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Leprosy in Italy[1]

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Statistical records in many Italian regions date back to the Roman Empire era and indicate a high prevalence of leprosy ([2]). As an example of government intervention and concern, King Constantino built the first recorded sanitarium for leprosy victims in the fourth century A.D. The Middle Ages saw an increase in the number of cases of leprosy.

Modern leprosy legislation was initiated in Italy in the nineteeth century with the passage of the "King Carlo Alberto Leprosy Law." In 1919, 212 cases of leprosy were recorded and in 1923 a National Leprosy Act was passed. Modern legislation was completed in 1954 with the Italian State providing compensation to each person affected by the disease.

In 1978 the new Italian National Health Service decentralized health control and aid to leprosy victims. Since then, incidence rates have been studied from data provided by 21 autonomous designated regions.

The objective of the present work is to present incidence rates of leprosy in Italy, and other data relevant to the consideration of possible control measures.

MATERIALS AND METHODS

A case of leprosy is defined as an Italian citizen notified to the National Leprosy Register at the Ministry of Health in Rome. A check for duplicate notification was made. The source of data was forms collected by a special unit of the Ministry of Health.

The National Leprosy Register was established at the Ministry of Health in Rome by an act in 1923. This register collected notifications of new cases of leprosy coming from health officials in 95 Italian provinces. A notification is filed, according to that act, when a clinically suspected diagnosis is confirmed by a medical examination by the province health official designated reference expert and, later, by laboratory results. For each notified case, a file is opened to collect the administrative and medical information sent each year from the province. Until 1980, financial support to patients and their relatives was given by the Ministry of Health, Rome, following annual confirmation of the leprous state of the patients by the provinces. In 1980, the regions took over the authority to control the disease and to manage the financial resources, so from that time less information came to the registry. The National Leprosy Register is still operating but, having lost its administrative function, its reliability has dropped since 1980.

In this study, the clinical type of leprosy was obtained from the registry. When this information was not available, cases were classified on the basis of available information as follows:

Lepromatous. A case with negative Mitsuda reaction and at least one of the following: multiple skin lesions (macular, papuloid), little or absent peripheral nervous system involvement, positive skin biopsy.

Tuberculoid. A case with neural involvement including anesthesia and clinical symptoms and at least one of the following: small number of skin lesions (erythematous), positive Mitsuda reaction, negative skin biopsy.

Borderline. Cases with a diagnosis of L. Borderline, L. Mixta, or L. Dimorpha.

Indefinite. Cases that did not fit previous definitions.

Skin biopsy data were available from 1960, but this information was included for only 36% of the patients registered. Drug use was not routinely recorded in the central register; sulfonamides and rifampin were recorded as given to some patients. Additional data were derived from bills paid by patients, clinical records, and laboratory findings, all collected at the same unit in Rome. The prevalence rates refer to 31 December 1980.

An imported case of leprosy is defined as

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TABLE 1. *Leprosy patients by clinical type and age on 31 December 1980.*

Age (yr)	Clinical type								Total	
	Lepromatous		Borderline		Tuberculoid		Indefinite			
	No.	%	No.	%	No.	%	No.	%	No.	%
0–15	2	100.0	—	—	—	—	—	—	2	100
16–30	11	78.6	—	—	1	7.1	2	14.3	14	100
31–50	128	76.6	7	4.2	23	13.8	9	5.4	167	100
51+	199	64.4	45	14.6	60	19.4	5	1.6	309	100
Total	340	69.1	52	10.6	84	17.1	16	3.2	492	100
Mean age at diagnosis	35.6		38.4		42.1		35.1		37.8	

one occurring in a person who had been living in a leprosy-affected area for at least two years before onset of symptoms.

The secondary attack rate in families is defined as the number of secondary cases divided by the total number of family members.

In this study, data were collected on magnetic tape and analyzed using the National Institute of Health Computer Center IBM 370/138; the BMDP computer package was used for the analyses. Plots and graphs were performed with a Tektronix Computer Plotter with a specific Basic software.

Chi-square ([12]) and Kruskal-Wallis ([11]) tests were used to check for statistical significance.

