Brief Report

Leprosy in Elderly and Children among New Cases – A 3-Year Retrospective Study

Abstract

Background: Leprosy occurs in all age groups, with adults constituting the majority. However, leprosy in children always drew the attention of epidemiologists as a guide to transmission of leprosy. With increasing life expectancy and decreasing prevalence of leprosy, there is going to be a significant rise of leprosy among elderly in India. In elderly leprosy patients, clinical signs are often quiet, which makes it a hidden source of infection. The detection of leprosy in elderly is of epidemiological importance, hence it is critical that due attention be given to leprosy in elderly as a possible contributor to hidden leprosy in India. **Aim:** To analyze leprosy in elderly and in children from the records of new patients seen over the past 3-year period. **Methods:** Analysis of details of "leprosy in elderly" and "leprosy in children'" from the records of new leprosy patients seen at a dermatology OPD of a teaching hospital over a period of 3 years. **Results:** Out of 157 patients, 34 (21.6%) were above 45 years, while 18 (11.4%) were below 15 years, the difference being statistically significant ($P > 0.05$). Bacteriological Index (BI) values in elderly were higher compared to children. In addition, elderly had a higher percentage of multibacillary (MB) leprosy compared to children both clinically (35% vs 22%) and histopathologically (38% vs 22%). **Conclusion:** Leprosy in elderly is an important entity, and there is a need to study it as a distinct group. It will provide information on hidden leprosy load and apprise us on sources of infection in the community.

Keywords: *Child leprosy, hidden leprosy, leprosy in elderly*

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Introduction

It was observed in countries where leprosy declined, as the disease burden and transmission drops, leprosy is seen more frequently in older age group.[1] As the immuno-senescence happens with age, more severe forms of leprosy in elderly can occur without manifestation of symptoms or signs, which goes undiagnosed, and can act as a reservoir of infection in the community.[2,3] This must be happening in India as the prevalence of leprosy in India which was 57.60/10,000 population before the start of multidrug therapy (MDT) in 1983 reduced to 0.66/10,000 by March 2016.[4] Nevertheless, systematic studies on leprosy in elderly are nonexistent compared to studies on child leprosy in India. In this study, we have presented the clinical, bacteriological, and histological characteristics of leprosy in elderly and child leprosy seen among new patients to understand the differences in the disease pattern between these two diverse age groups.

Methods

The present retrospective study was done based on the records of leprosy patients seen over 3 years from 2015 to 2017 at Dermatology OPD in a teaching hospital, Raichur, Karnataka. The data of all patients a) those <15 year of age b) those who are >45 years seen during this period was considered. The clinical details and results of skin smear examination and skin biopsy of all these patients were compiled. The clinical, bacteriological, and histological data of both these groups were analyzed to look for patterns.

Results

Out of total number of 157 leprosy patients seen during the period of 2015-2017 at our OPD, 34 (22.6%) were above 45 years while 18 (11.4%) were children <15 years.

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Observations in elderly leprosy patients

When 34 elderly leprosy patients (25 male and 9 female) were analyzed at the time of initial diagnosis, the number of patients between 45 to 54 years were 22, and those ≥55 years were 12. The oldest members of the group were 4 patients of 65 years.

The commonest clinical type in elderly leprosy was borderline tuberculoid (BT) in 20 patients, followed by lepromatous leprosy (LL) in 7, borderline lepromatous (BL) in 5, and tuberculoid (TT) in 2 patients [Table 1]. Type 1 reaction was observed in 5 patients (3 BT and 2 BL). None had type 2 reaction. Single skin lesion was noted in 10 patients, while 10 to numerous skin lesions were observed in 15 patients. Over all, on the basis of WHO therapeutic classification, number of pauci-bacillary (PB) patients was 18 while multibacillary (MB) was 16.

On skin smear examination, Bacteriological Index (BI) was negative in 23 patients. In the other 11 patients where it was positive, BI between 1+ to 3+ was recorded in 7, and 4+ in 3 patients. Skin histopathology revealed features of BT in 17, BL in 7, and LL in 6 patients. Clinico-histopathological concordance was observed in 22 out of 34 (65%) patients. All the five patients with type 1 reaction (BT 3, BL 2) showed clinico-histological concordance.

