A Study on Variants of Hansen's Disease Diagnosed Clinically and Correlated Histopathologically in A Tertiary Care Institute

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Abstract:
Objective:*Leprosy is a chronic infectious disease caused by Mycobacterium leprae expresses itself in different clinico pathological forms,depending on the immune status of the host.Ridelyjopling criteria is widely used for classifying leprosy based on clinical features.The demonstration of acid fast bacilli on slit skin smear examination and skin biopsies aid in its diagnosis.The aim of present study is to observe the clinicohistopathological correlation of skin lesion in all patients with a clinical diagnosis of Hansen's disease.*
Material And Methods: *The study include skin biopsy of all suspected cases of Hansen's disease received over aperiod of two years.*
Result: *From this study it was observed that commonest group affected by leprosy was 31 to 60 years.Males are twice more commonly affected than females and the most commonest clinically diagnosed spectrum was Lepromatousleprosy ,but histologically diagnosed spectrum was borderline tuberculoidleprosy.However,it was observed that there was complete agreement between clinical diagnosis and histopathological diagnosis in 60.6% cases and disagreement was observed in 39.4% cases.*
Conclusion: *Because there is some degree of overlap in different type of leprosy,especially the unstable forms.The correlation can be made more accurate by combining clinical and histopathological features*
Keywords: *Hansen'sdisease, skinbiopsy, Ridelyjopling criteria.*

I. Introduction

Leprosy also known as Hansen's disease is a chronic granulomatous infectious disease involving skin and peripheral nerves[1].Its causative agent is Mycobacterium Leprae which parasitized macrophages and schwann cells[2].The disease present itself in different clinico-pathological form depending upon the cellular and immune system of the host[3]. Even though tremendous progress has been made in the field of leprosy,it still continues to be a global health problem.The overall prevalence of leprosy in India has declined from 5.27/10000 in the year 2000 to 0.66/10000 in the year 2016. India represent approximately 60% of global burden. Leprosy expresses itself in different clinico-pathological forms depending on the immune status of the host. Diagnosis of leprosy is based on different clinical,microbiological and histopathological examination which includes detail examination of skin lesions and peripheral nerves,demonstration of lepra bacilli by Fite's acid fast stain in slit skin smear and histopathological diagnosis and demonstration of bacilli in histopathological sections4.Histopathological examination of skin provides confirmatory information in suspected case and gives indication of progression and regression of disease under treatment.Ridley and Jopling have suggested immunological basis of leprosy and classified it into 5 types;Tuberculoid(TT), Border tuberculoid (BT), Mid Borderline(BB), Borderline lepromatous(BL) and Lepromatous leprosy(LL).The objective of present study were to identify the clinical pattern of leprosy and perform detail clinicohistopathological correlation in our institute.

II. Material And Methods

This study was conducted in the Department of Dermatology and Department of Pathology,L.N. Medical College &J.K.Hospital,Bhopal.
Study Design: Retrospective observational study
Study Location: Department of Pathology, L.N. Medical College & J.K. Hospital ,Bhopal
Study Duration: June 2016 to June 2018
Sample Size: 66 cases

Study comprised of 66 clinically diagnosed / suspected and untreated cases of Leprosy/Hansen's Disease.
The data were retrieved from the records maintained in the department including Age, Sex,OPD/IPD no., Clinical diagnosis and Histopathological diagnosis and analyzed.

A Brief history and dermatological examination was carried out. Skin biopsy taken were fixed in 10% fomalin and subjected for tissue processing.4-5 mm thick sections were prepared from paraffin embedded blocks.

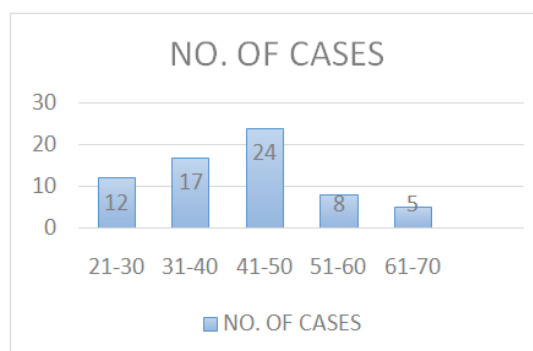These were then stained withhematoxylin& Eosin stain & are visualized under light microscope.

