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Original article

Recent trend in leprosy: Histopathological study aspect in a tertiary care hospital

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Abstract:

Introduction: Leprosy is a chronic infectious treatable disease, prevalent *in* India.Before the start of treatment,it should be diagnosed properly by clinical manifestations as well as by histopathological examination. Ridley-Jopling scale for confirmation of diagnosis and classification of leprosy.

Material & Methods: . One hundred and four (104) newly diagnosed cases of leprosy which underwent skin biopsy for histopathological examination during the period January 2014to July 2015 at JNMC,sawangi were included in the study. All sections were stained with hematoxylin and eosin and Fite Faraco stain. The criteria of Ridley and Jopling was utilized to diagnose and classify the cases

Observation and Results: In study , 59.62% were males and 40.38% were females. Male to female ratio was 1.5:1.Majority patients i.e. 63(60.58%) were in group of 21 to 40 years. Most patients presented with hypopigmented patch in 79 cases (75.96%). Most common site was upper limb(67.8%),followed by back(30.2%) and lower limbs(2%).Clinically, maximum49 cases were diagnosed as lepromatous leprosy i.e.LL(47.12%),followed by borderline leprosy i.e.BL(19.23%) and tuberculid leprosy i.e.TT(19.23%). On histopathological examination also ,maximum cases were leprmatous leprosy (46.15%),followed by borderline leprosy(23.08%),tuberculoid leprosy(20.19%).So clinical diagnosis was in concordance with histological diagnosis.Out of total 104 cases,65 (62.5%) showed acid fast bacilli with Fite Faraco.77(74.04%) cases showed good correlation between clinical and histological diagnosis. Maximum correlation was observed in LL(85.71%), TT(80%), cases. Followed by BL(75%),IL(50%)BT(42.85%).Least correlation was seen with BB(0%).

Conclusion:

Leprosy being a immunological disdorder present with different forms.So clinic-histopatholocal profile analysis of leprosy cases contribute to accurate typing of the disease.

Key Words: Leprosy,Histopathological

Introduction:

Leprosy (Hansen's disease) is a chronic granulomatous infectious disease primarily affecting the skin and nerves caused by Mycobacterium Leprae. Leprosy expresses itself in different clinico-pathological forms depending on the immune status of the host.From the international congress of Leprosy of the Madrid,in 1953,patients have been divided into groups according to clinical forms of the disease as indeterminate(I),tuberculoid(T),borderline(B) and lepromatous(L)[1] .Ridley and Jopling (1966) proposed a five group histological classification reflecting the immunological spectrum and this classification has been widely accepted by histopathologists.

The histopatho-logical criteria,granuloma cell type, bacterial load (BI), the number and distribution of lymphocytes, pathologic changes in nerves and the presence or absence of the subepidermal grenz zone and encroachment of epidermis form the microscopic basis for the classification.At one end

of the spectrum is Tuberculoid leprosy (TT), which is manifested with few lesions and a paucity of organisms. At the other end is Lepromatous Lepromatous leprosy (LL), in which there are numerous lesions with myriad bacilli and an associated absence of cellular immune response.In between these poles are Borderline-Tuberculoid (BT), Borderline Borderline (BB) and Borderline-Lepromatous (BL) leprosy. Polar forms (TT and LL) are the most stable and the Borderline forms (BB) the most labile. The indeterminate forms include the cases that do not fit into any of the five group[2].

The World Health Organization (WHO), recommends categorization into paucibacilly(PB) and multibacillary(MB) based on skin lesions and /or nerve trunk involvement.

At times typing of leprosy is not possible on clinical ground.Slit skin smear may also give false diagnosis.Histopathological examination of such skin lesions should be done in all suspected cases.

Aim and objective: The present study was carried out to categorise skin biopsies of leprosy into various subtypes on histopathological examination ,so as to facilitate the institution of accurate mode of therapy and regular follow-up of patients to prevent undesirable complications..

