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CLINICOPATHOLOGICAL CORRELATION OF HANSEN'S PATIENTS OVER A PERIOD OF 1 YEAR - A RETROSPECTIVE STUDY IN A TERTIARY CARE HOSPITAL, AT KANCHIPURAM DISTRICT

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ABSTRACT Leprosy an ancient curable chronic infectious granulomatous disease. In the absence of the classic involvement of the peripheral nerves, the clinical manifestations of leprosy are diverse and can mimic a host of other skin disorders. The clinical classification of early lesions of leprosy is often difficult, where skin biopsy plays a crucial role in diagnosis.

KEYWORDS : Leprosy, clinic-pathological correlation, Fite- Farraco

Introduction

Hansen's disease (Leprosy), an ancient curable chronic infectious disease, still continues to be a significant health problem in developing countries.[1] Hansen's disease is a chronic granulomatous infectious disease caused by Mycobacterium leprae. In the absence of the classic involvement of the peripheral nerves, the clinical manifestations of leprosy are diverse and can mimic a host of other skin disorders.[2] In 1966, Ridley–Jopling classified leprosy according to clinical, bacteriological, immunological, and histological criteria into TT , BT , BB , BL , and LL .[3]

In 1982, WHO proposed simplified classification of pauci and multibacillary leprosy based on clinical findings and the bacteriological index (BI value 2 or more - therapy for MB leprosy and a BI value <2 - therapy for PB leprosy).[4] Clinical diagnosis in some cases can be difficult during which skin biopsies play an important role in diagnosing and classifying different types of leprosy.

Materials and Methods

It is a hospital based retrospective study. Skin biopsies obtained from patients clinically diagnosed as leprosy in the OPD and leprosy clinic of our institute (Karpaga Vinayaka Institute of Medical Sciences and research centre) between December 2017 and December 2018 were included in the study.

All the patients attending the dermatology OPD with clinical diagnosis of Hansen's were included. Exclusively only Hansen's cases were included.

Detailed history, clinical examination of each patient was done followed by Routine haematological tests and Skin biopsy in all the patients.

Result

The study included 13 cases which where clinically diagnosed into various spectrum of Hansen's disease, of which, 9 cases (69%) correlated histopathologically. Out of the 13 cases, 12 were newly diagnosed and one was an old case of Hansen's, who had completed his treatment 40 years ago. Majority were females constituting of 53.8% (7 cases) and 46% (6 cases) males. The patients presented were of ages ranging from 27 to 80 years of age.

The patients presented with a range of symptoms which were hypopigmented macule, non-healing ulcer, erythematous plaque. 69% patients (9 cases) presented with hypopigmented macules which was the most common complaint among all, followed by 15% patients (2 cases) complaining of erythematous plaques and 7% (1 case) each of an non-healing ulcer and a case which had an atypical presentation of multiple flesh coloured to hyperpigmented plaques on various areas of the body, involving the palms, where she had an ulcer too, and the soles.

Skin Biopsy was done in all these cases for diagnostic purpose, using a 5mm punch and involving the lesional area with all the layers of the skin. The most common epidermal change seen among these cases was epidermal atrophy in 54% (7 cases) of patients, followed by unremarkable changes in 38% (5 cases) of patients and a case showing follicular plugging. In dermal changes, clear grenz zone was seen in 31% (4 cases), followed by ill formed granulomas in 31% (4 cases) of patients, well-formed granulomas in 31% (4 cases) of patients and unremarkable in 23% (3 cases) of patients.

