

The Prevalence and Pattern of Leprosy in a School Survey¹

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Case finding forms a salient link in the prevention and control of leprosy. Various methods such as tracing the contacts and group and census surveys are used for this purpose.⁽¹³⁾ School surveys being one of these. Only a few reports^(4,5,7) from some parts of India are available on the subject. Hence, it was thought worthwhile to undertake a leprosy school survey in Panaji, India. The present study highlights the prevalence and pattern of leprosy amongst schoolchildren.

MATERIALS AND METHODS

The children attending the Panaji schools formed the material for this study. Altogether, eight schools were surveyed. They included government, government-aided and private primary/high schools. Full cooperation of the authorities and the students was sought by explaining to them a week in advance the purpose and confidentiality of the study.

On the scheduled days the survey staff, consisting of two medical officers and a non-medical supervisor attached to the Urban Leprosy Center, National Leprosy Control Program, visited the school. The total skin surface of every child was thoroughly examined in broad daylight. Any student who had a suspicious skin and/or nerve lesion, as suggested by a change in the color of the skin, impairment or loss of sensation and/or thickened and tender nerves, was instructed to report to the center for a detailed examination. The morphology of the lesions were recorded in detail, emphasizing their probable

duration, size, and their number and distribution. The sensory modalities such as temperature, touch and pain were tested. Skin-slit smears for the demonstration of acid-fast bacilli and biopsies were also done. The microscopic sections were stained with the hematoxylin-eosin stain. The clinical and histopathologic classification of Ridley and Jopling^(10,11) and Ridley⁽⁹⁾ was used.

RESULTS

A total of 4,874 children from eight separate schools were examined. The overall incidence of leprosy was 5.3 per 1,000.

The age and sex distribution of the students examined and the number of leprosy cases is shown in Table 1. The prevalence for males and females was 7 per 1,000 and 2.9 per 1,000 respectively. The great majority of cases were seen in the 10 to 14 year age group. The duration of awareness of the disease was variable, ranging from one month to five years.

There were 2,851 male and 2,023 female students of which 20 males and 6 females had leprosy. Twenty-three had tuberculoid (TT), two indeterminate (I), and one had borderline tuberculoid (BT) leprosy.

Clinical features. *Tuberculoid.* Clinically the lesions were well defined, hypopigmented, erythematous, dry and scaly (Fig. 1). Induration was mild to moderate, and marked at the periphery. Sensations to temperature, pain and touch varied from reduced to anesthesia. The presence of a single lesion was the hallmark of this type. Only in two were more than one lesion noted. In three children the regional superficial cutaneous nerves supplying the patch were thickened and tender. The lesions occurred largely in the exposed parts of the extremities. Buttocks were affected in only one case. Other sites such as abdomen and face were also affected. Skin-slit bacteriologic examination was negative.

Borderline-tuberculoid. These lesions were well defined, hypopigmented, erythematous and dry with mild peripheral induration (Fig.

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2). Sensations to temperature, touch and pain were impaired. The lesions were asymmetrically distributed on both hands.

Indeterminate. In two patients the lesions were ill-defined, hypopigmented, mildly erythematous and surrounded by satellite lesions (Fig. 3). The induration was conspicuous by its absence. The sensations of temperature, touch and pain were impaired.

Histopathology. The histopathology of 21 cases of clinically tuberculoid leprosy were studied. In two cases the findings were clearly characteristic of tuberculoid, in nine the features were those of BT, and in the remaining ten the histopathology was that of inde-

minate leprosy in two of which perineural infiltration was noted. The clinical and histopathologic changes of the BT cases were consonant. Of the two cases diagnosed clinically as indeterminate one had corresponding histopathologic features and one of TT. The correlation between clinical and histopathologic determinations is presented in Table 2.

DISCUSSION

The school survey is a useful method for the study of the prevalence of leprosy (¹³). This is well documented in our study and by earlier studies (^{2-4,7}). In our study the prev-



FIG. 1. TT—A well-defined hypopigmented, dry scaly lesion on the buttocks.



FIG. 2. BT—A well-defined hypopigmented lesion with mild peripheral induration on the back.

TABLE 1. Age and sex distribution of examined children and leprosy cases.

Age (years)	Males		Females		Total
	No. students examined	No. leprosy cases	No. students examined	No. leprosy cases	
5	56	—	48	—	104
6	113	—	145	—	258
7	189	1	139	—	328
8	222	2	123	—	345
9	207	—	139	—	346
10	311	2	184	1	495
11	359	1	213	1	572
12	450	3	226	1	676
13	342	3	209	—	551
14	272	6	230	2	502
15	216	1	246	—	462
Over 15	114	1	121	1	235
Total	2,851	20	2,023	6	4,874

TABLE 2. Clinical and histopathologic correlations.