The lesions are classified on the basis of histopathological features into Borderline Tuberculoid(BT),Mid Borderline(BB),Borderline Lepromatous(BL),Lepromstous (LL),Tuberculoid (TT) Leprosy.

III. Results

- A study of 66 cases of leprosy/Hansen's disease were diagnosed/suspected clinically.
- Commonest age group affected was 41 to 50 years.
- Males were thrice more commonly affected than females
- Most common clinically diagnosed spectrum was lepromatous leprosy (LL) but histologically the most common diagnosed spectrum was borderline tuberculoid (BT)leprosy.
- However it was observed that there was complete agreement between clinical diagnosis and histopathological diagnosis in 60.6% cases and disagreement was observed in 39.4% cases.
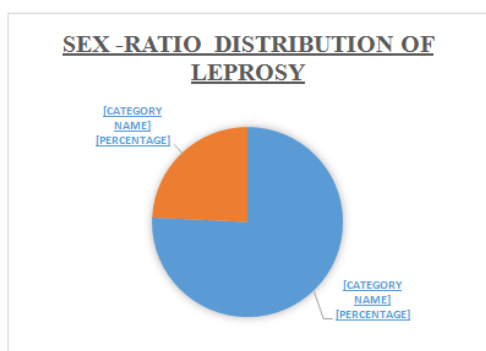
Fig 1.Sex Ratio Distribution of leprosy cases.   Fig.2: Age wise Distribution of Leprosy cases

Clinical Diagnosis	Total No. of Cases	Case Correlating on Histopathology		Cases not Correlating on Histopathology	
		No	%	No	%
TT	06	04	66%	02	34%
BT	20	15	75%	05	25%
BB	04	01	25%	03	75%
BL	08	05	62.5%	03	37.5%
LL	28	15	53.5%	13	46.4%

Fig. 3 Correlation between ClinicalAndHistopathological Diagnosis

	Year of Study	Overall Parity
Mitra and Biswas	2000	57.6%
Kumar Et. al	2000	60.6%
Singh Et. al	2008	58.6%
Pandya and Tailor	2009	58%
Giridhar et. al	2011	60.23%
Present Study	2017	60.6%

**Fig. 4** Percentage of Overall Parity Observed in Different Studies

IV. Discussion

Leprosy is widely prevalent in India. There was 0.83 lakh leprosy cases as on April 2011 with prevalence rate of 0.69 per 10,000 population(NLEP 2011)Leprosy is a chronic infectious disease caused by Mycobacterium Lepraeand is present in different clinico-pathological forms,depending on the immune status of the host.

Out of 66 cases studied,76% patients were males and 24% females with a male to female ratio (M:F) Of 3.16:1 Almost similar results were obtained in study conducted by Singh et al in 2008 and there were 72.34% males and 27.66% females.

Despite having such an accurate classification,there are diversities between the clinical and histopathological features.Clinical spectrum of leprosy in the present study revealed maximum cases in polar spectrum LL(42.4%) followed by BT-(30.3%),then followed by BL(12%),TT(9%),BB(6%)

Similar predominance of cases was observed in polar spectrum was observed by kumar et al in 2000 and pandya and tailor in 2009.

In the present study the histopathologicalcharacteristics were consistent with the clinical diagnosis in 40 cases out of 66 cases similar to observation made by giridhar et al.Borderline Tuberculoid leprosy seems to present least problem in classification.

Similar highest percentage of agreement between clinical and histopathological diagnosisof borderlinetuberculoid leprosy cases were also observed by giridhar et al ,pandyaand tailor and singhetb al.

Least agreement was seen in cases of borderline leprosy (BB) in this study,which is in concordance with observations recorded by singh et al,kumar et al.