Material & Methods:

The present study was carried out at the department of Pathology, JN Medical College ,Sawangi, Wardha, India. One hundred and four (104) newly diagnosed cases of leprosy which underwent skin biopsy for histopathological examination during the period January 2014to July 2015 were included in the study. Leprosy cases presenting with clinical manifestations or histopathological changes suggestive of lepra reactions were excluded from the study. The criteria of Ridley and Jopling was utilized to diagnose and classify the cases clinically and histopathologically. All these biopsies were fixed in 10% formalin, processed and sectioned. All sections were stained with hematoxylin and eosin. Fite Faraco stain to demonstrate acid fast bacilli was also used.

Observation and Results:

A total of 104 cases of leprosy were included in the present study out of which 62(59.62%) were males and 42(40.38%) were females. Male to female ratio was 1.5:1. The age of the patients ranged from 20 years to 80 years. Majority of the patients i.e. 63(60.58%) were in the age group of 21 to 40 years ,followed by 32(30.77%) in 41-60 yrs and 9(8.65%) in 61-80 years. Most of the patients presented with hypopigmented patch in 79 cases (75.96%) and the remaining cases with erythematous macule/papule/nodule. Most common site was upper limb(67.8%),followed by back(30.2%) and lower limbs(2%).

Clinically, maximum49 cases were diagnosed as lepromatous leprosy i.e.LL(47.12%),followed by borderline leprosy i.e.BL(19.23%) and tuberculid leprosy i.e.TT(19.23%). Least cases were diagnosed as borderline tuberculide(BT), midborderline(BB), indeterminate leprosy(IL). On histopathological examination also ,maximum cases were diagnosed as leprmatous leprosy (46.15%),followed by borderline leprosy(23.08%), tuberculoid leprosy(20.19%).So clinical diagnosis was in concordance with histological diagnosis. All sections were stained with Fite Faraco stain.Out of the total 104 cases,65 (62.5%)cases showed acid fast bacilli

Table 2 shows correlation of clinical and histological diagnosis. Among 104 cases,77 (74.04%) cases showed good correlation between clinical and histological diagnosis. Maximum correlation was observed in LL(85.71%), TT(80%), cases. This was followed by BL(75%),IL(50%)BT(42.85%).Least correlation was seen with BB(0%).

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Discussion:

Leprosy is a slowly progressive, chronic infectious disease which can express itself in different clinic-pathological forms depending on immune status of the host. Depending on degree of immunity, clinical and histopathological features of various types of leprosy gradually develop. Histopathological examination of skin or nerve biopsies and demonstration of acid fast bacilli in histopathological section and in slit skin smear aid in diagnosis of leprosy. In our study, majority cases were male(59.62%).. Male to female ratio was 1.5:1. Biological and socio-cultural factors have been the main reason for higher incidence of leprosy in men .Similar findings are seen with Suri SK et al[3],Sehgal et al[4],Nadkarni et al[5], Bijjaragi et al[6]. Male predominance may be because of more chances of contact,urbanization,industrialization. Leprosy can be seen in any age. In our study ,maximum cases were from 21-40 yrs age group with mean age 28 yrs. Similar findings are seen with Suri SK et al[3], Sehgal et al[4], Nadkarni et al[5] ,Bijjaragi et al[6] .Leprosy in young age points towards endemicity of the disease.

Most of the patients presented with hypopigmented patch in 79 cases(75.96%) and the remaining with erythematous macule. In a study by Mittal et al[7], 63/102 (61.76%) cases had hypopigmented macules and 38.24% cases had erythematous nodules which is similar with our study. In a study by M Giridhar[8], hypopigmented patches/macules were the lesions most frequently biopsied (68%) and in these skin lesions, features of TT, BT, IL were frequently found and out of 32% cases of erythematous nodules/plaques/papules, most of cases showed features of BL and LL.

