A STATISTICAL REVIEW OF 1,379 CASES OF LEPROSY IN CHINA[1]

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The present report is a review of information on 1,379 cases of leprosy, obtained by means of questionnaire cards sent to as many as possible of the medical workers in China who are dealing with this disease. The number is not as large as might be desired, but the investigation is being continued, so this report is to be regarded as a preliminary one. However, the figures dealt with are in most cases sufficient to obviate the danger of serious error from that factor.

The points on which information was sought were the following: sex, occupation, age at appearance of first symptoms, length of time before coming for treatment, site of first manifestation of the disease, the existence of leprosy in the family, known contact with lepers, the results of the bacteriological examination, and the type of the disease.

SEX

It is almost universally the case that leprosy is more prevalent in men than in women. This is certainly true in the disease as ordinarily met: that is, where it is slow in development and chronic in nature. It is probable that on the rare occasions when leprosy assumes epidemic form this rule does not hold, but none of the cases dealt with in this report come under the epidemic class.

Actually our figures are 1,091 males to 288 females, or a proportion of 3.8 to 1. It is certain that this is not the true state among the lepers of China. Because of the greater provision in this country for the medical treatment of men than for women, and the general rule that men come for treatment for most diseases in larger proportion than do women, the relative proportion of males is greatly exaggerated. In clinics where the provision for the treatment of women is the same as that for men the difference is much less striking.

Rogers in a recent paper (1) gives the following figures: Wayson and Rhea for Hawaii, 1.5 males to 1 female; Hopkins and Denney,

[1] Report to the Council on Research of the Chinese Medical Association. Given at the Section on Leprosy, Chinese Medical Association Conference, April 7, 1937.

Carville leprosarium, 2.6 males to 1 female; Kobayashi and Amagasaki in Tokyo, 3.4 times as many males as females in 6,693 cases; Klang and Wilson, Korea, 1.4 males to 1 female among 709 cases.

It is interesting here to note that an inquiry into infection among other members of the patients' families revealed the fact that 95 of them had leprous fathers and only 45 had leprous mothers, giving a proportion of slightly more than 2 to 1. This probably is approximately the correct sex incidence of leprosy in China.

OCCUPATION

The question of occupation is of interest in determining among what class leprosy is most common, and whether this may be in any way responsible for the spreading of the disease.

The reply to the first question is easy. Out of the 1,199 cases on which information was obtained no fewer than 1,053 (88 percent) were farmers, laborers, herdsmen, hawkers, fishermen, sailors, etc. The remaining 146 are classed as follows: government officials 3, ex-magistrate 1, army officers 7, soldiers 4, school-teachers 2, students 48, merchants 73, monks and priests 8. No information was given in 133 cases, and 47 of the patients were children below school age.

With regard to the question of how many of the patients may be engaged in trades which would favor spread of the infection no very full reply can be given, but the following figures are suggestive. There were 2 school-teachers, 8 monks and priests, 1 barber, 3 drawn-thread workers, and 14 hawkers. It is probable that this does not by any means exhaust the list of those likely to spread widely the infection.

AGE AT APPEARANCE OF FIRST SYMPTOM

The age at which the first manifestation of the disease appeared is given in the first part of Table 1. The figures given are, I believe, approximately correct, though in cases where the disease has lasted for more than ten years there may be some question as to whether the patients' memories are to be trusted. The data, however, were collected in two batches, and a comparison of the figures on this point in the two groups coincide so closely that it seems reasonable to regard them as approximately correct.

The summarized figures (for the first decade up to 30 and for all ages after that) are given in Table 1 to permit comparison with those for other countries in the article by Rogers referred to. For further comparison with his table, the percentages in Table 1 are

summated by five-year periods, as follows: 0-4, 0; 0-9, 5.2; 0-14, 20.1; 0-19, 40.4; 0-24, 56.4; 0-29, 69.4; 0-34, 80.1; 35 or over, 19.9.

Leprologists generally consider that an interval of four to five years usually elapses between the time of actual infection and the manifestation of symptoms. In the second part of Table 1 are given the figures for the same group of patients corrected on the basis of that assumption to show the presumptive ages at which infection took place.

TABLE 1.—*Age on appearance of first symptoms (1,350 cases), and estimated approximate age of infection.*

Age group	Age on appearance of first symptoms			Age of infection (estimated)	
	Cases	Percent		Cases	Percent
0–4	2	0.0		73	5.4
5–9	71	5.2		202	14.9
10–14	202	14.9	35.2	276	20.3
15–19	276	20.3		217	16.0
20–24	217	16.0	29.0	175	13.0
25–29	175	13.0		145	10.7
30–39	229	16.9		139	10.0
40–49	109	8.0	30.6	83	6.1
50 and over	77	5.7		48	3.5

It is interesting to note that, while manifestations of the disease are rare in infancy and the early years of life, the numbers of cases begin to rise steeply towards the end of the first decade and mount rapidly to a climax towards the end of the second decade, thereafter declining much more slowly in the older groups. In the two decades from 10 to 30 nearly two-thirds (64 percent) of the cases occur, the peak being reached with one fifth of all cases in the 15 to 20 age period.

This does not quite agree with the now commonly accepted idea that young children above the age of infancy are those most likely to acquire the infection, but it must be recognized that the period of five years allowed in the corrected part of Table 1 for the infection to remain dormant is purely arbitrary, and it may be that the actual average period is much longer.

PERIOD ELAPSING BEFORE TREATMENT

The information concerning the period elapsing between the time of appearance of symptoms and that at which the patients appeared at the clinics for treatment is most disappointing, as the figures in Table 2 show.

