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RESEARCH ARTICLE

CYTO- HISTOPATHOLOGICAL CORRELATION IN HANSEN'S DISEASE – A CASE SERIES

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ABSTRACT

Introduction: Hansen's Disease is a chronic infectious disease caused by *Mycobacterium leprae*. It primarily affects peripheral nerves and skin. Hansen's disease can be diagnosed on the basis of skin lesions and peripheral nerves along with cytological and histopathological examination by demonstration of acid-fast bacilli. **Objectives:** Concordance between clinical, cytological and histopathological diagnosis in cases of leprosy using Ridley–Jopling scale. **Material & Methods:** The present prospective study was conducted in the Departments of Pathology and Dermatology. Ten clinically diagnosed cases of leprosy were included in this study. Slit Skin smears and biopsies of all these cases of Hansen's disease were received and the cases were classified according to Ridley–Jopling classification into TT, BT, BB, I, BL, and LL. Cyto - histological correlation was done for all the cases. **Results :** Observation from this study revealed commonest age group affected by Hansen's Disease was 20- 29 Years of age. Males are affected predominantly and the commonest clinically diagnosed spectrum was LL (Lepromatous leprosy). It was observed that there was complete concordance between clinical diagnosis, cytological and histopathological diagnosis. **Conclusion:** For accurate diagnosis correlation of clinical, cytological and histopathological features appears to be more reliable than considering any of the parameters alone.

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INTRODUCTION

Hansen's disease is a chronic infectious and granulomatous disease caused by *Mycobacterium leprae*. It is a gradually progressive disease characterized by long incubation period and it primarily affects peripheral nerves and skin (Singh, 1996). It presents as different clinicopathological forms depending on immune status of the host. In 1960s, Ridley and Jopling proposed a histological classification for leprosy as indeterminate (I) leprosy, tuberculoid (TT), borderline tuberculoid (BT), mid-borderline (BB), borderline lepromatous (BL), and lepromatous (LL) leprosy (Ridley, 1988). However, in 1982, the World Health Organization classified leprosy as multibacillary (MB) and paucibacillary (PB) on the basis of bacillary index (BI). Hansen's disease can be diagnosed on the basis of different parameters which involve detailed examination of skin lesions and peripheral nerves along with cytological and histopathological examination by demonstration of acid-fast bacilli (Singh, 1994).

Cytological preparations in the form of slit skin smears have been in regular use for assessment of Hansen's lesions, yet their application has been restricted to the evaluation of morphology (morphologic index [MI]) and numbers (bacterial index [BI]) of acid-fast bacilli (AFB) (*Mycobacterium leprae*) to facilitate the diagnosis and classification of cases on the Ridley–Jopling (R–J) scale (Ridley, 1989). The present study was carried out to assess the concordance between clinical, cytological and histopathological diagnosis in cases of leprosy using Ridley–Jopling scale.

MATERIALS AND METHODS

The present prospective study was conducted in the Departments of Pathology and Dermatology. Ten clinically diagnosed cases of leprosy were included in this study. Slit Skin smears and biopsies of all suspected cases of Hansen's disease received over a period of 1 year (September 2018–October 2019). Hematoxylin and eosin and ZN stained sections of all cases were analyzed and the cases were classified according to Ridley–Jopling classification into TT, BT, BB, I, BL, and LL. Cyto -histological correlation was done for all the cases.

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Data were analyzed by

- Comparing the cytological diagnoses with the histopathological & clinical impression.
- Evaluating the concordance of histopathological and cytological diagnosis for each of the case.

Age	TT	BT	BB	BL	LL	ENL	I
1-10y	0	0	0	0	1	0	0
11-20	1	1	0	0	0	0	0
21-30	0	0	0	0	2	0	0
31-40	0	0	0	1	1	0	0
41-50	0	0	0	0	0	0	1
51-60	0	0	0	0	0	2	0

Cytohistological correlation

Cytological diagnosis I	No. of cases	Histopathological correlation I	No. of cases
TT	2	TT	1
BT	1	BT	1
BB	0	BB	0
BL	1	BL	1
LL	4	LL	4
ENL	2	ENL	2

Cytohistological correlation was found in 90% of cases.

Observations

A total of 10 cases were included in the study with the clinical diagnosis of Hansen's disease, over a period of 1 year (September 2018–October 2019). After clinical assessment all these patients were subjected to cytological examination followed by histopathological examination.

Age Distribution: The age of the patients ranged from 7 to 52 years.

Sex Distribution: Disease mostly seen in males, rarely in females

Cytological spectrum of skin lesions: Of the 10 cases evaluated by cytology, 4 were classified as lepromatous leprosy, 1 was Borderline lepromatous Leprosy, 1 Borderline Tuberculoid, 1 Tuberculoid, 2 Erythema Nodosum Leprosum, and 1 Indeterminate Leprosy.

Also observed that it was possible to sub-classify Hansen's disease with the help of cytology

DISCUSSION

Leprosy is a slowly progressive infection caused by *Mycobacterium leprae* affecting the skin and peripheral nerves. Histopathological examination of skin lesion is the gold standard for accurate diagnosis (Singh, 1994). During the period of 1 year biopsies of 10 patients were analyzed in this study. Leprosy can occur at all ages. In the present study, patients of 20-29 years (3rd decade) were affected most and patients below 7 years were affected least. Similar observations were made by Suri SK et al & Pooja Chauhan et al. (Pooja Chauhan, 2017). Variable and long incubation period may be responsible for this age distribution.

Bacillary index & morphological index: It was highest in LL types and low in BT types. Jopling also observed that the bacilli are scanty or absent in BT, always present in BB and numerous in BL and LL. It also shows the variation of cell mediated immunity and bacillary load as the spectrum of leprosy moves from tuberculoid pole to lepromatous pole. The present study confirms the same. Morphological index is better appreciated in slit skin smear. In present study, result of slit skin smear is used for bacillary & morphological index.

Conclusion

Correlation of clinical, cytological and histopathological features appears to be more reliable than considering any of the parameters alone for accurate diagnosis of Hansen's disease.

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