

A SURVEY OF DEFORMITIES IN LEPROSY

(with special reference to face)

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Introduction

One of the important reasons why leprosy patients cannot be rehabilitated into society is because of their deformities. With the increasing scope of reconstructive surgery, it is important at this stage to have a better understanding of the incidence of the various deformities of the disease, particularly those which are permanent in nature and which will need surgery in some form or other for their correction. With this object a survey as detailed below was undertaken.

Selection of the Material

In order to assess the true incidence of deformities it is necessary to examine a random and unselected group of persons suffering from leprosy. At Acworth Leprosy Home, Wadala, Bombay, both inpatients and outpatients are available. Inpatients naturally form a selected group and the incidence of deformities in them will be much higher than average, because of accumulation of the deformed cases. This also will be the case with the old outpatients who attend the clinic.

Therefore all persons were screened who visited the clinic for the first time either for diagnosis, confirmation of diagnosis and/or for the treatment of their disease. Out of these people 200 consecutive patients who were confirmed as suffering from leprosy were included in the survey. These patients were examined for the type of disease and deformities as they came to the outpatients' department, there being no selection of any kind. This survey was conducted from December 1961 to February 1962.

Examination of the Patients

The patients were examined clinically and bacteriologically; clinically for the detection of skin lesions, anaesthesia, any obvious deformity of the body, and for the type of the disease; bacteriologically for *M. leprae* in the lesions. The examination was concentrated mainly on the obvious deformities of the body and finding the incidence of deformity such as both affects function and/or appearance of the individual to make him sufficiently distinguishable to a layman as a subject of leprosy and which would hinder his rehabilitation.

Criteria of the Deformity

A. Face.

1. *General facial skin:*

- (a) Nodularity or lepromatous infiltration of the skin sufficient to cause visible stigma.
- (b) Gross wrinkling and laxity of the skin.

2. *Eyebrows:*

Visible loss of hair sufficient to comprise a stigma.

3. *Nose:*

- (a) Depression or irregularity in its contour sufficient to cause visible deformity. (The interior of the nose was examined by anterior rhinoscopy to detect lesions of mucous membrane cartilage and bone. The sense of smell was also tested but in the analysis only visible deformities are included.)

4. *Ears:*

- (a) Wrinkling and elongation of lobules.
- (b) Loss of helix.

5. *Lagophthalmos: Partial or total*

(Ophthalmic complications without lagophthalmos such as watering, corneal ulcers or opacities, iritis, etc. are not included.)

6. *Paralysis of other branches of the facial nerve.*

B. Upper extremity

- (a) Ulnar, median or combined ulnar and median paralysis.
- (b) Absorption of fingers.
- (c) Contractures of the fingers and thumb
- (d) Ulcers.

C. Lower extremity

- (a) Foot drop
- (b) Absorption of toes.
- (c) Plantar ulcers.

(Anaesthesia, nerve thickening, skin patches have been excluded, though the patients were examined for them, because anaesthesia and nerve thickening do not by themselves constitute visible deformity and later will regress with treatment, and none of them will require surgical correction.)

D. Sex organs

- (a) Gynaecomastia
- (b) Atrophy of testes.

Classification and Typing of the Disease

The disease was typed first clinically and this later was supported by bacteriological findings, into Tuberculoid, Intermediate and

Lepromatous. Subtyping in these three main types was done according to the extent and number of skin lesions, anaesthetic patches, and nerve lesions, as is given below.

<i>Tuberculoid or Non-lepromatous</i>			<i>Intermediate or Indeterminate</i>	<i>Lepromatous</i>
A	B	C		
TM1 MA1 P1	TM2 MA2 P2	P3	I B (Border line) RT (Reactionary Tuberculoid)	L1 L2 L3

TM—Tuberculoid major
MA—Maculoanesthetic
P—Polyneuritic (affecting the nerves)
I—Indeterminate

Thus TM1 is a Tuberculoid major case with a small or single patch somewhere on the body and TM2 is a similar case with multiple and/or extensive tuberculoid lesions, all over the body. P1 is a case of nerve involvement with little paralysis or anaesthesia and P3 is a case of multiple nerve lesions and with extensive anaesthetic patches over the limbs and/or gross paralysis of groups of muscles in limb or limbs. The Intermediate group includes borderline cases and reactionary tuberculoid varieties. All sorts of combinations of polyneuritic and other sub-types are possible, e.g. TM1, MA2P3, L1P1, etc.

