among the skin and nerve biopsies received in the Department of Pathology, Government Tiruvarur Medical College, Tiruvarur between May 2013 to April 2015. Skin and nerve biopsies from cases of leprosy received in the Department of Pathology, Government Tiruvarur Medical College Hospital, Tiruvarurfor a period of 2 years from May 2013 to April 2015 were included in the present study. A detailed clinical data comprising of the age, sex, site of lesion, signs and symptoms and clinical diagnosis were collected. The biopsy materials were fixed in 10% neutral buffered formalin and 5µ sections. were stained with Hematoxylin and Eosin stain (H and E) and modified Ziehl - Neelson stain (FiteFaraco stain) for lepra bacilli.

OBSERVATION AND RESULTS

During the period of study 166 skin and nerve biopsy specimens were received, out of these 59 biopsies (55 skin and 4 nerve biopsies) were diagnosed as Hansen's disease. BTHD was the most common histological lesion

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encountered (26 cases - 44.06%) followed by indeterminate leprosy (16 cases - 27.12%), BTHD in type I reaction (5 cases - 8.47%), BLHD (4 cases - 6.78%) pure neuritic leprosy (4 cases - 6.78%), LLHD (3 cases - 5.08%) and histoid leprosy (1 case - 1.67%).

Table 1: Spectrum of Hansen's disease

Types of leprosy	Number of patients	Percentage
Borderline tuberculoid Hansen's disease	26	44.06%
Indeterminate leprosy	16	27.12%
Borderline lepromatous Hansen's disease	4	6.78%
Polar lepromatous Hansen's disease	3	5.08%
Histoid leprosy	1	1.67%
Pure neuritic leprosy	4	6.78%
Borderline tuberculoid Hansen's disease in type I reaction	5	8.47%

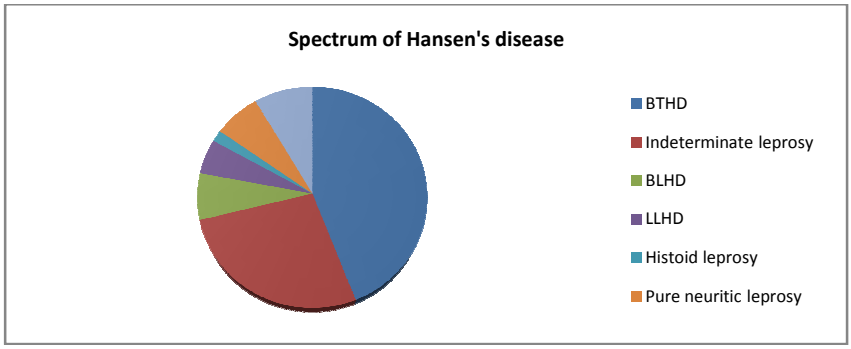


Figure 1: Age and sex incidence

In the present study, the youngest patient was 8 years old and the eldest was 63 years old with the mean age of 31.6 years and the median age of 29 years.

Table 2: Age and sex incidence

Age (years)	Number of patients													
	BTHD		Indetermin-ate leprosy		BLHD		LLHD		Histoid leprosy		Pure neuritic leprosy		BTHD in type I reaction	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
0 - 9	1			-										
n = 2		-	1		-	-	-	-	-	-	-	-	-	-
10 - 19														
n = 12	7	1	2	1	-	-	-	-	-	-	-	-	-	1
20 - 29														
n = 17	6	3	3	1	-	1	1	-	-	-	1	-	-	1
30 - 39														
n = 10	2	2	1	1	-	-	-	-	1	-	2	-	-	1
40 - 49														
n = 8	2	-	3	-	-	-	1	1	-	-	-	1	-	-
50 - 59														
n = 7	2	-	1	1	1	-	-	-	-	-	-	-	2	-
60 - 69	-													
n = 3		-	1	-	2	-	-	-	-	-	-	-	-	-
Total														
n = 59	**20**	**6**	**12**	**4**	**3**	**1**	**2**	**1**	**1**	**-**	**3**	**1**	**2**	**3**

Maximum incidence of BTHD (34.6%) and indeterminate leprosy (25%) was seen in 3rd decade. Majority of cases of BLHD, LLHD, pure neuritic leprosy and BTHD in type I reaction occurred in 7th, 5th, 4th and 6th decade respectively. In the present study out of 59 cases, 43 were males (72.8%) and 16 were females (27.2%). Male preponderance was seen in BTHD (76.9%), indeterminate leprosy, BLHD, pure neuritic leprosy (75% each) and LLHD (66.6%). There was 1 male patient with histoid

leprosy. Female preponderance was noticed in BTHD in type I reaction.

CLINICAL PRESENTATION

In present study, hypoanaesthetic lesion was the most common clinical presentation (52 cases - 88%) followed by hypopigmentation (47 cases - 79.7%), nerve thickening (47 cases - 79.7%), macules (34 cases - 57.6%), plaques (16 cases - 27%), nodules (6 cases - 10%) and erythyma (4 cases - 6.8%).

