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HETROGENICITY IN CLINICAL AND HISTOPATHOLOGICAL CLASSIFICATION OF LEPROSY

Pathology

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ABSTRACT

INTRODUCTION: Leprosy is a chronic granulomatous disease of the peripheral nerves, mucosa of the upper respiratory tract and skin. Due to its clinical diversity as well as its ability to mimic other diseases, makes histopathological examination a helpful diagnostic tool to confirm the diagnosis.

METHOD AND MATERIAL: A prospective study was conducted in a tertiary care teaching institute in Jammu. In this study, all newly diagnosed untreated patients were enrolled over a period of one year.

RESULTS: A total of 56 cases of leprosy were studied over a duration of one year. Patients of both sexes were affected with predominance of males. Preponderance of leprosy was seen in the age group of 21-30 years. Both clinically and histopathologically, BT constituted the predominant group. Maximum clinico-histopathological concordance was prominent in indeterminate leprosy.

CONCLUSION: Histopathological examination of skin lesions is gold standard for precise diagnosis and typing of leprosy.

KEYWORDS

Leprosy, Skin, Boderline

INTRODUCTION:

Leprosy also known as Hansen's disease named after physician Hansen.[1] Its causative agent is Mycobacterium Leprae which parasitizes macrophages and Schawann cells.[2,3] It is a chronic granulomatous disease of the peripheral nerves, mucosa of the upper respiratory tract and skin lesions are the primary external sign. Left untreated, leprosy can be progressive, causing permanent damage to the skin, nerves, limbs and eyes.[1] According to the Ridley and Jopling classification (1966), leprosy can be divided into five groups on the basis of clinical, histopathological and immunological status of the host: tuberculoid leprosy (TT), borderline tuberculoid leprosy (BT), mid-borderline leprosy (BB), borderline lepromatous leprosy (BL), and lepromatous leprosy (LL).[4] Histopathological examination not only helps in confirmation of the diagnosis but also helps in exact typing of the disease.[5,6] A reliable diagnosis hinges around a good histopathological diagnosis and demonstration of acid fast bacilli (AFB) in histopathological sections.[6,7] Modified Fites procedure has proved to be the most valuable in demonstrating leprae bacilli in tissues sections.[8] Due to its clinical diversity as well as its ability to mimic other diseases, leprosy is sometimes difficult to diagnose clinically, making histopathological examination a helpful diagnostic tool to confirm the diagnosis.[9]

The present study was conducted to establish the importance of skin biopsy in identifying and diagnosing difficult cases where clinical diagnosis alone was not adequate and therefore, a transparency considering a clinico-pathological correlation in leprosy assumes greater importance.

METHOD AND MATERIAL:

A prospective study was conducted in a tertiary care teaching institute in Jammu. In this study, all newly diagnosed untreated patients were enrolled over a period of one year. Skin biopsies of these patients were taken from the active lesions after taking their informed consent. A detailed clinical history and examination was carried out in the Department of Dermatology that was recorded in a predesigned proforma. After receiving the skin biopsies sent to the Department of Pathology, the tissue was fixed in 10% formalin, dehydrated with ascending grades of alcohol, cleared in xylene and embedded in paraffin. There after 3-5 micron thick paraffin sections were cut on a rotary microtome, dewaxed and stained with haematoxylin and eosin and further stained by modified Fite- Faraco method for identification of Mycobacterial Leprae. Bacterial index were calculated in the tissue biopsy specimen using Ridley's method microscopically using an oil immersion objective (100X).[10]

The correlation between clinical and pathological findings was evaluated. Histopathological criteria used for clinical correlation was the flattening of epidermis, involvement of sub-epidermal zone, character and extent of granuloma formation, density of lymphocytic infiltrate, nerve involvement, presence of M. Leprae and epitheloid cells and other cellular elements in biopsy sections.[4]

Exclusion criteria:[11]

- Cases with inadequate biopsies which did not include full depth of the dermis
- Patients already treated with antileprosy medication
- Cases showing features of reactional leprosy
- HIV positive cases, Pregnant women and Diabetic patients
- Patients on immunosuppressive drugs (like corticosteroids etc)

RESULTS:

A total of 56 cases of leprosy were studied over a duration of one year. Patients of both sexes were affected with predominance of males (39; 69.6%%) with a male to female ratio of 2.2:1. Preponderance of leprosy was seen in the age group of 21-30 years (28; 50%).

