

THE SEX INCIDENCE OF LEPROSY

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INTRODUCTION

In India, as in most other countries, leprosy appears to be much more common among men than among women. There is a great disproportion in our in-patient institutions and out-patient clinics, and also in cases seen in survey work. It is important to determine whether this apparent difference in the sex incidence is actual. It may be that leprosy affects both sexes equally but that fewer cases among women are detected. If, however, the disease is really less frequent among them it would be interesting to know why. Is it because they are less susceptible, or because they are merely less exposed to infection because of their conditions of living?

The subject has never been thoroughly studied, though there are many reports bearing on the point. The question is a difficult one. Obviously, investigations in small areas may give misleading results; it is desirable to collect information from as wide an area as possible, to include different races, different climates and different social conditions. We have, therefore, surveyed the available literature and have also made inquiries of workers in different parts of India and in other countries. In this paper we attempt to review the information that we have collected, and to arrive at some conclusions regarding the sex incidence and the factors affecting it.

GENERAL STATISTICS OF SEX INCIDENCE

A summary of the figures are given in Table 1. Not all of these can be taken at their face value; a great deal depends on how they were collected, and their source. Returns based on compulsory notification of cases in countries in a comparatively high state of civilization may be taken as giving a reliable idea of the matter; similar returns in less advanced countries are less reliable. Figures derived from voluntary attendances at clinics and hospitals are bound to be unreliable, since in many countries it is much more difficult for

TABLE 1.—Collected statistics on the sex incidence of leprosy.*

Country	Author and Date	Sex		Ratio	Remarks	
		Males	Females			
Group A—Data Probably Accurate						
Norway	Sand 1903	1,080	598	1.8:1	Admissions (compulsory segregation), 1860-1900. All cases in Norway.	
	(Official) 1910	137	186	0.7:1		
	..... 1930	23	46	0.5:1	
United States	Hopkins and Denney ... 1929	519	199	2.6:1	Patients admitted to Carville, 1894-1928.	
South Africa	(Official) 1930	6,077	3,327	1.8:1	All cases segregated, 1910-1930.	
Iceland	Ehlers Bjarnbjedinson . 1908	91	67	1.4:1	Total figures, 1894-5.	
	.....	81	51	1.6:1	Total figures, 1901.
	.....	54	44	1.2:1	Total figures, 1907.
Surinam	Lampe 1929	555	361	1.5:1	Compulsory notification.	
Loyalty Islands—						
Lifou	Leboeuf 1912	.....	.....	3.0:1	} Compulsory examination of all tribes.
	Laquize 1931	107	88	1.2:1		
Mare	Leboeuf 1912	.....	.....	1.2:1	
	Laquize 1931	20	56	0.3:1		
Ouvea	Leboeuf 1912	.....	.....	2.0:1	
	Laquize 1931	32	26	1.2:1		
British Guiana	Hillis 1903	897	223	4.0:1		Compulsory notification.
	Godfrey 1913	479	154	3.0:1		Compulsory admissions.
Hawaii	Wayson 1932	2,264	1,303	1.7:1		Compulsory segregation.
Philippine Islands	Denney 1917	6,950	3,475	2.0:1		Compulsory notification.
Nauru	Allen 1930	217	226	1.0:1	All cases, 1923-1930.	

TABLE I, CONTINUED.
Group B—Accuracy of Data Uncertain

Japan	Tamiya	1932	10,175	4,086	2.5:1	Official figures, 1930
Java	Ehlers and Verdier	1908	3,050	1,275	2.4:1	Official figures.
Finland	Ehlers and Verdier	1908	59	89	1.5:1	Total cases reported.
Crete	Ehlers and Cahnheim ..	1902	127	70	1.8:1	Total cases reported.
Estland	Kupffer	1919	199	244	0.8:1	
	Paldrock	1929	91	145	0.7:1	
Ceylon	(Official)	1932	238	82	3.0:1	1921 Census.
India	(Official)	1921	74,293	28,220	2.6:1	1921 Census.
Danish Antilles	Ehlers	1904	56	65	0.9:1	Official figures.