Sex Incidence and Distribution of Deformity

Males comprise 79% of the cases examined, 63.92% of whom had obvious deformity; while the percentage in female patients examined was 57.14%. Out of 200 cases, 125 had showed visible deformity and 76 cases of these (i.e. 60% app.) required some form of surgery. The number of operations required for these 76 cases, for one or more deformities was calculated as 180 operations.

A few deformities, e.g. absorption of fingers and toes, cannot be corrected by surgery. Some of the deformities recover without any operation, e.g. skin patches, ulcers and many of the lepromatous skin lesions. Thus of the 76 cases with the deformities, the average number of surgical operations required per patient was 2.36.

TABLE I

Sex	Number of cases	% in 200	No. of cases with deformity	% in total sex cases	% in 200
Male	158	79%	101	63.92%	50.5%
Female	42	21%	24	57.14%	12%

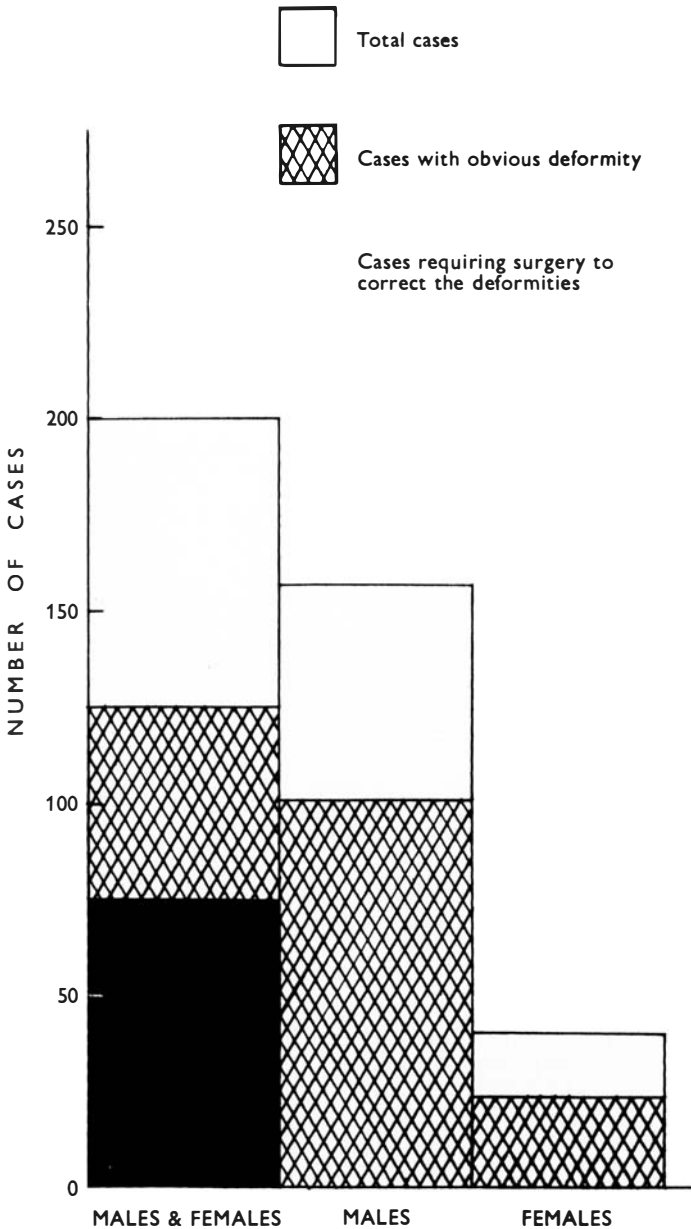


DIAGRAM 1
SEX INCIDENCE AND DISTRIBUTION OF DEFORMITY

Age Incidence and Deformity

The maximum incidence of disease was in the 20 to 29 age group. The number of deformed cases was also maximum in the same age-group. In terms of percentages there is a steep rise from 8.33% at 0 to 9 years to 54.54% at 10 to 19 years. This rise continues with the