The dermal changes also includes the type of infiltrates, vascular changes and presence or absence of nerve destruction. The type of infiltrate seen in these cases includes more than one type of cells in a slide, of which most commonly seen was lymphocytes in 77% (10 cases) of patients, followed by epitheloid cells in 46% (6 cases) of patients. More than one type of infiltrates were present in a single slide which has all been documented. Vascular changes like perivascular infiltrates were seen in 23% (3 cases) of patients and a case of leucocytoclastic vasculitis in type II reaction patient with presence of neutrophils in the vessel wall was recorded. There were no vascular changes seen in rest of the cases. Similarly, periappendageal infiltrates were seen in 61% (8 cases) of patients and nerve destruction seen in 15% (2 cases). Special stain, Fite faraco was done in all the cases, which showed positivity in 3 cases, one, with cigar bundles (BI- 4 to 5) and two with globi of bacilli (BI-4).

In the present study, the clinico-histopathological correlation was present in 69% (9 cases) of cases.

Table 1- Showing the epidermal changes seen in each type of diagnosed leprosy cases.

Epidermal Changes	TT	BT	BB	BL	LL	IL	Total
Atrophic	-	1	-	1	1	-	3 (23.07%)
Follicular plugging	-	1	-	-	-	-	1 (7.69%)
Unremarkable	1	1	-	1	-	-	3 (23.07%)

Table 2- Showing the dermal changes seen in each type of diagnosed leprosy cases.

Dermal Changes	TT	BT	BB	BL	LL	IL	Total
Clear Grenz zone	-	-	-	1	1	-	2 (15.38%)
Ill formed granuloma	1	3	-	-	-	-	4 (30.76%)
Well-formed granuloma	-	-	-	2	-	-	2 (15.38%)
Perivascular infiltrates	-	1	-	-	-	1	2 (15.38%)
Leucocytoclastic vasculitis	-	-	-	-	1	-	1 (7.69%)
Periappendageal infiltrates	1	3	-	2	-	-	6 (46.15%)
Nerve destruction	-	-	-	2	-	-	2 (15.38%)

Epitheloid cells	1	3	-	2	-	-	6 (46.15%)
Foamy histeocytes	-	-	-	2	-	-	2 (15.38%)
Giant cells	-	1	-	1	-	-	2 (15.38%)
Fite faraco positivity	-	-	-	2	1	-	3 (23.07%)

Figure 1- Showing variety of skin lesions in a case of LL type of hansen's.
A- an ulcer on the left thumb with surrounding hyperpigmentation and scaling.
B & F- induration present on the ear lobe and the pinna of the ear.
C & D- Multiple erythematous to hyperpigmented papules and plaques.
E- Multiple hyperpigmented macules with irregular borders.

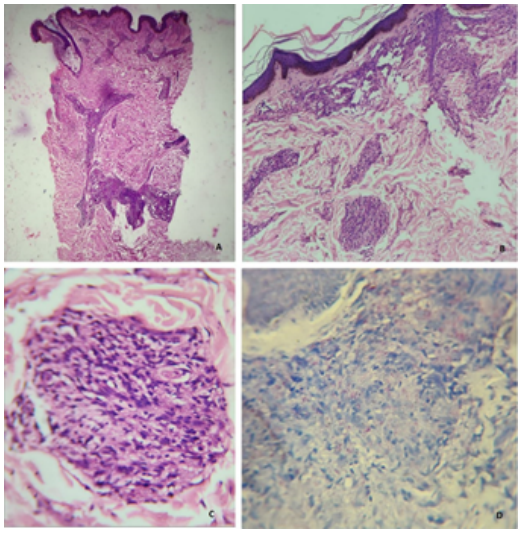

Figure 2- Showing the histopathological features of a case of BL spectrum of Hansen's.
A- Scanner view showing the full view of the biopsy specimen including the epidermis, papillary and reticular dermis.
B- Showing 10x view viewing a clear grenz zone just below the epidermis with multiple well formed granulomas.
C- High power view of a well formed epitheliod type of granuloma with multiple foamy macrophages.
D- Fite faraco stained slide with the eosinophilic stained bacilli.

