



## CLINICO-EPIDEMIOLOGICAL STUDY OF CHILDHOOD LEPROSY FROM A TERTIARY CARE HOSPITAL

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### ABSTRACT

**Background:** Childhood leprosy is an indicator of recent transmission of the disease in the community. This study was undertaken to evaluate the recent trend of childhood leprosy in Western Uttar Pradesh.

**Methods:** A retrospective record based analysis of all children less than 14 years of age attending the leprosy clinic of the department from April 2014 to March 2017 was done. The various parameters analyzed were age, sex, rural/urban background, subtype of leprosy and reactions at presentation.

**Results:** There were 58 children with leprosy of which 41 (70.68%) were males and 17 (29.32%) females. 34 (58.62%) cases had multibacillary disease while 24 (41.38%) cases had paucibacillary disease. Familial contacts could be traced in 17 (29.31%) cases. The most common type of leprosy was Borderline lepromatous, seen in 19 (32.76%) cases, followed by Borderline Tuberculoid in 14 (24.14%) cases.

**Conclusion:** The large proportion of children with multibacillary disease raises a serious concern and indicates the active disease transmission in the community. More concerted efforts are needed to curb this menacing disease.

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## INTRODUCTION

Leprosy was once a major public health problem and associated with a lot of social stigma. Concerted efforts led to the successful elimination of this menacing disease from the world in 2000 and India achieved this milestone in 2006. India, however, continues to report a large proportion of leprosy cases amongst the global burden of the disease. Moreover, elimination in leprosy is defined as the prevalence of less than 1 case per 10,000 population. This is unlike other diseases, where elimination means reduction to zero cases of infection caused by the particular agent within a specific geographic region.<sup>1</sup> Leprosy in children is an indicator of current disease transmission. More than 13,000 cases of leprosy in children were reported from India in 2012.<sup>2</sup> The proportion of childhood cases has largely remained static in the recent past and is around 10%.<sup>3</sup> This data indicates that leprosy transmission is actively taking place in the country and the situation may explode at any moment. Characteristics of childhood leprosy have never been studied in our region. This study was undertaken to study the characteristics of childhood leprosy in the region; to know the recent trends in

childhood leprosy and infer about the transmission of leprosy in the area.

## METHODS

This was a retrospective record-based descriptive study based on the data of leprosy patients attending the leprosy clinic of Dermatology Outpatient Department of Jawaharlal Nehru Medical College, Aligarh Muslim University, Aligarh for a period of 3 years from April 2014 to March 2017. All diagnosed patients of leprosy of 14 years of age or less were included in the study. The patients were diagnosed on the basis of clinical signs and symptoms and the diagnosis was confirmed by slit skin smear examination and skin histopathology in all cases. Records of the patients were analyzed for the following clinical and epidemiological parameters: age, sex, rural/urban background, type of leprosy, treatment given (paucibacillary/multibacillary), presentation with lepra reaction and family contacts with leprosy.

## RESULTS

A total of 58 cases of childhood leprosy were registered with us during the study period. These comprised of 10.94% of all cases enrolled with us. Of these, there were 41 (70.68%) males and 17 females (29.32%). 26 (44.83%) patients were from the urban background while 32 (55.17%) patients were

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from the rural background. Most of our patients were between 10-14 year age group. There were only 5 children who were less than 10 years of age at the time of presentation which comprised of 8.60% of all cases. Familial contact was found in 17 (29.31%) patients.

**Table 1** General epidemiologic parameters of the Patients

Characteristics	Number	Percentage
Males	41	70.68%
Females	17	29.32%
Urban	26	44.83%
Rural	32	55.17%
Familial contact	17	29.31%

**Table 2** Clinical parameters of the patients

	Type of leprosy	Number	Percentage
Paucibacillary	Tuberculoid (TT)	10	17.24%
	Borderline Tuberculoid (BT)	14	24.14%
	Mid-borderline (BB)	3	5.17%
Multibacillary	Borderline Lepromatous (BL)	19	32.76%
	Lepromatous (LL)	12	20.69%
Lepra reactions	Type 1 reaction	3	5.17%
	Type 2 reaction	5	8.62%

Majority of our patients, i.e. 34 (58.62%) had multibacillary disease while 24 (41.36%) had paucibacillary disease. As per the Ridley-Jopling classification, Borderline lepromatous (BL) patients were the most common and comprised of 19 (32.76%) cases, followed by the 14 Borderline Tuberculoid (BT) leprosy cases (24.14%). There were 12 (20.69%) lepromatous leprosy (LL) cases while 10 (17.24%) cases had Tuberculoid (TT) leprosy. Only 3 (5.17%) patients presented to us with mid borderline (BB) leprosy. At the time of presentation, 8 (13.80%) children had lepra reactions. These included 3 (5.17%) patients with type 1 reaction and 5 (8.62%) patients with type 2 lepra reaction.