TABLE 2

Particulars	0-9	10-19	20-29	30-39	40 & up
	age group in years				
Total cases in each group	12	22	66	54	46
% of age group cases in 200	6	11	33	27	23
No. of deformed cases	1	12	40	38	34
% of deformed cases in total age group cases	8.33	54.54	60.60	70.47	74
No of cases requiring surgery	0	7	19	25	25

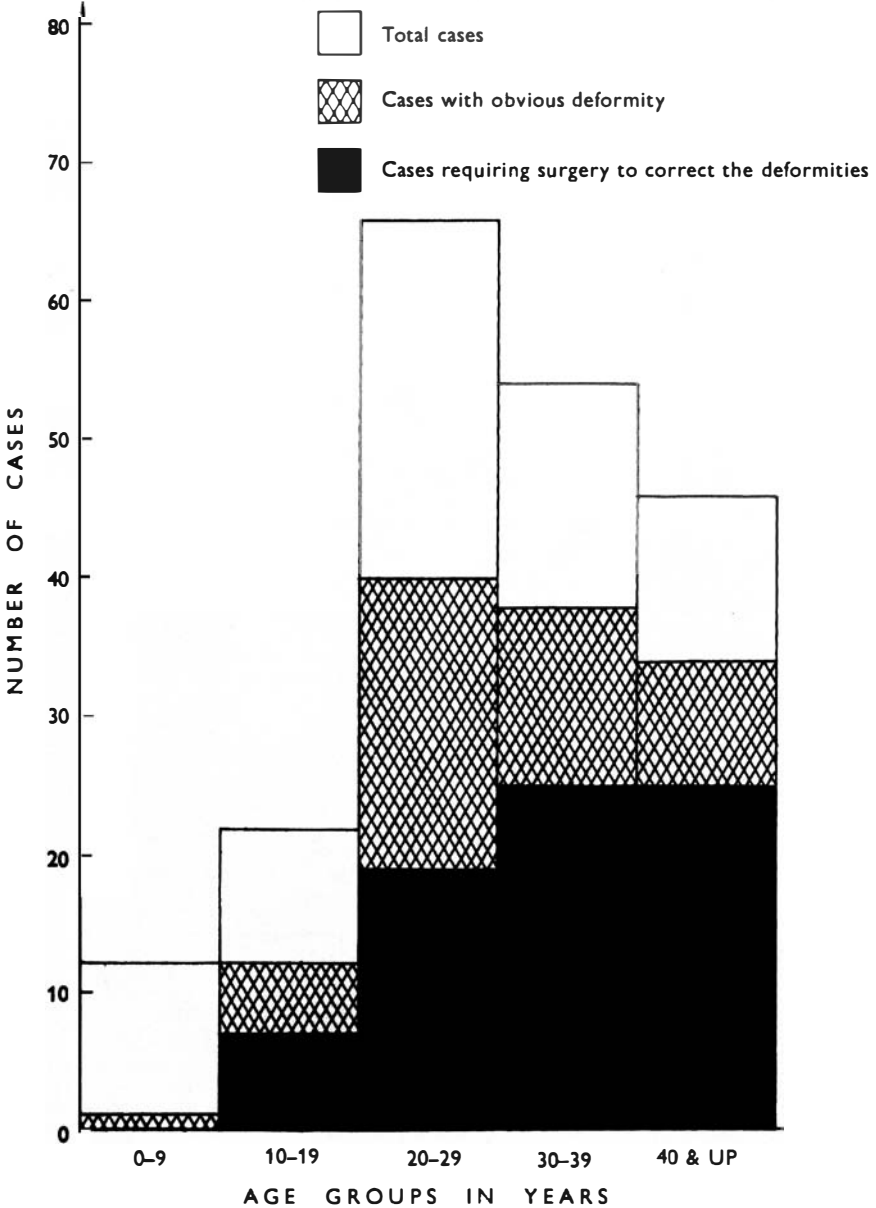


DIAGRAM 2
AGE INCIDENCE AND DISTRIBUTION OF DEFORMITY

age and attains 74% at 40 years and above. The number of cases requiring surgery in each age group also increases with the age, being zero in 0 to 9 years age group and 25 in 5th age group. In 20 to 29 age group the number of cases requiring surgery out of the total deformed cases is 19, which as compared to later age group is less.