Group C—Accuracy of Data Doubtful

Annam	Cognac and Mougeot ..	1899	2,145	327	6.6:1	Cases observed.
Formosa	Gushue-Taylor	1929	....	....	3.8:1	260 cases at clinic.
Japan	Matsura	1909	566	145	4.0:1	
	Sakurane	1909	429	107	4.0:1	
	Inouye and Orishige ..	1909	541	127	4.0:1	Cases at clinics. Ando (1917),
	Sugai and Mabachi ..	1910	159	41	4.0:1	522 cases; Kobayashi and Ama-
	Kitasato	1910	100	40	2.5:1	gasu (1932), 6,693.
	Ando	1917	....	....	3.6:1	
	Kobayashi and Amagasu	1932	....	....	3.0:1	Admissions to leprosaria.
Martinique and Guadeloupe	Ehlers and Verdier ..	1908	289	91	3.0:1	Admissions (voluntary).
India	Lowe	1933	2,044	340	6.0:1	Cases at clinics.
	.....		....	....	7.0:1	
Central Sudan	Tonkin	1904	125	95	1.3:1	Cases observed.

* Sources not appearing in the list of references are personal communications.

females to attend clinics than for men, especially where seclusion of women is practiced. The fact that leprosy work is nearly always done by men also tends to reduce the number of women attending clinics in countries such as India. Census returns made by non-medical men are of course unreliable, but since the error affects the returns of both sexes these may give a rough idea of the sex incidence.

In group A of Table 1 we have placed the figures which appear to be reliable. Unfortunately, most of them are from highly-civilized countries, with little leprosy. In group B are the returns which are probably moderately reliable. In group C are those which are certainly unreliable, and those concerning which we can form no opinion. This classification is arbitrary, but we hope we have not done any injustice to those who have compiled returns; we may say that those which we have compiled ourselves are placed in Group C. We will base all arguments as far as possible on the returns in Groups A and B.

In these groups all areas except five show a preponderance of males, on the average the ratio being about two to one. The exceptional returns are those from Norway, Estland, the Danish Antilles, Mare Island of the Loyalty Islands and Nauru. In the last-mentioned area the sex distribution in the cases detected between 1920 and 1930 is practically equal, 217 men and 226 women.¹ In the other countries mentioned there is a preponderance of females.

In Norway, Sand (³¹) reported that the relative incidence during the period 1860 to 1900 (2,858 cases) was 1.8 males to 1 female. On the other hand, in 1930, with 69 lepers in Norway, there were 46 females and 23 males, exactly 2 to 1. It therefore appears that during the interval the relative sex incidence was reversed.

The cause of this reversal is not immediately apparent. Of the 167 new cases reported since 1905, 86 were males and 81 females, the males still predominating. However, most of the cases existing in 1930 were chronic ones of very long standing, two-thirds of them being sixty years of age, and twelve over eighty. It is noticeable that though males are in excess in the age groups below forty, females greatly predominate in the higher age groups; there are 11 men and 35 women over sixty, 5 men and 25 women over seventy. This suggests that the greater longevity of the women, together with the marked decline in total incidence—practically no new cases being detected—has caused the present increased proportion of women.

¹ Tennyson-Allen, unpublished communication.

It is possible that similar factors are acting in other countries where leprosy is dying out. For example, Paldrock (26) reports that in Estland there are 91 male and 145 female lepers, and similar figures are reported for Kurland and Livland. We do not have detailed data from these Baltic States, but it seems quite likely that their unusual returns may be explained as are those for Norway. The same factors also probably influence the recent Iceland figures. This tendency for female lepers to outnumber the males in old age is illus-

TABLE 2.—*Ratios of males to females in Dutch Guiana in 1929 among (1) the general native population, and (2) the native lepers.**

Age group	Ratio, males to females	
	General	Lepers
1 - 4	1.7:1	1.2:1
5 - 9	1.4:1	0.9:1
10 - 14	1.8:1	1.2:1
15 - 19	1.2:1	1.1:1
20 - 29	1.5:1	1.0:1
30 - 39	1.2:1	0.8:1
40 - 49	1.6:1	0.8:1
50 - 64	0.6:1	0.4:1
65 - 80	0.7:1	0.3:1

* From data kindly supplied by Dr. P. H. J. Lampe.

trated by the figures for Dutch Guiana (Table 2), based on the accurate leprosy census made in 1929 and kindly sent me by Dr. Lampe of Surinam.