Table 3: Clinical presentation

Clinical features	Number of patients (n = 59)							Percentage (%)
	BTHD (26)	Indeterminate leprosy (16)	BLHD (4)	LLHD (3)	Histoid leprosy (1)	Pure neuritic leprosy (4)	BTHD in type I reaction (5)	
Hypoanaesthesia	26	13	4	3	-	1	5	88%
Hypopigmentation	24	14	4	2	-	-	3	79.7%
Erythema	2	-	-	-	-	-	2	6.8%
Macule	16	14	-	-	-	-	4	57.6%
Plaque	10	2	2	1	-	-	1	27%
Nodule	-	-	2	3	1	-	-	10%
Nerve thickening	20	10	4	3	1	4	5	79.7%

CONCORDANCE WITH CLINICAL DIAGNOSIS

Maximum clinicohistopathological concordance was seen with LLHD, histoid leprosy and pure neuritic leprosy (100%) followed by indeterminate leprosy (90%), BTHD (68.7%) and BLHD (60%). Overall concordance of diagnosis of spectrum of Hansen's disease was seen in 72.8% of cases (43 cases). Overall percentage of disagreement was in 27.2% of cases (16 cases).

Table 4: Clinicohistopathological correlation

Clinical diagnosis (no. of patients)	Histopathological diagnosis							Percentage of agreement
	BTHD	Indeterminate Leprosy	BLHD	LLHD	Histoid leprosy	Pure neuritic leprosy	BTHD in type I reaction	
BTHD (32)	22	4	1	-	-	-	5	68.7%
Indeterminate Leprosy (11)	1	10	-	-	-	-	-	90.9%
BLHD (5)	-	2	3	-	-	-	-	60%
LLHD (3)	-	-	-	3	-	-	-	100%
Histoid leprosy (1)	-	-	-	-	1	-	-	100%
Pure neuritic leprosy (4)	-	-	-	-	-	4	-	100%
No diagnosis (3)	3	-	-	-	-	-	-	0%
Total (59)	**26**	**16**	**4**	**3**	**1**	**4**	**5**	

MODIFIED ZIEHL - NEELSEN STAINING

All cases of BLHD, LLHD, histoid leprosy (100%) and 2 cases (50%) of pure neuritic leprosy were positive for modified Ziehl - Neelson stain where as all cases of BTHD, BTHD in type I reaction and Indeterminate leprosy were negative.

Table 5: Modified Ziehl - Neelsen Stain Positivity

Type of Hansen disease	Number of positive cases	Percentage
BTHD n = 26	0	0%
Indeterminate leprosy n = 16	0	0%
BLHD n = 4	4	100%
LLHD n = 3	3	100%
Histoid leprosy n = 1	1	100%
Pure neuritic leprosy n = 4	2	50%
BTHD in type I reaction n = 5	0	0%
Total n = 59	**10**	**16.9%**

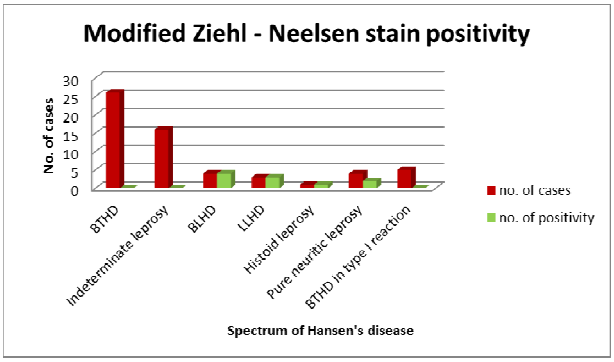


Figure 2

DISCUSSION

In the present study, the maximum incidence was seen in the age group of 20 – 29 years (28.81%) and the lowest incidence was seen in the age group of 0 – 9 years (3.39%). These findings are comparable with the studies of Niranjana Moorthy *et al* where majority between 20 – 29 years and least affected were below 9 years[8]. In the present study, out of 59 cases, 72.8% were males and 27.2% were females with male to female ratio (M:F) of 2.7 : 1. With Modified Ziehl - Neelsen stain for acid fast bacilli 100% positivity was noticed in BLHD, LLHD, histoid leprosy and 50% in pure neuritic leprosy. The findings in BLHD and LLHD are comparable with the study of Aryon de Almedia *et al* which shows 100% positivity for BLHD, LLHD[9]. In the present study, complete concordance of clinical and histopathological diagnosis was in 72.88% of the cases with maximum concordance in the diagnosis of LLHD, histoid leprosy and pure neuritic leprosy. This finding is comparable with the study of Niranjana Moorthy *et al*, where overall concordance was seen in 62.63% of cases with maximum concordance in the diagnosis of polar lepromatous Hansen's disease (80%)[8].

