Original Research Article

A clinicoepidemiological study of familial leprosy

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A B S T R A C T

Background: Hansen’s disease (also known as leprosy) is an infection caused by Mycobacterium leprae which can affect the skin, mucous membranes and nerves. It is known to spread among and infect family members. There are very few published studies pertaining to family leprosy conducted in India and worldwide.

Aim: To find the prevalence of familial leprosy and to know the clinicoepidemiological patterns of these cases.

Settings and Design: Observational study.

Material and Methods: This was a descriptive study conducted for a period of five years from 2013-2018. The study population included all new documented cases of leprosy visiting our out-patient department during the study period. All the patients were diagnosed as leprosy on histopathological confirmation or by the presence of cardinal signs of leprosy according to the world health organization (WHO) definition. The data collected was analysed by simple descriptive statistics. Permission to conduct the study was taken from institutional ethical committee. Consent was taken from index case and family members.

Results: A total of 302 new leprosy cases with 18 index cases (n=18) whose family members were affected, accounting for the prevalence of 5.96 %. Total number of family members with documented leprosy (old or newly detected) was 26. So, the total number of leprosy cases were 44 (index cases + family members). Out of the 18 families, 4 families had more than one person who was affected. 8 cases (18.18%) of Childhood leprosy were noted. Among the index cases 4 cases (22%) of paucibacillary leprosy were seen and 14 cases (78%) of multibacillary leprosy was seen. Among the family members, 18 cases of paucibacillary leprosy were seen and 8 cases of multibacillary leprosy were seen. Conjugal leprosy was seen in 10 families accounting for the prevalence of 3.31%.

Conclusion: Our study intends to emphasize the importance of examining the close contacts of a case of leprosy, especially the family members in whom the incidence of leprosy could be very high. By way of identifying leprosy cases early in its course we may be able to prevent deformities to a great extent.

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1. Introduction

Hansen’s disease (also known as leprosy) is an infection caused by Mycobacterium leprae which can affect the skin, mucous membranes and nerves. It is one of the oldest known infective diseases, and was known to affect family members (Daniellsen & Boeck 1848) even before the discovery of Mycobacterium Leprae by Hansen in 1874. Apart from droplet infections, Leprosy is also known to have genetic predisposition.1,2 The prevalence of Leprosy in India is very high, estimating half of world’s cases to occur.3 According to a study, the prevalence of familial Leprosy in India was...
There are very few published studies pertaining to family leprosy conducted in India and worldwide. In this study our primary objective was to determine the prevalence of familial leprosy and clinicoepidemiological features of familial leprosy.

2. Materials and Methods

This was a descriptive study conducted for a period of five years from 2013-2018 and patients were followed up for 2 years in a tertiary care centre in Karnataka. The aim of the study was to know the prevalence of familial leprosy and to know the clinicoepidemiological patterns of these cases. The study population included all new documented cases of leprosy visiting our out-patient department (OPD) during the study period. All the patients were diagnosed as leprosy on histopathological confirmation or by the presence of cardinal signs of leprosy according to the world health organization (WHO) definition.

The following definitions were used in this present study. Index case was the leprosy patient who presented to our OPD with Complaints. Family member was defined as person who lived under same roof together with index case. A detailed history with a standard proforma including patients age, sex, demographic details, clinical features, complications were collected. All the family members of the index case were called to OPD and detailed history (including of past history of leprosy treatment) and clinical examination was done. Any suspected leprosy case in family members were further investigated using skin biopsy for histopathological examination and Slit skin smear examination for confirmation of leprosy. The demographic details and clinical features of family members were collected only if they had histopathology suggestive of leprosy or if they met the WHO definition of leprosy. The socioeconomic status, type of residence including number of rooms in house were noted. The type of leprosy was classified using Ridley Jopling method, Indian system of classification and WHO classification. The data collected was analysed by simple descriptive statistics. Permission to conduct the study was taken from institutional ethical committee. Consent was taken from index case and family members.

3. Results

During this 5-year period a total of 302 new leprosy cases were detected in our tertiary centre. There were 18 index cases (n=18) whose family members were affected, accounting for the prevalence of 5.96%. Total number of family members with documented leprosy (old or newly detected) was 26. So, the total number of leprosy cases were 44 (index cases + family members) (Figure 1). The details of these cases are summarised in Table 1.

Borderline tuberculoid leprosy was the most common type seen in the study with 18 cases (40.9%) followed by borderline lepromatous with 16 cases (36.36%), 6 (13.63%) cases of lepromatous leprosy, 2 (4.54%) cases of tuberculoid leprosy, 2 (4.54%) cases of pure neuritic leprosy.

Out of the 18 families, 4 families had more than one person who was affected. 8 cases (18.18%) of Childhood leprosy (Figure 2) were noted (defined as age less than 15 years according to international federation of anti-leprosy Association 2001). Male: female ratio was 1.7:1. Important demographic and clinical data are mentioned in Table 2.

Among the index cases 4 cases (22%) of paucibacillary leprosy were seen and 14 cases (78%) of multibacillary leprosy was seen. Among the family members, 18 cases of paucibacillary leprosy were seen and 8 cases of multibacillary leprosy were seen. Conjugal leprosy (Figure 3) was seen in 10 families accounting for the prevalence of 3.31%. Fourteen cases of the index case belong to lower socioeconomic status. Eighteen family members were sleeping in the same room as their index cases. Out of the 44 cases, 13 cases (29.54%) had complications of leprosy.