**DISCUSSION**

Cases of childhood leprosy comprised of 10.94% of all registered cases of leprosy in our institution. This is comparable to other studies from tertiary hospitals from India where childhood leprosy cases comprise 5% - 11% of all leprosy cases.<sup>4,5</sup> The ratio of boys to girls was calculated to be 2.4:1. All previous studies have shown a definite male predilection in leprosy with ratios varying from 1.25:1 to 3:1.<sup>6,7</sup> The increased number of male patients can also be explained by the social scenario in our part of the world which gives preferential care to male children over girls. The disease was found to be more common in rural patients than the urban patients. The greater predisposition of rural patients in our study could be due to the large number of rural patients attending our hospital. Only 8.6% patients were younger than 10 years of age. Leprosy is a disease with a long incubation period and therefore, children of a younger age group are less likely to present with clinical features.<sup>3</sup> Familial contacts were present in 30% of our patients. Familial contacts have been reported in a wide range of patients. These include contacts with less than 1% to 47%.<sup>8,9</sup> Many patients in our study had more than one familial contact, a fact in concordance to most studies on childhood leprosy.<sup>10</sup>

The number of multibacillary cases in our study exceeded those of paucibacillary patients. Most previous studies on

childhood leprosy have reported paucibacillary disease to be the dominant subtype with reported prevalence of as high as 98% in a study.<sup>11</sup> Only a few studies have reported a majority of multibacillary cases.<sup>12-14</sup> The reported percentage of multibacillary cases has been around 50-55%, as was seen in our study. A recent study from Mumbai found that multibacillary patients constituted 9.6% cases of all children with leprosy.<sup>15</sup> The large burden of multibacillary cases is a matter of concern as these may be infectious and lead to further transmission of the disease in the community. As per the Ridley Jopling classification, the commonest subtype of leprosy in our study was the borderline lepromatous (32.76%) followed by the borderline tuberculoid type (24.14%), lepromatous (LL) type in 20.69%, tuberculoid type (TT) in 17.24% and mid borderline (BB) in 5.17%. This finding contrasts with most previous studies which consider borderline tuberculoid type to be the most common.<sup>16</sup> The greater number of multibacillary cases in our study was probably responsible for BL cases to be the most common clinical type. This can also be explained by the fact that most of the rural population has less access to the health care set up which forces them to resort to local practitioners who fail to diagnose leprosy at earlier stages and disease remains undiagnosed till it downgrades and patient presents lately to the tertiary care hospitals. The percentage of LL and BL cases is comparable to other studies.<sup>17</sup> Lepra reactions were seen in 13.8% children at the time of presentation, which is in accordance to several previous studies, where the range of patients presenting with reactions has been 0-29.7%.<sup>10,13</sup> Lepra reactions are acute episodes that may lead to neuritis and resultant nerve damage leading to deformities. If not corrected early, this may lead to lifelong disability in children.

**CONCLUSION**

Our findings show that leprosy is still a health problem in our region and active transmission of the disease continues despite the disease being eliminated from the country. The large proportion of childhood leprosy cases is a testimony to this fact. The percentage of patients with multibacillary disease is a matter of grave concern as these patients may aid in the transmission of the disease further in the community. Presence of one or more family contacts in a sizable proportion of children points to the high disease burden of leprosy in the community. This also highlights the need for careful contact tracing of children diagnosed with leprosy. The sizable percentage of children presenting with lepra reactions shows that leprosy can go undetected for a long period of time in children. Also, lepra reactions may cause neuritis, which may lead to permanent deformity and disability to the children, a burden they shall have to carry throughout life.

This study provides an overview of the current trends in childhood leprosy in Western Uttar Pradesh. The study paints an alarming picture of the threat posed by leprosy, which is considered by many to be no longer a matter of concern. Continued efforts are needed to curb this menacing disease and children need to be made the prime targets of these efforts.

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