Clinically,most cases were lepromatous leprosy(47.12%),followed by borderline leprosy(19.23%) and tuberculid leprosy(19.23%). Least cases were diagnosed as borderline tuberculide, midborderline leprosy ,indeterminate leprosy. On histopathological examination also ,maximum cases were diagnosed as leprmatous leprosy (46.15%),followed by borderline leprosy(23.08%),tuberculoid lessprosy(20.19%).So clinical diagnosis was in concordance with histological diagnosis in most cases. Lepromatous is the form of leprosy presenting with low resistance towards the infection. It indicate immunologically depressed population or delay in approaching health services for the treatment.

The correlation between clinical and histopathological classification is shown in table 2.The overall concordance between clinical and histopathological classification was 74.04% .Different studies showing clinic-histopathological correlation are shown in table 3.They shows varying correlation. Our study showed that showed maximum clinico-histopathological correlation was seen in LL(85.71%),TT(80%), followed by BL(75%) IL(50%)and BT(42.85%) .Least correlation was seen withBB(0%). So,more correlation was seen in polar types of leprosy compared to the borderline types .Similar finding of maximum clinico-histological correlation in leprosy was also seen with other studies by Anuja Sharma et al[9] Shenoi& Sidappa[10] , Pandey & Tailor [11], Bhatia et al [12], Kalla et al[13] and Shanker Naryan et al [14].Least agreement was seen in cases of mid borderline leprosy in this study, which is in concordance to the observations recorded by Anuja Sharma et al [9],Shenoi & Siddappa[10], Nadkarni & Rege[5], , Moorthy et al [15],Bhatia et al[12], Kalla et al[13], Shankar Naryan et al[14]and Singhi et al[16].

The histopathological features in leprosy indicate the accurate tissue response while the clinical features indicate only the gross morphology of the lesions caused by the underlying pathology.Since

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tissue response varies in the disease spectrum due to variability of cell mediated
immunity, it is logical to expect some disparity between clinical and histopathological features.

Histopathological analysis of the cases in the present study is shown in table4 . According to Ridley and Jopling histopathological criteria attention is given to the epidermal atrophy, presence of clear sub epidermal Grenz zone, dermal inflammatory infiltrate, presence and composition of granulomas , presence of giant cells and relative proportion of lymphocytes and foamy histiocytes. In histopathological examination,88% cases had epidermal atrophy.In remaining cases,it was unremarkable.Grenz zone was seen in all the LL cases,whereas it was abscent in TT.Granuloma was the main feature of tuberculoid leprosy.

Conclusion:

Leprosy being a immunological disdorder present with different forms.So clinic-histopatholocal profile analysis of leprosy cases contribute to accurate typing of the disesse.Study of different forms,may help the health agencies to plan their activities towards the population.

TABLE 1:SEXWISE DISTRIBUTION OF CASES

	Male	Female	Total
TT	6	15	21(20.19%)
BT	6	-	6(5.77%)
BB	3	-	3(2.88%)
BL	12	12	24(23.08%)
LL	33	15	48(46.15%)
IL	2	-	2(1.92%)
Total	62	42	104

TABLE 2: Comparision of Clinical and Histological diagnosis

Clinical		TT	BT	BB	BL	LL	IL	Correlation
TT	20	16	2	2				16/20
BT	7	3	3	0			1	3/7
BB	6	2		0	2	2		0/6
BL	20			1	15	4		15/20
LL	49				7	42		42/49
IL	2		1				1	½
TOTAL	104	14	11	5	30	42	2	77/104

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TABLE 3:Clinico –histological correlation by different studies

	Year of study	Clinico –histological correlation
Mitra and Biswas	2000	57.6%
Anuja sharma	2008	53.44%
Bijaragi	2012	57.3%
M Giridhar	2012	60.23%
Present study	2015	74.04%

TABLE 4: Histopathological features of Leprosy

	TT	BT	BB	BL	LL	IL
Epidermal atrophy	18	6	3	24	48	2
Grenz zone	-	1	1	23	48	-
Macrophages	-	-	3	24	48	-
Lymphocytes	15	6	3	24	10	2
Granuloma	-	-	1	24	48	-
Giant cells	5	5	-	-	-	-

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