An interesting report is that of Laquieze (19) concerning the Loyalty Islands. All the tribes there are paraded periodically to examine them for leprosy, so that the data should be fairly accurate. From the time of the introduction of leprosy until 1912, male lepers were apparently more numerous than females. In 1912, however, it was noticed that the proportion of females was increasing, and in 1931 on one island, Mare, they formed nearly three quarters of the total (See Table 1). Laquieze attributes the relative increase among females to their mode of life. He writes that morality does not exist, that there is promiscuous contact and promiscuous exchange of clothing, though it is not clear why these conditions should affect the women more seriously than the men.

Concerning the Virgin Islands Hayes (12) says that females have predominated there from the time figures were first taken. He holds that the women live so much the same lives as the men that the condition to which the usual predominance of males is ascribed—i.e.,

greater contacts with others—does not exist there. The women are as well nourished as the men and in as good health. Leprosy among them is apparently not more noticeable than among the men. He points out that most of the leprosy has been found in patients at the municipal hospital, and that for one reason and another women attend the hospital more frequently than do men.

From the foregoing it appears that, in the few countries in which female lepers exceed the males, there is some local factor which influences the sex incidence and produces abnormal returns.

It is striking that the figures from nearly all the countries with many lepers show a preponderance of males, often a marked preponderance, and that this is found not only in backward countries where accurate returns are difficult to obtain but also in advanced countries such as the United States. Manalang (21) dismisses these figures as inaccurate and states that both sexes are equally affected, believing that the cases in females are undetected. He produces no evidence to support this opinion except the unusual figures of Paldrock concerning Estonia and of Hayes concerning the Virgin Islands, which we have already discussed. The reports of leprosy workers all over the world cannot be dismissed in this fashion. Similar reports are made concerning the sex incidence of tuberculosis in most countries, and these reports are undoubtedly fairly accurate for they are based on mortality figures in civilized countries.

We consider that the figures prove fairly conclusively that in countries where leprosy is at all common the number of males usually exceeds the number of females by about two to one, on the average.

SEX INCIDENCE AND AGE

This matter was investigated by Rodriguez (28) in the Philippine Islands, where the general sex ratio is two to one (Denney 4). Among the 398 children of leper parents in the Culion Leper Colony studied by him there were practically equal numbers of girls and boys—198 to 200. Of these, 39 per cent of the boys and 44 per cent of girls had leprosy or signs suggestive of leprosy. He found that the incidence was practically identical in both sexes up to the eighth year, after which it tended toward the ratio normal for adults, becoming 28 to 13 in the 8-12 year group. This is probably due to the fact that dissimilarity between the activities and habits of the girls and boys begins to become pronounced at this period. Between 10 and 16 years, however, the influences of puberty become manifest; these are

naturally more pronounced in girls, and the incidence among the females rises suddenly, exceeding the male figure by 10 per cent. Thus Rodriguez finds that, in spite of the normal adult ratio in the Philippines, in young children equally exposed to infection there is no difference though there are minor differences in older age periods.

On the other hand Y. Hayashi (11) found that in families in which the parents suffered from leprosy 45 per cent of the sons and 32 per cent of the daughters had leprosy. He concluded that under the same conditions of exposure to infection boys develop the disease more readily than girls.

Figures for India based on the census figures during the last fifty years are given by Rogers and Muir (29). The ratio is 2.6 males to 1 female. They find that in each report a considerably higher proportion of the female lepers was under thirty years of age than was the case with the males. They think this may be due to a higher death rate among the female lepers, but another possible explanation is that in the young the incidence is the same in the two sexes, while in adults it is much higher in men. As we have seen, this was found in the Philippines, and it is quite probably true in India also. Santra² found that, in a compulsory examination of all school children up to 16 years of age in a certain area, about 1 per cent of both boys and girls (about 3,000 of each examined) showed signs of leprosy.

In Hawaii in an examination of 119 males and 106 females (mostly children?) living in the same houses with lepers, McCoy and Goodhue (23) found that the incidence in females (4.7 per cent) exceeded that in males (4.2 per cent), but that of 12 adult female attendants on lepers none showed signs of leprosy, while of 23 adult male attendants 13 had the disease. This seems to agree with the view that children of both sexes show the same rate while adults show a great preponderance of males, but the authors concluded that under the same circumstances both sexes are equally affected.³

More recently Wayson⁴ has investigated the records of 3,567 cases in Hawaii under compulsory segregation, and finds that the general ratio is 1.6 males to 1 female, and that this is fairly constant

² Personal communication.