Grade 2 disability was observed in 4 patients of this group at initial diagnosis. One of them had a deep plantar ulcer, while three of them presented with ulcers and fissuring of fingers, along with weakness of small muscles of hand.

Observations in child leprosy patients

When the child leprosy patients were analyzed (11 male and 7 female), the patients in age group <10 years were 6, while those between 11 and15 were 12. The youngest members of this group were 3 patients who were 8-years-old. The commonest clinical type of leprosy was BT in 12 children, followed by BL in 3, TT in 2, and LL in 1 [Table 1]. Only one patient had type 1 reaction (T1R). BI of 1+ was noted in 2 patients, one of them being the patient with T1R. Single skin lesion was observed in 7, 2 to 5 lesions in 4, and >5 skin lesions in 7 children. Skin biopsy revealed features of BT in 9 biopsies, indeterminate type in 3, BL in 3, and LL in 1 patient. Clinico-histological concordance was noted in 12 out of 18 patients (66.6%). Grade 2 disability was observed at the time of initial diagnosis in 2 patients, with one of them presenting with ulnar claw hand.

When the numbers of leprosy in elderly and children were compared, the former was higher, with difference being statistically significant (P = <0.05). MB (BL and LL) leprosy was more frequent in elderly patients compared to children, both clinically (35% vs 22%) and on histopathology (38% vs 22%). The percentage of smear positivity was also higher in elderly group (32%) compared to children (11%). In addition, the BI values recorded in 11 elderly patients ranged from 1+ to 4+, while in both smear-positive child leprosy patients BI was 1+.

Discussion

The incidence of leprosy has always been greater among the elderly than younger population except when there is low life expectancy.[5] A study from south India reported that 81 out of 168 patients (48%) were over 40 years, with 19 of them (11%) being over 60 years of age.[6] When the age of onset of leprosy was studied in 1012 patients in north India, the mean age of onset for PB and MB groups was 27.36 ± 12.78 years and 32.60 ± 15.05 years, respectively, indicating the higher percentage of MB leprosy in the older age group.[7] A study estimating the incidence of leprosy among the contacts of leprosy patients from Agra, reported that the incidence rate of leprosy has increased gradually and significantly with age. Incidence rate among children was found to be 4.5/10,000 PY,

Table 1: Details of leprosy in children and elderly at the time of initial diagnosis

	Leprosy in children (Patient <15 years of age)	Leprosy in elderly (Patient >45 years of age)
No of patients	18 (11.4%)	34 (21.6%)
Clinical type of leprosy	TT: 2, BT: 12, BL: 3, LL: 1	TT: 2, BT: 20, BL: 5, LL: 7
WHO PB (<5 lesions) and MB (>5 skin lesions) type	PB: 11 patients, MB: 7 patients	PB: 18 patients, MB: 16 patients
Number of skin lesions	SSL in 7, 2-5 in 4, 6-10 in 3, 11-30 in 3 and >30 in 1 patient.	SSL: 10, 2-5 in 8, 6-10 in 1, 11-30 in 7, 31-50 in 1, >50 in 7
Skin smear	AFB+ve in 2 patients (BI 1+in both pts)	AFB+ve in 11 patients (BI: 1+in 4, 2+in 3, 3+in 1, 4+in 3 pts).
Reactions	T1R: In 1 patient. T2R: Nil	T1R: In 5 patients. T2R: Nil
Histopathology	IL in 3, TT in 1, BT in 9, BL in 3, LL in 1, non-specific in 1 patient	BT in 17, BL in 7, LL in 6 and Non-Specific in 4 patients
Clinico- histopathological concordance	Concordance noted in 12 patients (66.6%).	Concordance noted in 22 (65%) patients
Disability at the time of diagnosis	G2D in: 2 patients (11%)	G2D in: 4 patients (11.7%)

TT: Tuberculoid leprosy, BT: Borderline tuberculoid leprosy, BL: Borderline lepromatous leprosy, LL: Lepromatous leprosy, IL: Indeterminate leprosy, T1R: Type 1 reaction, T2R: Type 2 reaction, G2D: Grade 2 disability, AFB: Acid fast bacilli, BI: Bacillary index

increased to 5.2 in those aged 15–29, 7.8 in the age range 30–44, and further to 11.2 beyond the age of 44.[8] These statistics highlight the importance of leprosy in elderly in the community.

