

SHORT REPORT

Presence of an index case in households of newly registered leprosy patients: experience from a leprosy referral centre in South India

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Summary The global leprosy burden in terms of new case detection does not seem to show a declining trend. India continues to be one of the major contributors to the leprosy burden. It is well known that the presence of an index case is a risk factor for leprosy among household contacts. The Blue Peter Health and Research centre (BPHRC), a leprosy referral centre in South India, observed the presence of an index case in 27.6% of leprosy patients newly diagnosed during 2009–2013. A majority of the index cases were either parents or siblings. Early case detection is recommended in global and national strategies, but active contact screening is not in the purview of integrated leprosy services in India. Active contact screening may be considered as one of the major activities to further reduce the leprosy burden.

Keywords: leprosy, household, contacts, index case, children

Introduction

In most of the world, man is the only reservoir of *Mycobacterium leprae*, and untreated leprosy patients are assumed to be the only source of infection. The main mode is through nasal droplets.^{1,2} Multi-drug therapy (MDT) treats leprosy and reduces the number of cases in the community, but falls short of preventing transmission.^{3,4} The risk of contracting leprosy is raised amongst contacts of a known leprosy-affected person. According to WHO⁵ children represented 9.4% (12,043) of all new cases registered in India in 2013, indicating continued transmission of infection.

Previous studies by Jain *et al.* reported a history of contact in 38% of leprosy patients and 95% of them were intra-familial contacts.⁶ Vijaykumaran *et al.* reported an incidence in contacts of 7.7 per 1000 PYR,¹ which was eight times more than that of the general population, while George *et al.* reported an incidence rate of 5.1/1000.⁷ Many other studies also concluded that the presence of a household contact increased the risk of leprosy.^{3,6,8–10}

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This study reports the presence of index cases linked to newly diagnosed leprosy patients, in the absence of active contact surveillance.

Methods

The Blue Peter Health and Research centre (BPHRC) is a leprosy referral centre where leprosy affected attend for treatment of various leprosy-related complications. Services are offered by a Medical Officer, Physiotherapy Technician and Laboratory Technician. New patients report for diagnosis and management. The patients may be self-referred or are referred from either private or government health centres for management.

This is a record-based retrospective study of new leprosy patients registered at BPHRC over a period of 5 years (2009 to 2013). Any history of contact with a known leprosy patient is recorded for all newly diagnosed leprosy patients at our clinic. An index case is defined as a previously diagnosed leprosy patient living in the same house and sharing the same kitchen (intra-familial), or is within the social circle of the newly diagnosed leprosy patient.

Results

BPHRC registered a total of 764 leprosy patients during the 5 year period (2009–2013). Among them, 257 were newly diagnosed (Table 1). Of these 179 (69.6%) were male and 26 (10.12%) were children. The age range was 4–75 years. A history of a known index case is observed in 71 (27.6%) patients: 57 within the household and 14 amongst social contacts. The duration of the exposure could not be ascertained in most cases. The classification of leprosy of the index cases was also difficult to determine, as most cases were already treated at other centres in the past and were only rarely registered at this clinic for complications such as Type II reactions and ulcers.

Among the 71 index cases 47 (66.2%) were male and 16 (22.5%) were children (age below 15 years). The majority of cases involved intra-familial contact. The presence of an index case was more likely among paucibacillary cases (38.3%). Parents and siblings contributed the majority of index cases (Table 2). A history of multiple index cases in the household was observed in seven (12.9%) patients.

Discussion

Transmission of leprosy is still poorly understood. The long incubation period adds to the difficulty of understanding the mode of transmission. Previous studies done by Jain *et al.*⁶ concluded that active leprosy patients are a potential source of infection.

Table 1. Type of leprosy in new patients and presence of index cases

	MB Cases	%	PB Cases	%	Total	%
With household index cases	42	74	15	26	57	100
With social index cases	11	79	3	21	14	100
No index case	157	84	29	16	186	100
Total	210		47		257	

Table 2. Relationship of index case to the newly diagnosed leprosy patients

Relationship of index case	Number	Percentage
Father	18	25.4
Mother	14	19.7
Brother	12	16.9
Grand Parents	4	5.6
Sister	4	5.6
Son	4	5.6
Husband	1	1.4
Social	14	19.7
Total	71	100

The duration of association of the newly diagnosed patients with the index case could not be ascertained in this study. Also the patients who gave no history of previous exposure to the disease may have been unaware of a contact, or may have chosen not to disclose the details.

The high percentage (57/257 or 22.2%) of new cases having an index case in the household emphasises the continuing need to screen and follow up the asymptomatic contacts of newly diagnosed leprosy patients as suggested by Vijayakumaran *et al.*,¹ Jain *et al.*⁶ and Ranade *et al.*⁹ The relatively high number of patients with MB type of leprosy suggests that knowledge of the signs of leprosy is lacking, but it is also important to remember that stigma may undermine any initial inclination to seek medical advice. These aspects need to be studied further for early diagnosis and treatment.

Even more significant is the fact that 16 of 26 cases amongst children (61.5%) had contact with an index case, showing that contact examination would have a large impact on early case detection in children, thus greatly reducing the risk of disability in children.

Though contact screening is part of the present National Leprosy Eradication Programme (NLEP) there is no follow-up of this activity. There has been tremendous change in socio-economic status and lifestyle of people in India during the recent years. The question of how this influences transmission and susceptibility of the community to leprosy infection is yet to be explored.

Conclusion

The considerable number of new leprosy patients, and especially children, with a history of contact with a known leprosy patient suggests that examination and management of contacts is an important and cost-effective means of early case detection in leprosy. More operational research is warranted.

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