³ Unfortunately, we have not been able to obtain this report, which is out of print. We have only seen an abstract and so cannot examine their data very carefully.

⁴ Personal communication.

in all the age groups except between 15 and 20 (i.e., after the onset of puberty) when it becomes 1.26 males to 1 female.

The data here quoted afford fairly strong evidence that the sex incidence of leprosy varies at different age periods, sometimes quite markedly. In children the rate in the two sexes appears to be much more nearly equal than in adult life, when the male rate often greatly exceeds the female rate. Between the ages of twelve and twenty, puberty and marriage and its consequences tend to cause a relative increase in the female rate, but after that the prevalence among males once more strongly asserts itself. We have already discussed the tendency for women to live longer than men and thus increase the number of female lepers in old age.

SEX AND THE FORM OF LEPROSY

There are not many references to this subject in the literature, and apparently most workers have observed no marked differences. We have gathered an impression that in India the severer forms of leprosy are less common among women, but this cannot be offered as an established fact. Sand (31), considering 1,678 cases (1,080 males and 598 females), found that 70 per cent of the males and only 65 per cent of the females had the nodular type; his figures for duration of the disease also show that females have a longer expectation of life. However, the differences are not marked.

TABLE 3.—Sex and form of disease among 197 cases in Crete (Ehlers and Cahnheim, 1902).

Form of disease	Number of patients			Percentage distribution		
	Total	Men	Women	Total	Men	Women
Nodular	74	63	11	37.6	49.6	15.7
Anesthetic	91	46	45	45.2	36.2	64.3
Mixed	32	18	14	16.2	14.2	20.0
Totals	197	127	70	100	100	100

Ehlers and Cahnheim (6) give figures for 127 men and 70 women in Crete, here shown in Table 3. From these figures it appears that in that region the nodular form was much more common among men than women, practically half of the men being of that type but only some sixteen per cent of the women. There were relatively more women than men in the mixed-form group, in the ratio of 1.4 to 1, and still more with the anesthetic type, 1.8 to 1. They had no explanation to offer for this "extraordinary phenomenon".

F. Hayashi⁵, of the National Leprosarium in Japan, informs us that in that country the disease in women is on the whole milder than in men. The proportion of neural cases is higher in women; he cites as typical the figures for the Zensei leprosarium, 36 per cent as compared with 19 per cent among men.

We believe that in most countries there is a tendency for the disease to take a severer form in men than in women. This difference may possibly be attributed to environmental factors.

CAUSES OF THE SEX DIFFERENCE

The question now arises as to what may be the cause of the greater frequency among men. We may classify the possible causes as (1) environmental and (2) anatomical or physiological. There is no doubt that in many countries (e.g., India) environmental factors greatly influence the sex incidence, but it is an open question whether in addition there is something in the make-up of women which renders them less susceptible.

Stallybrass⁽³²⁾ gives an interesting discussion concerning the sex incidence of disease in general. His opinions may be summarized as follows:

There are differences, sometimes quite marked, in the incidence and mortality of infectious diseases in the two sexes. Some diseases (e.g., whooping cough and acute rheumatism) are reported as being more common in females, while others (e.g., pneumonia and the middle-age form of tuberculosis) are more common in males. It is also noticeable that the sex incidence of disease often varies with age.

Nevertheless, at all age periods males show a greater incidence and mortality of infectious diseases and a higher total mortality rate. This difference may be due to greater exposure or to greater susceptibility. Greater exposure may possibly explain the greater mortality in males in adult life, but it is difficult to see how it can explain greater mortality in childhood. Greater susceptibility in males may possibly be caused by sex differences; males are bigger and have a more developed musculature, which may throw a greater strain on the circulatory and excretory systems and so reduce chances of recovery when attacked. Again it is difficult to understand how this can explain the greater mortality in males in childhood.

The sex factor may be physiological rather than anatomical. The sex hormones are connected with differences in endocrine activity, as shown by the greater activity of the thyroid in women. The endocrine system is intimately connected with destruction of bacteria and their toxins. It is possible that differences in endocrine function in the two sexes may have an influence on the susceptibility to infectious disease.