The major source of infection in the community is untreated hidden MB leprosy lying undetected.[4] Early detection of the same will lead to depletion of source, interrupt the active transmission, and reduce complications and disability. MB leprosy is more common in elderly patients as noted in a recent large population-based study in Brazil.[9] Similar focused population-based studies are required in India as well.

In the present study, we chose to compare findings of leprosy in elderly against that of child leprosy although these groups are at different ends of age spectrum, for the only reason that there is lack of organized data on any other age group of leprosy for comparison. Nevertheless, this comparison against child leprosy gave us a fair idea about problems of elderly leprosy. Child leprosy was 11.4% in new cases, which is almost similar to national child leprosy rate (9%) reported by the National Leprosy Eradication Programme (NLEP).[10] However, it can be noted that percentage of elderly patients (21.6%) in this study was almost double to that of child leprosy. A study done in Brazil noted that the percentage of new cases classified as MB increased progressively by age and reached 67.7% among those aged 60 or more years.[5] However, we do not have similar studies from India on leprosy in elderly.

Child leprosy has always been grouped separately as it is an important epidemiological indicator of continued transmission in the community. In contrast, leprosy in elderly has received very little attention and never been accounted separately. Structured studies on leprosy in elderly are also very few in the literature and mostly are from South America.[5,9] However, few studies from Indian subcontinent assessed elderly population as a part of their leprosy study design. A 5-year study based at New Delhi showed that out of 849 new patients seen, 218 were >40 years (26%) and 115 (14%) were >50 years of age.[11] In another study done in Bangladesh, the age of patients ranged from 6 years to 87 years with mean of 35.58 years.[12]

In areas of decreasing endemicity, it was noted that occurrence of leprosy in elderly was higher as new case detection rates (NCDR) declines.[13] In addition, the increase in life expectancy also has influence on leprosy. With one in nine persons in the world aged 60 years or over at present and projected to increase to one in five by 2050, population ageing is a phenomenon that we can no longer ignore.[14] In Mexico, the greatest NCDR was registered among 60–79 year olds when life expectancy increased from 70.4 to 76.5 years from 1989 to 2009.[15] In India, we can predict a similar scenario as life expectancy is increasing. Another hypothesis is that the association between MB leprosy and the elderly may be a characteristic of the disease itself; regardless of decreasing endemicity.[5] An observational study noted that the detection rates for MB leprosy remained higher for elderly patients timely detected, showing that late diagnosis is not enough to explain this association.[16] Another study, demonstrated an increasing trend for detection rate in the elderly for the next 10 years.[9] All these observations are potential areas for further research.

It is to be noted that the definition and age group of people to be included in leprosy in elderly is yet to be defined. In the present study, we have included all those who were 45-years or more as elderly patients, which was purely empirical. Our reasoning was that in Indian population metabolic changes and their related disorders start appearing at this age. It might be of interest to note that even for childhood leprosy, the definition of age for inclusion is not clearly defined, and it varies from study to study.[17]

Leprosy in elderly as a group deserves special attention.[5] It is unfortunate that most destitute leprosy patients are elderly! Ongoing global surveillance of tuberculosis (TB) notifications show increasing age of patients with active TB, compounded by changes in clinical manifestations of disease.[18] It is relevant to note that studies on safety of MDT in geriatric patients have not been documented convincingly.[19]

In conclusion, the present study noted that every fifth leprosy patient is an elderly patient and their percentage is almost double than that of child leprosy. More studies are needed on leprosy in elderly to bring to the fore new knowledge: a) to understand the role of elderly leprosy in the spread of the disease in the community, b) to identify the unique needs of this group for improved disease management.

Limitations of the study

It is a retrospective analysis of patient records of a medical institute and not a population-based study.

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Conflicts of interest

There are no conflicts of interest.

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