Fig. 1: Familial leprosy

Fig. 2: Childhood Leprosy
Table 1: Demographic details of familial leprosy.

| Family No | Index Case | Age | Sex | Type  | Complication Contacts | Age | Sex | Type  | Complication |
|-----------|------------|-----|-----|-------|-----------------------|-----|-----|-------|--------------|
| 1         | Wife       | 36y | Female | BT    | Husband 1               | 45y | Male | BL    |              |
| 2         | Husband    | 55y | Male  | BL    | Wife 1                  | 46y | Female | BT    |              |
|           |            |     |       |       | Daughter 2              | 34y | Female | BT    |              |
|           |            |     |       |       | Son 3                   | 32y | Male  | BL    | ENL          |
|           |            |     |       |       | Son 4                   | 29y | Male  | PNH   |              |
| 3         | Wife       | 36y | Female | BT    | Husband 1               | 39y | Male  | BL    |              |
| 4         | Brother    | 11y | Male  | BT    | Brother 1               | 8y  | Male  | BT    |              |
| 5         | Mother     | 37y | Female | LL    | Son 1                   | 13y | Male  | BL    | ENL          |
| 6         | Husband    | 52y | Male  | BL    | Wife 1                  | 40y | Female | BT    |              |
| 7         | Mother     | 37y | Female | LL    | Son 1                   | 13y | Male  | BL    |              |
| 8         | Father     | 35y | Male  | LL    | Son 1                   | 8y  | Male  | BL    |              |
| 9         | Husband    | 55y | Male  | BL    | Wife 1                  | 47y | Female | BT    |              |
|           |            |     |       |       | Son 1                   | 19y | Male  | BT    | LO           |
| 10        | Mother     | 50y | Female | BL    | Son 1                   | 17y | Male  | BL    |              |
| 11        | Father     | 35y | Male  | LL    | Son 1                   | 8y  | Male  | BT    |              |
| 12        | Husband    | 38y | Male  | LL    | Wife 1                  | 30y | Female | BT    |              |
| 13        | Husband    | 55y | Male  | BL    | Wife 1                  | 46y | Female | BT    |              |
|           |            |     |       |       | Son 2                   | 34y | Male  | BT    |              |
|           |            |     |       |       | Son 3                   | 31y | Male  | BL    |              |
|           |            |     |       |       | Son 4                   | 28y | Male  | PNH   | LO           |
| 14        | Brother    | 13y | Male  | BT    | Sister 1                | 11y | Female | TT    |              |
| 15        | Husband    | 52y | Male  | BL    | Wife 1                  | 50y | Female | BT    |              |
| 16        | Husband    | 55y | Male  | BL    | Wife 1                  | 49y | Female | BT    |              |
|           |            |     |       |       | Son 1                   | 22y | Male  | TT    |              |
| 17        | Mother     | 50y | Female | BL    | Son 1                   | 16y | Male  | BL    |              |
| 18        | Husband    | 38y | Male  | LL    | Wife 1                  | 34y | Female | BT    |              |

BT- Borderline Tuberculoid Leprosy; BL- Borderline Lepromatous Leprosy; LL- Lepromatous Leprosy; ENL- Erythema Nodosum Leprosum; PCH- Partial Claw Hand.

Table 2: Clinical data of Familial Leprosy

| Total No. of cases | 302 |
|--------------------|-----|
| Index cases        | 18  |
| Family members     | 26  |
| Total No. of Leprosy cases | 44 |
| Total No. of TT (%) | 4.55 |
| Total No. of BT (%) | 40.91 |
| Total No. of BL (%) | 36.36 |
| Total No. of LL (%) | 13.64 |
| Total No. of PNL (%) | 4.55 |
| Total No. of complications in index cases | 8 |
| Total No. of complications in family members | 4 |
| No. of childhood leprosy | 18.18 |
| Male               | 29  |
| Female             | 17  |
| Male:Female        | 1.7:1 |
| Index paucibacillary cases % | 22.22 |
| Family paucibacillary cases % | 69.23 |
| Index Multibacillary cases % | 77.78 |
| Family Multibacillary cases % | 30.77 |
| Conjugal leprosy   | 3.31 |

TT- Tuberculoid Leprosy; BT- Borderline Tuberculoid Leprosy; BL- Borderline Lepromatous Leprosy; LL- Lepromatous Leprosy; PNL- Pure Neuritic Leprosy.
Conjugal leprosy was seen in 10 families in our study with prevalence of 3.31%. Conjugal leprosy, though reported to be uncommon has a prevalence between 0.33% to 7.8%.\textsuperscript{10,11} The average duration of contact with the spouse was 16.6 years before contracting the disease. Conjugal leprosy is an enigma in the epidemiology of leprosy. Prolonged intimate exposure among the couple is a definite risk factor for transmission of leprosy yet, the prevalence of conjugal leprosy is not as high as it were expected to be.

5. Conclusion

Due to the combined efforts of many dermatologists, the incidence and prevalence of leprosy have dropped to a great extent over the past few decades. But we must still have an eye out for possible leprosy cases which could be missed if thorough examination is not done. Our study intends to emphasize the importance of examining the close contacts of a case of leprosy, especially the family members in whom the incidence of leprosy could be very high. By way of identifying leprosy cases early in its course we may be able to prevent deformities to a great extent. So, active surveillance of the at-risk contacts (family members) has to be carried out and should be subjected to detailed examination.

6. Source of Funding

No external funding was received to carry out this work.

7. Conflict of Interest

None declared.

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