Age at time of death was compared with life expectancy for the same age and sex for the Italian population, using survival tables of ISTAT ([10]) for the years 1932, 1942, 1952, 1962, and 1972.

RESULTS

On 31 December 1980, 547 cases were reported; a prevalence of 0.95/100,000 inhabitants. Of these, 328 were males (60%) and 219 were females (40%); the sex ratio being male/female = 1.5.

Table 1 shows distribution by age and clinical type for the 492 patients (90%) whose age and type of disease were known. According to data available, the lepromatous form is more frequent in younger cases and among those for whom better quality records were available. Mean age at diagnosis for each diagnostic group is also given in Table 1.

No statistically significant differences were found between diagnostic groups for mean age at diagnosis and no significant differences were found by applying the Kruskal-Wallis test for age distribution.

Figure 1 shows the geographical prevalence distribution of leprosy cases according to place of residence. No place of residence is known for four cases and the other three are foreign residents.

Calabria, Puglia, and Liguria have higher prevalence rates. These are regions which traditionally have high immigration rates and have populations engaged in the sea trades. Aggregations of cases in these areas have also been affected by the presence of leprosaria.

For 503 cases (91.9%) the source of infection was known; 406 cases (80.7%) were indigenous and 97 cases (19.3%) were imported. The largest proportion of imported cases came from South America (Table 2).

Distribution by clinical type did not differ between imported and indigenous cases. However, the male/female ratio was 1.1 for

TABLE 2. *Imported leprosy cases in Italy by country of origin.*

Country of origin	No. cases	% of total
Europe	11	11.7
South America	34	36.1
North America	1	1.0
Northwest Africa	29	30.8
Central Africa	2	2.1
South Africa	2	2.1
Middle East	1	1.0
Eastern Europe	6	6.3
Other areas	8	8.5
Total	94	100.0

FIG. 1. Geographical distribution of leprosy in Italy, 1980.

indigenous cases compared to 6.1 for imported ones, reflecting higher immigration rates in males.

There were 382 cases from families without other known cases, but 165 were from 78 families with more than a single case. Table 3 gives the distribution of cases in these families. The secondary attack rate for family members was 8.9%.

The mean interval between the index case

TABLE 3. *Family relationship between index and secondary leprosy cases.*

Sex	Secondary cases' relationship to index case										Total	
	Parent		Brother/sister		Husband/wife		Son/daughter		Other			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Male	4	10.8	7	18.9	19	51.3	6	16.2	1	2.7	37	100
Female	—	—	4	28.6	5	35.7	5	35.7	—	—	14	100
Total	4	7.8	11	21.6	24	47.0	11	21.6	1	2.0	51	100

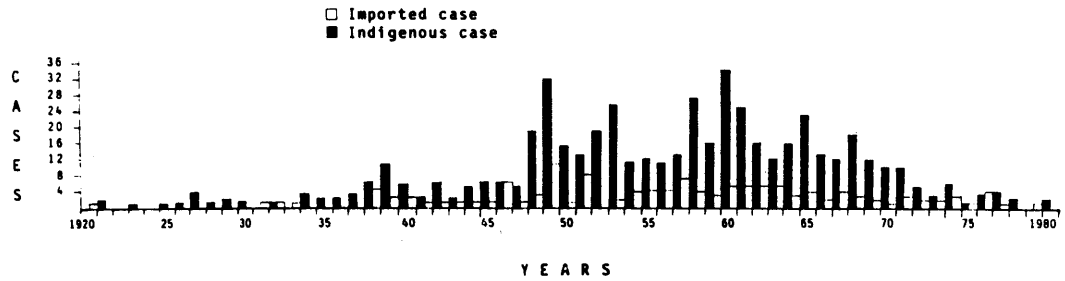

FIG. 2. Epidemic curve of notifications of leprosy cases in Italy by year and source of infection, 1920–1980.

and the first secondary case was 6.1 years. This information was not available for 23 of the 87 secondary cases (29%) but 61 index cases (78%) had the same type of leprosy as the secondary cases. For 17 cases (22%), there was no concordance between index and secondary cases. Five index cases had lepromatous with tuberculoid secondary cases, eight had lepromatous with borderline secondary cases, and four had tuberculoid with indefinite secondary cases.