Both clinically and histopathologically, BT constituted the predominant group 33.9% and 26.7% respectively, followed by LL which showed clinical diagnosis in 25% and histopathological diagnosis in 23.21% patients. (Figure 1)

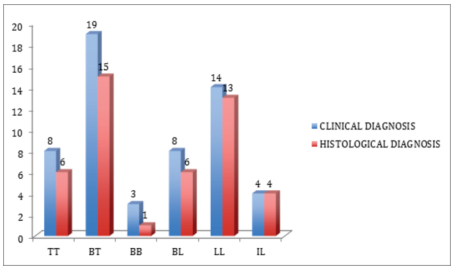

Figure 1: Distribution of cases on basis of clinical and histological diagnosis

Maximum clinico-histopathological concordance was noticeable in indeterminate leprosy (100%), followed by LL (92.8%) and BT (78.9%). The least concordance was found in mid-borderline leprosy (33.3%). (Table 1)

CLINICAL DIAGNOSIS	HISTOLOGICAL DIAGNOSIS						PARITY %AGE
	TT	BT	BB	BL	LL	IL	
TT (8)	6	2					75%
BT (19)	1	15	2			1	78.9%

BB (3)		1	1	1			33.3%
BL(8)			2	6			75%
LL (14)				1	13		92.8%
IL (4)						4	100%
TOTAL (56)	7	18	5	8	13	5	80.3%

Table 1- Clinico-Histopathological Correlation
TT-Tuberculoid, BT-Borderline Tuberculoid, BB-Mid Borderline, BL-Borderline Lepromatous, LL- Lepromatous, IL- Indeterminate

DISCUSSION:

Accurate and timely diagnosis of leprosy is the only way to control it, as it is the disease of humans and only source of infection is a patient of leprosy itself. It is an important public health problem in our country, with Uttar Pradesh, Bihar, Maharashtra and West Bengal being the states with the supreme number of case.[12]

Of the 56 patients in the present study, 28 (50%) patients with age group of 21-30 years (3rd decade) were affected most and extremes of age (0-10 years and >60 years) were affected least. Similar observations were made by Kumar A et al[13], Hazarika D et al[12] and Mathur MC et al[14] with 23.87%, 29.16% and 30.77% of cases, respectively.

The clinical profile of patients in the present study showed the majority of the patients i.e. 30 (53.5%) to be borderline leprosy. Similar dominance of cases in borderline group was also noted by Kumar A et al[13], Bijjaragi S et al[15] and Nadia et al.[16]

Hundred precent concordance was observed in indeterminate leprosy i.e. four out of four patient showed correspondence between clinical and histopathological finding. This finding resembles to studies done by Sharma A et al[11] and Kansagara M H et al[17]. But in divergence to our observations, studies done by Mathur MC et al[14], Bijjaragi S et al[15] and Manandhar U et al[18] showed highest clinico-histopathologic correlation in LL subtype of leprosy, 95.2 %, 84.2%, 93.8%, 76.2% and 57.1% respectively.

The present study showed an overall clinico-histopathological concordance of 56.94%. The incongruity between clinical and histopathological diagnosis was noticed because the clinical diagnosis was based on the naked eye gross morphology of the lesions as a result of the underlying pathology; whereas the histopathological parameters used in leprosy were well defined and precise, indicating the accurate response of the tissue, conversely, taking into account the immunological manifestations as well.

Selection of the site for biopsy plays a vital role in histopathological diagnosis as clinically different lesions biopsied from same patient can show different types of histopathology. There can also be some inter observer disparity both clinically and histopathologically, leading to overlap between different types of leprosy.[19]

CONCLUSION:

Multidrug therapy (MDT) remains the cardinal point in eliminating the disease. Since 1995 WHO provides free MDT to all patients.[20] Prior to starting MDT for particular type of leprosy, the clinical findings should be correlated and confirmed with histopathological examination and bacteriological index of skin biopsy.

Histopathological examination of skin lesions is gold standard for precise diagnosis and typing of leprosy.

Pronounced variation in the understanding of clinical and histopathological interpretations amongst various investigators in their studies encouraged us to undertake this study.

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