⁵ Personal communication.

In addition to anatomical and physiological differences in the sexes there is the cytological difference. Each cell in the female contains a group of chromomeres different from the corresponding group if present in the male, and it is this group that determines sex and sex differences.

Whether these anatomical, physiological, and cytological differences between the sexes have any effect on the sex incidence of disease is uncertain.

Regarding leprosy, we will quote the opinions of various leprosy workers. Rodriguez (28) attributes the difference in sex incidence after eight years to the dissimilarity between the activities and habits that begin to become pronounced at this period. Sand (31) attributed the heavier incidence in men in Norway to the hard life and the poor conditions of their work as fishermen. Ehlers and Cahnheim (6), for Crete, had the same view; they found that the men worked harder than women and under worse conditions, and also were more frequently addicted to alcohol. As stated, McCoy and Goodhue (23) considered that under the same conditions the rate in the two sexes were the same; the higher rate recorded in men was believed due to environmental factors.

Wayson considers the sex difference due either to biological or environmental factors whose identity have not been definitely established, and thinks that the relative rise in the female rate at puberty may be influenced by elements coincident to that phenomenon and to marriage with child birth. He says that there seems to be no tradition or practice prevalent among the Hawaiians which would tend to any preferential rate for the sexes. We have already quoted Laquieze (19) concerning the Loyalty Islands, where he considers that environmental factors have affected the sex incidence, causing a predominance of women.

There is considerable evidence that in India the environmental factor is markedly effective. The females from an early age live much more secluded lives than the males and are much less exposed to leprosy infection, and also to other infections which predispose to leprosy. In the absence of seclusion of women (e.g., in certain areas under modern industrial conditions) there is a relative increase in the female incidence, as is shown by two unpublished observations by K. R. Chatterji and B. N. Ghosh, who examined menial workers engaged in certain industries. Their figures are shown in Table 4.

In the first group (Ghosh) the leprosy incidence in women exceeds that in men, while in the second group (Chatterji) the incidence in men is nearly twice that in women. The explanation of this difference is not apparent, but is probably connected with the conditions of life and labor in the two industries. In the first industry these conditions are bad and weigh heavily on the women, who have to look after their homes and families outside their working hours. In the second industry the conditions are much better, the work is light and out of doors, and the women remain strong, healthy and active while the men become lazy and sometimes drunken and dissolute.

TABLE 4.—Sex incidence of leprosy in two industrial groups in India.

Sex	Group I (Ghosh)		Group II (Chatterji)	
	Number examined	Incidence of leprosy	Number examined	Incidence of leprosy
Male	109,471	0.9%	86,789	1.7%
Female	21,977	1.2%	86,081	0.9%

On the other hand in some countries it is difficult to trace any explanatory environmental factor, yet male lepers greatly predominate. The most important example is the United States, where Hopkins and Denney (13) reported a ratio of 2.6 to 1; they offer no explanation for this difference. The 2 to 1 ratio in the Philippine Islands is also difficult to explain on the basis of environment. Wayson, as has been said, makes a similar statement about Hawaii, as does F. Hayashi for Japan.

Such observations have led to the hypothesis that under the same conditions females are less susceptible to leprosy than males. This hypothesis is difficult to prove or to disprove. We think that a slightly greater degree of natural immunity in females probably causes little difference in the sex incidence of highly infectious, virulent, acute diseases, but on the other hand it is not impossible that a slight difference of immunity might markedly influence the incidence of a disease of low infectiousness and virulence such as leprosy. Slightly greater powers of defense might give a far higher percentage of frustrated attacks, and might explain a milder form of the disease in women.

However, most investigators have found that the rates in childhood are about the same, and that the marked difference appears after puberty. Clinical observations have shown that the onset of leprosy in women often occurs in association with pregnancy, labor

and lactation, so that at the child-bearing period the sex differences would seem rather to increase leprosy in the female sex. In the absence of definite evidence on the point we think that a fundamental difference in the susceptibility to leprosy in the two sexes is improbable, and that the difference in incidence is probably due more to environmental factors.

