

Sensitivity of Slit Skin Smear examination in suspected Leprosy cases in a tertiary care centre: Rising trends



Microbiology

KEYWORDS:

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ABSTRACT

Introduction: Conventional diagnosis of leprosy in a tertiary care centre. **Objective:** To study the sensitivity of Slit Skin Smear (SSS) examination in patients suspected of Leprosy in a Medical College Hospital from Jan 2012-Dec 2016. **Method:** A retrospective study from Jan 2012 to Dec 2016 was made to study the number of smear positive cases from among the skin samples submitted to the Department of Microbiology, Government Medical College, Amritsar. Smears were collected from eight sites, stained by the ZN method and checked for the presence of AFB under oil immersion lens. **Results:** Of the 363 sets of slides examined, 114 were found positive. Five year sensitivity on average was 31.4% with a significant increase in AFB positivity noted every year from 21.2% to 42.35%. **Conclusion:** SSS as a diagnostic tool is increasingly losing its place to molecular tests which are still limited to a few centres. Now that the country has achieved its elimination target of Prevalence Rate of <1/ 10,000 population, it is imperative to use all resources at our disposal so as not to lose any leprosy patient walking in through our General health services.

INTRODUCTION

Leprosy is a chronic infiltrative disease caused by a slow growing and multiplying bacillus, *Mycobacterium leprae*. The incubation period may be as much as 5 years and the first lesion may appear in as many as twenty years after exposure. It is mainly transmitted by close and intimate contact with untreated cases via droplets from nasal and oral secretions and rarely through skin. The disease peculiarly affects the cooler parts of the body mainly skin, peripheral nerves, mucosa of the upper respiratory tract and sometimes the eyes. Untreated the disease may progress and cause irreversible disability to the skin, nerves, limbs and eyes¹.

Diagnosis of leprosy as enunciated by the NLEP Government of India Guidelines, entails looking for the three Cardinal signs which are

1. Hypopigmented or reddish skin lesions with definite sensory deficit.
2. A thickened or enlarged peripheral nerve with loss of sensation and/or weakness of the muscle supplied by that nerve.
3. Presence of AFB in slit skin smears (SSS) or histopathology.

Presence of any one sign out of three is essential to diagnose Leprosy². Taken together all the three cardinal signs have a sensitivity of 97% with a positive predictive value of 98%³.

SSS is done to confirm doubtful cases not confirmed by other two cardinal signs, hence indications for the same are:

1. Diffuse infiltration without any sensory impairment or with vague sensory impairment.
2. Innumerable bilaterally symmetrical ill defined macular lesions without any sensory impairment or with vague sensory impairment.
3. Papules, plaques or nodules, on the earlobes, face, back and extensor surface of the limbs without any sensory impairment or with vague sensory impairment.
4. Clinical situations where it is unclear whether the person is suffering from PB or MB leprosy
5. Person presenting with fresh lesions after release from treatment.

India achieved elimination of Leprosy as a public health program at

National Level in Dec.2005. Elimination was defined as attaining a prevalence rate of less <1 per 10,000 population. But Annual New Case Detection Rate <10/ 10,000 which was to be achieved in 642 districts of the country by March 2017 is true for only 445 districts⁴.

MATERIAL AND METHOD

Government Medical College and Hospital, Amritsar, is a tertiary care and referral centre for the city and adjoining districts. Department of Microbiology receives skin smears for bacillary load from patients suspected of leprosy visiting the Skin and VD department. The samples were obtained from eight sites, namely right and left nasal mucosa, right and left ear lobes, two smears from the edges of active lesions, and two from right and left buttocks each. The slides were stained by ZN staining method and checked for the presence of AFB. Bacteriological Index (BI) was determined for every AFB positive slide and Morphological Index calculated for slides with a BI above 2. The sensitivity of a test is its ability to correctly identify those with the disease (true positive rate) and specificity is its ability to identify those without the disease (true negative rate).

RESULTS

The data for the past five years from January 2012 to December 2016 was analysed in a retrospective manner. A total number of 363 sets of slides were investigated by slit skin smear examination, out of which 114 were found AFB positive. The average sensitivity of the technique was 31.4% in our centre. What was significant in this study was, the very steady and significant rise in the sensitivity of light microscopic technique from 21.2% to 42.35% from January, 2012- December, 2016.

TABLE 1: Sensitivity of slit skin smear.

Year	Total sets of slides examined	No. of sets of slides found positive	Percentage positivity
2012	66	14	21.2
2013	75	20	26.7
2014	94	28	29.9
2015	43	16	37.2
2016	85	36	42.3

CONCLUSION

Our centre observed an increasing sensitivity from 21% to 42.35% from Jan 2012 to Dec 2016 The observations made in our study were in

concordance with trends noted in our own college earlier⁵ and elsewhere in the country⁶. The sensitivity of light microscopic examination of skin smears has been reported in literature to be anywhere from 10-50% with increase in trends over recent consecutive years⁶.

WHO based clinical classification¹ has succeeded tremendously to bring down the scourge of this dreaded disease in endemic areas but bacteriological examination was made irrelevant for the diagnosis and initiation of treatment for Leprosy. Now with the Final Push Strategy for elimination of the disease in place, it needs the expansion of network of people who are able to diagnose and cure leprosy as well as possible basic information about the disease⁷. The Ridley and Jopling⁹ and WHO classification¹ has to be used together in the research and referral centres to study the disease pathology, progression, prognosis and risk factors for relapse, to provide standardization and comparability of studies over time and geography⁸. Molecular techniques are replacing conventional diagnostic methods in early diagnosis with remarkable sensitivity but till such time these point of care tests are available everywhere for routine diagnostic use we must not relegate our present resources and skills like SSS examination to history¹⁰. This is a simple, 100% specific test and needs to be passed to the newer generation of medical students and technicians.

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