Discussion

Leprosy is a chronic infectious and slowly progressive disease, which can express itself in different clinicopathological forms depending on the immunity of the host.[5] It primarily affects the skin and the peripheral nerves.[6] It can can cause permanent damage to the skin, nerves, limbs, and eyes.[7] The age of the patients in the present study ranged from 27 to 80 years of age. In other previous studies conducted in india observed majority (48–52.3%) of their study patients belonging to 21 to 40 years of age.

In the present study, majority of the patients were females (54%), unlike other studies like Rizvi et al and Manandhar et al, in which they observed male preponderance.[8,9] This was thought to be attributed to increased chances of exposure due to job-related mobility and also inhibition of many females from approaching the hospital for treatment because of social taboos and customs.[8] But, the modern day women are working shoulder to shoulder with the men of the community, so the communicable diseases like this is not sparing them too.

The most common symptom noted in our study was hypopigmented macules in 69% patients, followed by erythematous plaques, non-healing ulcer and multiple hyperpigmented plaques. In the study conducted by Rizvi et al, symptoms like loss of sensation (70%), nerve thickening (67.5%), hypopigmented macules (61.25%) and erythematous patches (41.25%) were noted. Moorthy et al found hypopigmented lesions in 80.9% of his study population to be the most common clinical finding.[10]

The cellular characteristics in leprosy lesions are related to the immunological modulation of the patient. Hence, different grades of modulation affect the host defensive response and result in different types of clinicopathological pictures.[11] The selection of the site for biopsy is very important in histopathological diagnosis as clinically dissimilar lesions biopsied from the same patient can show different types of histopathology.[12]

Various epidermal changes and dermal changes were taken into account in the histopathology of the present study. The epidermal changes noted were epidermal atrophy (53.8%), a case showing follicular plugging, a case showing hyperkeratosis and rest unremarkable. In a study conducted by Banushree et al, epidermal features included were atrophy (29.9%), erosion (24.3%) and rest, which was the majority, unremarkable (45.8%). The dermal changes in the present study are presence of clear grenz zone (30.7%), ill formed epitheloid cell granulomas (30.7%), well formed granulomas (15.38%) and unremarkable (23%).[13] Infiltrates found in our study included epitheloid cells (46%), foamy histeocytes (15.38%) and langhan type of giant cells (15.38%). Banushree et al found epitheliod granuloma in 44.85%, grenz zone in 24.3%, giant cells in 13.08% and macrophages in 27.10% of the study population. Fite faraco staining was also done and showed positivity in two BL spectrum of Hansen's cases with BI 4 to 5.[13]

The clinic-histopathological correlation was observed in 69.23% of Hansen's cases in our study with majority of cases in the BT spectrum. Kumar et al, out of 372 cases, 269 (72.31%) were BT.[10] In a study of Bal A et al, out of 303 leprosy cases, 206 was BT.[14] Manandhar U et al studied 75 cases in which 30 (40%) cases were BT histologically.[9] Kumar et al in 2000, found clinicopathological correlation in 60.6% of cases and Rizvi et al in 2015 in 70% cases.[10,8] Pandya et al study showed the least concordance with 58%.[15]

Table 3- Showing comparison of clinic-histopathological correlation between present and various other study.

Present study	Kumar et al	Rizvi et al	Pandya et al
69.23%	60.6%	70%	58%

Conclusion

The main backbone of leprosy control depends on reducing the load of infection in the society by breaking the chain of infection, by proper case detection and ensuring their satisfactory treatment at the earliest. The clinical classification of early lesions of leprosy is often difficult as compared to the later full blown disease, keeping in mind the cardinal signs of the disease. This is aided by investigations like slit skin smears and skin biopsy. Histopathological examination plays a crucial role in diagnosis in cases where there is clinical overlap in the diseases. Correlation of clinical and histopathological features along with bacteriological index is more useful for accurate typing of leprosy. As there is growing number of newly detected cases in the country and increase in atypical presentation of this disease, clenching the proper diagnosis becomes very important to avoid increase in its spread in the society.

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