Tuberculoid and borderline tuberculoid leprosy often overlap clinically,histologically and immunologically but differ only in the degree and the same is true for borderline lepromatous and lepromatous leprosy.
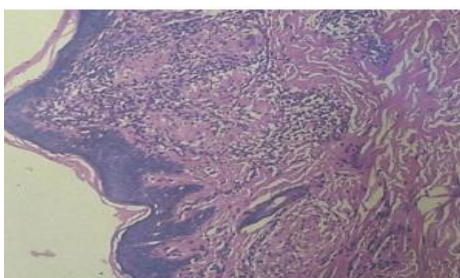
Fig5:TUBERCULOIDLEPROSY:Erosion of basal layer of epidermis by lymphocytes and epitheloid cells without intervening clear zone.Multiplewell formed granuloma in papillary dermis
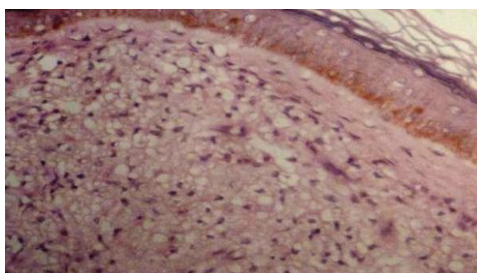
Fig 6:LEPROMATOUS LEPROSY: Collection of foamy macrophages in the dermis with clear grenz zone under the epidermis.
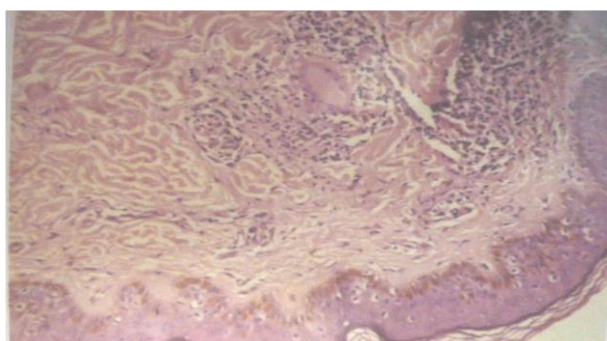
Fig 7: **BORDERLINE TUBERCULOID LEPROSY:Clearsupepidermal zone with well formedepitheloid cell granuloma and langhans giant cells.**

V. Conclusion

- In clinical practice a case of leprosy is to be classified as per clinical criteria.
- Skin biopsy has to be taken from the most active site of the lesion.
- This will help in the confirmation of diagnosis and classification

References

[1]. Jopling WH, McDougall. Definition, Epidemiology and World Distribution Hand book of Leprosy, Fifth edition. CBS Publishers and Distributors 1996: 1.
[2]. National Leprosy Eradication Programme – Annual report for the year 2015 -2016.
[3]. WHO – Fact sheet on Leprosy : Status of the disease in 2015.,Ridley DS, Jopling WH. Classification of leprosy accroding to immunity: a five- group ystem. Int J Lepr 1966; 34: 255.
[4]. Mitra K, Biswas S et al. Correlation between clinical and histopathological criteria for the classification of leprosy. Indian J Dermatol 2001; 46 (3) :135- 137.
[5]. Nadia S, Rashmi J, Sohaib A, Rawat SDS, SelviThamarai N, Meena H. Clinicopathological correlation of Leprosy : A 4 year's retrospective study from a tertiary referral centre in North India. Int J Med Res Health Sci. 2015;4(2):350-354.
[6]. Shenoi SD, Siddappa K. Correlation of clinical and histopathologic features in untreated macular lesions of leprosy - a study of 100 cases. Ind J Lepr 1988; 60 : 202 - 06.
[7]. Pandey AN, Tailor HJ. Clinicohistopathological correlation of leprosy. Ind J DermatolVenereolLep 2008; 74 : 74- 76.
[8]. Bhatia AS, Katoch K et al. Clinical and histopathological correlation in the classification of leprosy. Ind J Lepr1993 ; 61 : 433- 438.
[9]. Kalla G, Salodkar A, Kachhawwa D. Clinical and histopathological correlation in leprosy. Ind J Lepr2000 ; 68 : 184 -185.
[10]. Shanker Narayan NP, Ramu G et al. Correlation of clinical, histological and immunological features across the leprosy spectrum. Ind J Lepr2001 ; 73 :329- 42.
[11]. Nadkarni NS, Rege VL. Significance of histopathological classification in leprosy. Ind J Lepr1999 ; 7 : 325- 32.
[12]. Singhi MK, Kachhawa D, Ghiya BC. A retrospective study of clinic- histological correlation in leprosy. Ind J PatholMicrobiol2003 ; 46 : 47- 48.
[13]. Sandeep M, ShamanurMurugesh. A Study of Clinic- Pathological Concordance in Leprosy Patients in the Post- Elimination Era. International Journal of Science and Research. 2016;5(2):1304-1306.
[14]. Ridley DS, Jopling WH. Classification of leprosy accroding to immunity: a five- group ystem. Int J Lepr 1966; 34: 255.