The sex of the index case is known for 49 families—37 males and 12 females. In 12 families, the first two cases were notified at the same time.

Figure 2 shows the new cases by year according to source of infection—734 cases from 1920 to 1980. The annual incidence rate was 0.013, 0.011, 0.005, 0.007, 0.013 per 100,000 population, respectively, for the last five years. Of the 734 notified cases between 1920 and 1980, 187 have died (the mortality rate in the 60-year period was equivalent to 4 per 1000/year).

No statistically significant differences were found between this group and the survivors, according to sex, source of infection, occupation, or clinical status.

The mean age at death was 60.8 years, with a median of 63; the mean survival time between time of diagnosis and death was 16.7 years, with a median of 16. Leprosy patients showed a decreased life expectancy compared to the population at large. Compared to Italian citizens of the same age and year of birth, male leprosy patients died 10.2 ± 17.0 (mean ± S.D.) years earlier and females, 9.22 ± 15.0 (mean ± S.D.) years earlier.

DISCUSSION

In late 1981 an extensive police search with mass media publicity influenced public opinion: a "very dangerous" leprosy case escaped from a hospital. After a few days he was captured and returned to the hospital ([7, 8]).

A week later the media reported ostracism by the people of a village against a ten-year-old child with leprosy who had applied to the local school and was not accepted. An intervention by the President of the Republic was necessary to clear the debate.

These were the two recent episodes from which Italians realized that leprosy is still a problem, underlining the fact that leprosy in Italy is not just a small, imported problem, but that foci of endemic leprosy still exist in the country.

The problem seems not to go away. The very low incidence in the last ten years seems to be sufficient, lacking more vigorous efforts at control, to let the leprosy live. Perhaps it is not of sufficient size to get attention from health administrators. The country's present leprosy program dates from 1954, and no action is taken to control the disease. The program is purely one of assistance: a salary is given to the patient and aid is given to the relatives. Four leprosy hospital wards take care of treatment of most cases.

Estimates of leprosy-related expenses amount to about 20 million lire per year (US$15,000) for each case ([5]). It seems reasonable to discuss a more profitable use of these resources.

SUMMARY

A descriptive epidemiological study on the present prevalence of leprosy in Italy is presented. Cases are identified as notified to the Special Leprosy Section at the Italian Ministry of Health. Clinical cases are defined. In addition, sex and professional breakdowns are provided. Cases of the dis-

ease are identified as either imported or indigenous. Geographical distribution, according to importation status, is offered: no Italian region is free from leprosy. Incidence curves from 1920 are given, showing the continuous decline in the incidence of the disease. Possible applications of effective eradication programs are discussed.

RESUMEN

Se presenta un estudio epidemiológico descriptivo sobre la prevalencia actual de la lepra en Italia. Los casos descubiertos son notificados al Ministerio Italiano de Salud, Sección Lepra. Se definen los tipos clínicos, se registran sexo y ocupación, se identifican los casos importados y los autóctonos así como su distribución geográfica (no hay regiones libres de lepra). Se presentan las curvas de incidencia desde 1920 (que muestran una disminución constante en la incidencia de la enfermedad) y se discute la posible aplicación de programas efectivos de erradicación.

RÉSUMÉ

Une étude épidémiologique descriptive de la prévalence actuelle de la lèpre en Italie est présentée. Les cas sont identifiés suite à leur notification à la section spéciale de la lèpre du Ministère Italien de la Santé. Les cas cliniques sont définis. Ils sont également ventilés par sexe et catégories professionnelles. Les cas de la maladie sont classés en importés ou en autochtones. On fournit la distribution géographique d'après le status d'importation. Aucune région d'Italie n'est indemne de lèpre. Les courbes d'incidence depuis 1920 sont décrites; elles témoignent d'un déclin continu de l'incidence de l'affection. Les applications possibles d'un programme efficace d'éradication sont discutées.

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