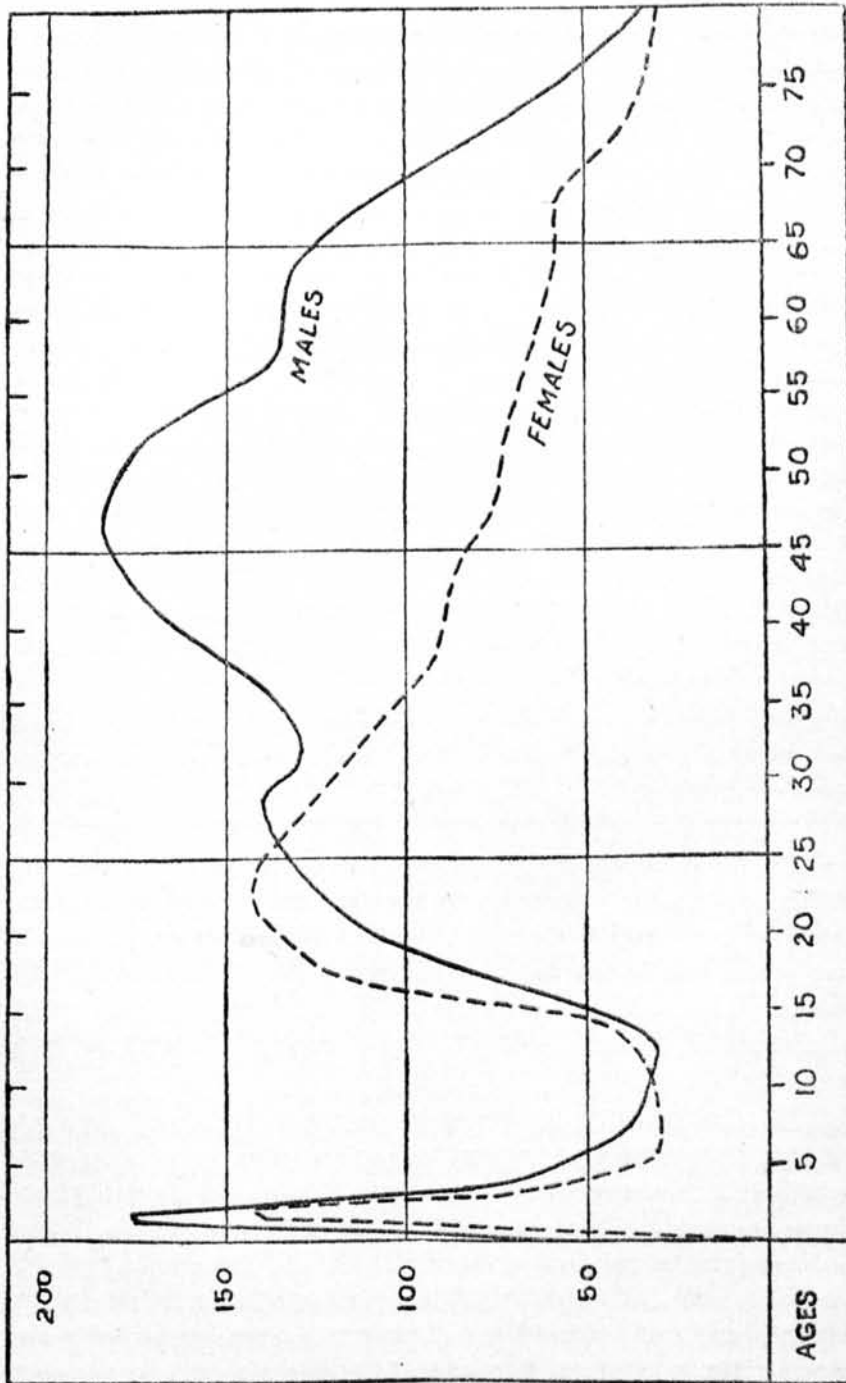
What these environmental factors are is not clear. Probably different factors operate in different countries. Among the most important are possibly greater seclusion of women and less exposure to infection and even when infection occurs there may be less leprosy in women than in men because of less prevalence of those conditions which lower the resistance and enable a latent infection to develop into the disease. Women often take better care of themselves than do men. The latter often suffer more from exposure to climatic conditions and from fatigue through heavy labor, and tend more commonly to develop bad habits, addiction to alcohol and sexual intemperance, and probably to acquire venereal disease. All these factors possibly operate in varying degree in different places.