TABLE 2.—*Period elapsing between appearance of symptoms and beginning of treatment (1,356 cases).*

Time elapsed	Number of cases	Percentage of cases
0–6 months	77	5.7
6–12 months	178	13.1
1–2 years	115	8.5
2–3 years	137	10.1
3–4 years	124	9.1
4–5 years	121	8.9
5–6 years	80	5.9
6–7 years	78	5.8
7–8 years	74	5.5
8–9 years	33	2.4
9–10 years	78	5.8
Over 10 years	261	19.2

Less than one-fifth of the patients (19 percent) came for treatment during the first year of the disease. Not much less than one-half of them (45 percent) had had it for over five years before being treated, and nearly one-fifth (19 percent) for ten years or more. Here, surely, is sufficient reason for the depressing reports which one sometimes gets of failure to cure any reasonable proportion of cases.

SITE OF FIRST MANIFESTATION

It is often stated that the face is the most frequent site of the first lesion in leprosy. That is not the fact with the cases under consideration, as shown by the figures in Table 3. The buttock and lower extremity take the first place with 35 percent; the face was the first site in only one-quarter of the cases, and the arm was almost as frequently involved first.

Too much weight must not be put on these figures. They depend for their accuracy on the patients' observation, often not very accurate, of what may be transitory manifestations which are not always very evident, and also on their recollection of events that occurred sometimes more than ten years before.

TABLE 3.—*Sites of first lesions of leprosy (1,255 cases).*

Site of first lesion	Number of cases	Percent of cases
Leg and buttock	438	34.9
Face	319	25.4
Arm	298	23.7
Body	129	10.3
Multiple	71	5.7

LEPROSY IN THE FAMILY

Details of the presence of the disease in other members of the patients' families, as admitted by them, are given in Table 4.

Not quite one-third of the patients admitted the existence of other cases in the family. It is interesting to note the fact, attention to which has been called above, that more than twice as many fathers as mothers suffered from leprosy.

KNOWN CONTACT WITH OTHER LEPERS

It will be realized that statistics on contacts with cases of leprosy are not very reliable, but the answers to the question are as follows: Out of 1,379 cases, 446 had had known contact with other cases, 711 definitely denied such contact, and 222 were not aware of association with other lepers. In other words, only one-third of the patients are definitely known to have had contact with sufferers from the disease, outside of their own immediate relatives. Such statements must be taken with reserve, but it is interesting to note that they do not differ greatly from the findings of other observers.

RESULTS OF BACTERIOLOGICAL EXAMINATIONS

The value of the figures on the bacteriological examinations is considerably lessened by the absence of any statement regarding the number of examinations made in each case. It is desirable that a series of smears should always be taken from different areas before

pronouncing a case negative. Furthermore, this examination was made in only a little more than one-half of the cases reported upon—712 examined, 667 not examined. Out of the 712 examined, 523 were positive, 187 negative, and 2 doubtful. It is very desirable that more systematic examinations should be made. The technique is simple and not very time-consuming.

TABLE 4.—*Occurrence of leprosy in other members of the family (1,325 cases).*

Occurred in	Instances	Remarks
Four generations	1	
Grandfather	4	
Father	95	Both parents in 3 cases.
Mother	45	
Brothers and sisters	120	Also parents, 4 cases.
Children	18	Also other near relatives, 2 cases.
Other near relatives	158	Also in immediate family, 4 cases.
None	897	
Total	1,338	Less counted twice, 13 cases.

TYPES OF DISEASE

The question of the types of disease has been deliberately left to this point of the report, because the returns under this heading are most unsatisfactory. This is hardly surprising, for the recommended method of classification is a difficult one and its application depends to some extent on the results of the bacteriological examinations. Our own experience is that even those with expert knowledge will often differ with regard to the subtype to which a case should be assigned, and that classification by a single observer will itself vary with his increasing ability in securing positive bacteriological examination. The returns as received are given in Table 5.

The only comment offered is that, obviously, many of the cases were incorrectly classified with reference to the Memorial Conference classification. Cases should be recorded with indication of their subtype, and not simply the type ("C" or "N"). The terms "mixed" and "nodular" should not be used. There is as yet insufficient agreement on the position of "tuberculoid" cases in the classification. It will be noted that no attempt at classification was made in 103

patients; we are not inclined to blame those reporting for omitting this.

TABLE 5.—*Classification of 1,276 cases.*

"C"	261 cases	C1—N1	40 cases
C1	28 cases	C1—N2	24 cases
C2	46 cases	C1—N3	9 cases
C3	14 cases	C2—N1	40 cases
"N"	367 cases	C2—N2	48 cases
N1	43 cases	C2—N3	19 cases
N2	56 cases	C3—N1	10 cases
N3	20 cases	C3—N2	9 cases
"Tuberculoid"	21 cases	C3—N3	15 cases
		"Mixed"	206 cases

In closing, it is desired to emphasize the fact that the numbers of cases dealt with in this analysis are too small to permit drawing any final conclusions, though they at least suffice to indicate definite features with regard to the disease as it is seen in China to which further consideration should be given. It may be said that this paper deals with only a few very elemental facts, but our knowledge of leprosy in this country is so extremely scanty that an appreciation of these elemental facts is necessary as a basis for further study. Great stress should be laid on the appalling delays before patients come for treatment, which reduces enormously their prospects of cure. This delay is doubtless due to the lack of opportunity for treatment, and the entire want of interest in leprosy work in official circles.

Thanks are due to all those who have assisted in making this survey by sending us the returns dealt with. It is hoped that they will continue to do that in order that a fuller and more complete report may be issued at some later date. Thanks are due also to the Henry Lester Institute of Medical Research, and to its director, Dr. H. G. Earle, for bearing the cost of printing and of sending out the cards for these returns.

REFERENCE

(1) ROGERS, SIR L. The epidemiology of leprosy. Internat. Jour. Lep. 4 (1936) 369–484.