	Histopathologic	TT	BT	I	Total
Clinical					
TT		2	9	10	21
BT		—	1	—	1
I		1	—	1	2
Total		3	10	11	24

alence was found to be 5.3 per 1,000. In a similar study from Greater Bombay it was over 10 per 1,000 (2,3), while in Burma and Nigeria the prevalence is very high and regular resurveys of schools every year or every two years yield four or five new cases per 1,000 children examined (6). Such findings in an urban community underline the importance of the school survey as a case detection method in a leprosy control program for it is far more difficult to detect leprosy cases in town by other methods. Furthermore it assists in contact tracing, thus unfolding the endemicity of leprosy in an area. Leprosy was detected in both males and females but the prevalence was higher in males.

It was interesting to usually find a single lesion, in most cases conforming to the morphology of tuberculoid leprosy. They were chiefly present on the exposed parts of the body such as the extremities and the face. Only in one case were the buttocks affected. These findings are in conformity with those described in standard texts (1,8), while the

observations of Ganapati *et al* (3) are deviant. Clinically most patients could be classified on the basis of morphologic characteristics.

On the other hand, well-defined histopathologic changes were only seen in 13 patients. In the remaining patients, early histopathologic changes suggestive of indeterminate leprosy were noted. Hence the disparity between the clinical and histopathologic findings was evident; well-formed clinical lesions having early histopathologic changes while an early clinical lesion had the well-formed histopathologic findings of TT.

The present observations, therefore, emphasize the importance of histopathologic study in addition to clinical study in order to decide the precise status of a patient in the leprosy spectrum (12). Additionally, it helps in the detection of early lesions of leprosy and assists in determining the schedule of leprosy treatment.

SUMMARY

The prevalence of leprosy in a school survey conducted in Panaji, India was found to be 5.3 per 1,000 with males predominating. The majority of patients had a single lesion on exposed parts of the body showing the clinical characteristics of tuberculoid leprosy. However, clinical features of indeterminate leprosy were seen in two patients and borderline tuberculoid in a single case. On the other hand, histopathologically, the majority of the patients were classified as having borderline tuberculoid or indeterminate leprosy. A disparity between the clinical and histopathologic diagnosis was evident. This observation emphasizes the importance of studying both the clinical and histopathologic features in deciding the precise status of a patient in the leprosy spectrum.



FIG. 3. I—An ill-defined hypopigmented lesion surrounded by satellite lesions on the forearm.

RESUMEN

En un estudio hecho en una población escolar de Panaji, India se encontró que la preponderancia de lepra fue de 5.3 por 1000, con un predominio en los hombres. La mayoría de los pacientes tuvieron una sola lesión sobre partes expuestas del cuerpo con las características de la lepra tuberculoide. Sin embargo, en dos pacientes se observaron características clínicas de lepra indeterminada y de lepra cercana a la tuberculoide (borderline tuberculoide) en uno de ellos. Por otro lado, histopatológicamente, la mayoría de los pacientes se clasificaron como borderline tuberculoides o como indeterminados. Fue evidente una disparidad entre el diagnóstico clínico y el histopatológico. Esta observación enfatiza la importancia de estudiar tanto las características clínicas como las histopatológicas para definir la posición precisa de un paciente dentro del espectro de la lepra.

RÉSUMÉ

Au cours d'une enquête menée dans une école dans le Panaji, une prevalence de 5,3 pour 1000 de lèpre a été trouvée. Cette prevalence est prédominante chez les garçons. La majorité des malades présentaient une lésion isolée, sur les parties exposées du corps, montrant les caractéristiques cliniques de la lèpre tuberculoïde. Néanmoins, chez deux malades, on a relevé des caractéristiques cliniques de lèpre indéterminée; chez un autre cas, il s'agissait de lèpre tuberculoïde borderline. Par ailleurs, sur le plan histopathologique, la majorité des malades pouvaient être classés comme souffrant de lèpre tuberculoïde borderline ou indéterminée. Le diagnostic clinique et le diagnostic histopathologique montrent ainsi une disparité évidente. Cette observation souligne l'importance qu'il y a à étudier à la fois les caractéristiques cliniques et histopathologiques, en vue de préciser où exactement se situe un malade dans le spectre de la lèpre.

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