CONCLUSION

During the period between May 2013 to April 2015, 59 biopsies were diagnosed as Hansen's disease with higher incidence in the age group of 20 - 29 years (28.81%) and less incidence was noticed in children less than 9 yrs of age. Males show higher incidence (72.8%) than females. The most common clinical presentation was hypoanaesthesia (88%) followed by hypopigmentation (79.7%) and nerve thickening (79.7%). BTHD (44%) was the most common lesion followed by indeterminate leprosy (27.1%). Histoid leprosy was the least common (1.7%). Modified Ziehl - Neelsen staining showed 100% positivity in BLHD, LLHD, histoid leprosy and 50% positivity in pure neuritic leprosy. Overall concordance of clinical and histopathological diagnosis of spectrum of Hansen's disease was seen in 43 cases (72.88%) with maximum concordance in diagnosis of LLHD, histoid leprosy and pure neuritic leprosy (100%).Pure Neuritic Hansen and Histoid Hansen are peculiar to the Indian subcontinant. Further they are usually AFB +ve.

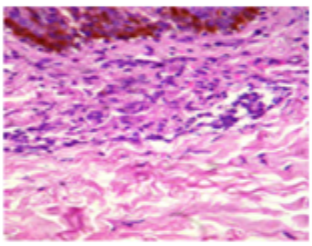
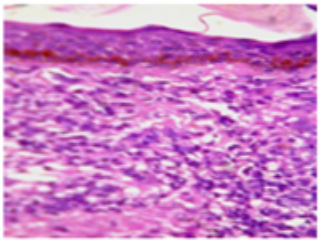


Figure 3



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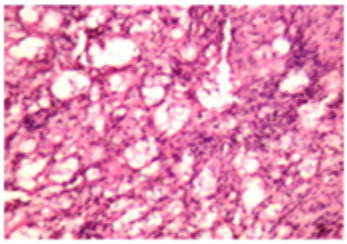

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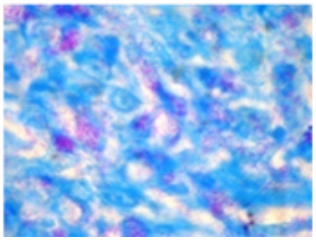

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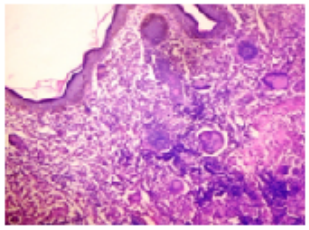

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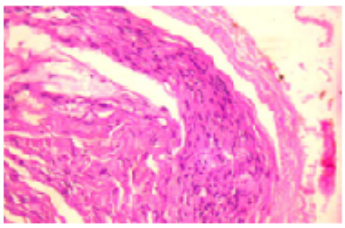

Figure 8

Legend

Figure 3: BTHD - Skin biopsy showing lymphocytic and epithelioid cells infiltration in the upper dermis.

Figure 4: BLHD - Skin biopsy showing atrophy of epidermis, grenz zone and collections of foamy macrophages, lymphocytes and epithelioid cells in equal proportion in the dermis.

Figure 5: Lepromatous HD - Skin biopsy showing collection of foamy macrophages in the dermis along with the evidences of ulceration.

Figure 6: Modified Ziehl – Neelsen stain (100 X) showing acid fast bacilli

Figure 7: BTHD IN TYPE I REACTION - Skin biopsy showing granuloma composed of lymphocytes, epithelioid cells and Langhan type of giant cells. The dermis is edematous.

Figure 8: Pure neuritic HD - Nerve biopsy showing infiltration by macrophages and few lymphocytes

REFERENCES

1. Sundar Rao PSS. Current epidemiology of leprosy in India from leprosy review provided by find articles at BNET www.findarticles.com/ai - n28435538
2. Prasal KVN, Ali PM. Incubation period of leprosy..Ind J Med Res1976, 11: 124 – 7.
3. David E Elder et al, Lever's histopathology of skin, 9thedn : 569 – 70
4. Lucas SB. Mycobacteria and the tissues of man. In: Ratledge C, Stanford J, eds. The biology of the mycobacteria, vol. 3. London: Academic Press, 1988:107
5. Prasad PVS. All about leprosy, 1stedn New Delhi. Jaypee brothers 2005, 1 – 3.
6. Britton WJ, Lockwood DNJ. Leprosy. Lancet 2004;363:1209- 1219
7. Ridley DS, Jopling WH. Classification of leprosy according to immunity: a five-group system. Int J Lepr 1966; 34:255.
8. Niranjana Moorthy B, Kumar P, Chatura KR, Chandrasekhar HR, Basavaraj PK. Histopathological correlation of skin biopsies in leprosy. Ind J Dermatol, Venereol and Leprol 2001, 67: 299 - 301.
9. Almedia AD, Jambeiro J, Cirqueira JSO, Silva TC. Retrospective histopathological classification of 1,108 skin biopsies from patients clinically suspected of having leprosy from Bahia, Northeast Brazil, Revista da sociedadeBrasileria de Medicina Tropical 1998, 31 : 533 - 7.

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