SEX INCIDENCE AND SOURCE OF INFECTION

It is commonly said that leprosy is a house infection. Rogers and Muir (29) quoted figures of 700 cases in which the source of infection was traced, and no less than 78 per cent gave a history of living in the same house with a leper. If this is a true finding it is difficult to explain the difference in sex incidence on the basis of environment. If house infection is the chief cause, and there is no marked sex difference in susceptibility, both sexes should be more or less equally exposed to infection and should show a roughly similar incidence.

These considerations make us wonder whether the importance of house infection has not been exaggerated, and whether many cases of leprosy do not develop as the result of contact much more casual and less intimate. House association is of course more easily detected and remembered than contacts outside, which may explain figures such as those quoted. Casual outside contacts are as a rule much more commonly made by men than women, and this, we believe, is a factor in increasing the incidence in males.

Some time ago we took very careful histories of four hundred patients, and found a marked difference in those given by the two sexes. Of the 100 women 87 per cent and of the 300 men only 48 per cent



TEXT-FIG. 1.—Mortality from tuberculosis among males and females, by age, in England and Wales in 1927. The curves are based on the death rates per 100,000 of the population.

gave histories of contact, mostly house infection. We think that the explanation of this difference is probably that the women, having fewer outside contacts, nearly all got infected in their homes and gave such history; while many of the men were infected unknowingly by contacts outside the house and thus gave no history of contact. If this is true it follows that, while house infection is undoubtedly important, infection outside the house is also of an importance which is not always realized.

COMPARISON WITH TUBERCULOSIS

McNalty (²⁴) gives a graph showing the mortality from tuberculosis in the sexes at different ages in England and Wales (Text-fig. 1), considering these data a much more trust-worthy guide to incidence than available figures for incidence itself. There is no marked difference before the age of puberty, but after that time females are slightly in excess up to the age of 25. This is possibly connected with the greater strain of puberty, and of pregnancy and its consequences in young women. Between 25 and 50 years the female rate steadily declines while the male rate rises. Taken on the whole the number of male deaths from tuberculosis is greatly in excess of female deaths. This difference is usually attributed, not to any greater susceptibility of the males, but to environmental factors connected with habits and conditions of life and work.

On the other hand, it is interesting to note that Robinson and Wilson (²⁷), in an extensive investigation of tuberculosis in twenty thousand industrial workers in America, found tuberculosis in 1.07 per cent of the 14,044 men and 1.17 per cent of 5,950 women. Apparently under similar conditions females may develop tuberculosis as frequently as males. Thus the environmental factor appears to be of great importance.

With modifications the tuberculosis graph might well represent roughly the incidence of leprosy in many countries. The whole curve would shift to the left to represent onset instead of mortality, and the peak caused by infant mortality in tuberculosis would be reduced in the leprosy curve, but in other respects the two curves probably would be essentially similar. The causes of the variations in the age incidence and sex incidence of the two diseases are probably also very similar.

SUMMARY AND CONCLUSIONS

1. In practically all countries where leprosy is highly endemic the number of male sufferers reported exceeds the number of female lepers, usually by about two to one.

2. In a few countries with comparatively little leprosy the number of female lepers reported exceeds the number of males. There appears usually to be some local factor which may explain these unusual returns.

3. There are differences in the sex incidence at different age periods. In childhood, as reported in some countries, the frequencies are approximately equal. In other countries male children appear to be more affected, but certainly the difference is less marked in childhood than in adult life. Puberty commonly causes a relative increase of leprosy rates in females.

4. There is some evidence that sex influences the form of leprosy, men showing on the whole a severer form of the disease and a greater mortality than women.

5. The possible causes of the difference in the sex incidence of leprosy are considered to be (a) environmental (b) physiological. The environmental factor is probably the chief factor. In many countries men are more exposed to infection and to conditions which predispose to leprosy. Environment, however, does not seem to explain fully the difference in incidence in some countries, and it is considered possible that physiological differences may be associated with the difference in susceptibility.

6. The bearing of these findings on the epidemiology of leprosy is briefly discussed. It is considered that they indicate the importance of sources of infection outside the house and family.

7. A comparison is made between the sex incidence of leprosy and that of tuberculosis. Certain resemblances are pointed out and it is suggested that similar factors cause these similarities in the two diseases.

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