IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 16, Issue 9 Ver. IV (Sep. 2017), PP 34-35
www.iosrjournals.org

Rising Trends: Slit Skin Smear Positivity in Suspected Cases of Leprosy in A Tertiary Care Hospital in western Uttar Pradesh

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Abstract:
Background & Objectives: *NLEP initiated in 1983 achieved elimination of leprosy as a public health problem in India. However, as per WHO and various studies marginal increase in total number of new leprosy cases has been noted in last few years. Slit-skin smear (SSS) examination is simple and widely available test for screening of leprosy and its classification as well as monitoring response to treatment. The present study had been designed to study the trends of Slit Skin Smear (SSS) positivity in patients clinically suspected of leprosy.* ***Methods:*** *A retrospective data of last 5 years was collected to study the number of smear positive cases from among the slit skin samples submitted to the Department of Microbiology, stained by a modified ZiehlNeelsen method and examined for the presence of acid fast bacilli (AFB) under oil immersion objective lens.*
Results:*Increasing number of AFB smear positive cases was noted among the clinically suspected cases with smear positive percentage increasing from 28.6% to 43.8% from the year 2012 to the year 2016, with average positive percentage of 39.3% during the period of the study.*
Interpretation andConclusions*:Our study highlights the recent trend of increasing number of clinically suspected leprosy cases with rising positivity of slit skin smears for acid fast bacilli, as noted in other tertiary care centers.*
Keywords:*Leprosy, Slit Skin Smear, Acid fast bacilli,*

Date of Submission: 02 -09-2017 Date of acceptance: 13-09-2017

I. Introduction

Leprosy or Hansen's disease is a chronic granulomatous infectious disease caused by *Mycobacterium leprae* that primarily affects the skin and the peripheral nerves, and which can affect all ages and both sexes. Leprosy had been a major public health problem in India in the last century.[1]In 1983, the National Leprosy Eradication Program (NLEP) was initiated with the goal to decrease the prevalence rate of leprosy below 1 case/10,000 population. India has achieved elimination of leprosy as a public health problem, recording a prevalence rate of 0.66/10,000 population and ANCDR (Annual New Case Detection Rate) of 9.71 as of 2015-16 as per NLEP data. [2] However as per WHO,India reported 127326 new cases in 2015, accounting for 60% of the global new leprosy cases; with marginal increase in total number of new cases as compared to previous two years , 2013 (126913) and 2014 (125785).[3] There also have been reports from various authors about increasing detection of new cases of leprosy both clinically and on slit smear examination in the post NLEP phase [1,4,5,6,7]
A positive slit-skin smear is not only one of the cardinal signs and confirms the diagnosis ofleprosy, it is also an essential screening procedure for all patients in whom the diagnosis of leprosy is suspected. It helps in: 1) diagnosis or excluding the diagnosis of leprosy; 2) the classification of leprosy within the Ridley and Jopling spectrum and between the two treatment groups (paucibacillary and multibacillary); 3) monitoring of the response to treatment in skin smear positive patients. Additionally, it is useful to study distribution of *M. leprae*in skin and in ascertaining infectivity and severity of the disease. [8]

II. Material And Methods

The present retrospective study was conducted in Post Graduate Department of Microbiology, Subharti Medical College and associated ChhatrapatiShivajiSubharti Hospital, from January 2012 to December 2016. Our laboratory receives slit skin smears (SSS) for bacillary load from patients suspected of leprosy visiting the Skin and VDdepartment. The samples were obtained from different sites, namelyright and left nasal mucosa,

right and left ear lobes, the edges of active lesions, and right and left buttocks. The slides were stained by a modified ZiehlNeelsen method using 5% sulphuric acid as the decolourizer. At least 100 oil-immersion fields of the smears were examined for the presence of acid fast bacilli (AFB). Bacteriological Index (BI) was determined for everyAFB positive slide and Morphological Index (MI) calculated for slides with BI above 2.

III. Results

A total number of 231 clinically suspected patients were investigated by slit skin smear examination, out of which 91 were found AFB positive. Out of 91 smear positive cases, 71(78%) patients were males while 20(22%) patients were females. Males outnumbered female by a ratio of 3.6:1. Increasing number of AFB smear positive cases was noted among the clinically suspected cases with smear positive percentage increasing from 28.6% to 43.8% from the year 2012 to the year 2016, with average positive percentage of 39.3% during the period of the study. (Table 1)

Table 1.SSS positivity in clinically suspected leprosy patients year wise and gender wise from 2012-16

Year	No. clinically suspected leprosy patients undergoing SSS examination			No. of patients with SSS positive for AFB			Percentage positive (%)
	Male	Female	Total	Male	Female	Total	
2012	4	3	7	2	0	2	28.6
2013	20	13	33	8	2	10	30.3
2014	29	20	49	14	3	17	34.6
2015	48	21	69	23	7	30	43.5
2016	53	20	73	24	8	32	43.8
Total	154	77	231	71	20	91	39.3

IV. Discussion

Our study shows an increasing number of clinically suspected cases of leprosy presenting to the dermatology department and being subjected to slit smear examination from 2012 to 2016 with male predominance. Similar trend has been observed by Kansaraetal[5] and Mathanetal[9]. During this period the percentage of AFB smear positive cases steadily increased which in agreement with studies done across various states of India [1,4,5,10]. In our study out of the smear positive cases, 78% patients were males, which is similar to study by Kansara etal[5] in which 64.5% of smear positive patients were male. Average smear positivity of 39.3% in our study is higher than the observations made by other authors [1,4], but corresponds to sensitivity of SSS reported in literature [8]. This study had inherent limitations of small sample size and retrospective study design and a larger population based study is warranted for the confirmation of above findings.

V. Conclusion

This study highlights the recent trend of increasing number of clinically suspected leprosy cases with rising positivity of slit skin smears for AFB, as noted in other tertiary care centers, which needs to be further investigated and managed in view of the WHO proposed global leprosy strategy of leprosy free world by 2020.[3]

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*VandanaSardana, MD. "Rising Trends: Slit Skin Smear Positivity in Suspected Cases of Leprosy in A Tertiary Care Hospital in western Uttar Pradesh." IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) 16.9 (2017): 34-35