Regional Incidence

TABLE 3

	<i>Face</i>	<i>Upper extremity</i>	<i>Lower extremity</i>	<i>Sex Organs</i>
No. of cases with deformity	85	51	40	4
% in 200	42.5	25.5	20	2
No. of cases requiring surgery	48	39	12	4
% in total regional cases	56.46	77 app.	30	100
No. of operations required to correct deformities	101	56	17	6

Of all the regional deformities, those of the face form the largest group and also require the largest number of operations.

Regional Deformities and the Type of the Disease

TABLE 4

	<i>Total cases of each type of the disease and its % in 200</i>	<i>Face</i>	<i>Upper extremity</i>	<i>Lower extremity</i>
Total cases of deformity in each region	↓ →	85	51	40
Tuberculoid	126 or 63%	23	31	24
Intermediate	25 or 12.5%	14	6	5
Lepromatous	49 or 24.5%	48	14	11

The tuberculoid variety constituted 63% of the total cases, then came the lepromatous 24.5% and least were the intermediate with 12.5%. In the lepromatous variety, out of 49 cases, 48 were with visible face lesions and 14, i.e. 28% were suffering from some lesions of the extremities. It is commonly believed that in the lepromatous variety the extremities are not much affected, but in this survey 28% of the cases were found to have some deformity of the extremities. More than 60% of deformities of the extremities belonged to the tuberculoid variety (see table 4A.).

From the table it is seen that more than half of the cases of face lesions belonged to the lepromatous type and about $\frac{1}{3}$ to the tuberculoid variety. In extremities 60% belonged to the tuberculoid and

TABLE 4A

<i>Particulars</i>	<i>Approximate Percentage in each Group</i>		
	<i>Tubercloid</i>	<i>Lepromatous</i>	<i>Intermediate</i>
Face	27	56	17
Upper extremity	61	28	11
Lower extremity	60	28	12

28% to the lepromatous variety. The cases of deformity of different regions, belonging to the intermediate type varied from 11% to 17%.

Details of Facial Deformities

From Table 3 it is observed that cases with visible facial lesions were 85, i.e. 42.5%. Of these, 48 cases required surgery to correct these lesions. Hence nearly 24% of the total leprosy cases needed some type of facial reconstruction. The total number of operations to correct these deformities was 101.

TABLE 5

<i>Particulars</i>	<i>General facial skin</i>	<i>Ears</i>	<i>Nose</i>	<i>Eyebrows</i>	<i>Lagophthalmos</i>	<i>Paralysis of other facial branches</i>
1. Deformed cases	70	57	36	33	5	2
2. % in total face cases	82.33	67.05	42.33	38.83	5.88	2.35
3. Number of cases requiring surgery to correct the deformity	8	33	22	30	5	2
4. % of total cases requiring surgery to the total in each column	11.42	57.9	61.11	90.90	100	100
5. % of 3 to total face cases	9.41	38.82	25.88	35.29	5.88	2.35

Maximum cases of deformity were in general in the facial skin and constituted 82%. Many of these were lepromatous infiltrations which would regress on treatment but cases with paralysis of facial nerve branches which were very few would need operations in all the cases. In the nose, lesions of the mucous membrane, cartilage, or bone did not always produce visible deformity. Silent perforations of the septum without visible external deformity were present in 4 cases in the series. It was also observed that unless there was complete destruction of the nasal lining the sense of smell did not disappear.

Summary

200 unselected cases of confirmed leprosy attending the out-patient's department at The Acworth Leprosy Home, Wadala, Bombay, were surveyed for deformities and the results analysed in terms of age, sex and regional distribution. The sex distribution of

deformities showed predominance of males to females in the approximate ratio of 4 : 1. The incidence of deformities with age showed a steep rise in 2nd decade (55%) and by the age 40, 70% of all cases examined showed visible deformities which could be classified as stigmata of leprosy. The regional distribution of deformities showed preponderance of facial deformities. The estimated total number of operations per patient with deformity was 2·36. The relation of various deformities to the type of leprosy have also been discussed.

It is hoped that this survey will be of help to the planning of a reconstructive surgery programme in any area where the percentage incidence of leprosy per population is known.

Acknowledgement

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