

The prevalence of multiple sclerosis in Sicily I: Monreale city

GIOVANNI SAVETTIERI, BENEDETTO DARICELLO, AND DARIO GIORDANO
From the Clinica Neurologica, University of Palermo

LUCIEN KARHAUSEN
From the Committee for Medical Research, European Economic Community, Brussels

GEOFFREY DEAN
From the Medico-Social Research Board, Dublin

SUMMARY The prevalence of probable multiple sclerosis in Monreale city, close to the university city of Palermo, Sicily, is at least 43 per 100 000. If the possible multiple sclerosis patient is included, it is 47 per 100 000. This prevalence is not significantly different from that found in Enna city, 53 per 100 000. The prevalence in Sicily and, no doubt, in Italy has, in the past, been seriously underestimated. This confirms the need for thorough studies of small populations if many patients are not to be overlooked in a prevalence survey.

Previous reports on large population groups have suggested that the prevalence of multiple sclerosis (MS) in Sicily and southern Italy is low, of the order of 4-12 per 100 000.^{1,2,3} In contrast, immigrants from Italy resident in Greater London, many of whom are from southern Italy and Sicily, had a hospitalised MS prevalence in 1960-72 similar to that found among people born in the United Kingdom.⁴ (Table 1). Spanish and Cypriot immigrants to London have a slightly lower MS prevalence than those from other countries of Europe. In contrast, no Maltese immigrants were hospitalised for MS in London and the West Midlands, although 9.7 was the expected number. A study in the Maltese islands has confirmed that the prevalence of MS is very low there, 4 per 100 000.⁵

In Enna city (population 28 000) in central Sicily, the prevalence of probable MS was 53 (52.9) per 100 000,⁶ which is of the same order of magnitude as has been reported from the United Kingdom and northern Europe. The high prevalence of MS found in Enna city is no doubt due to the fact that the population studied was small and Enna hospital has a good neurological department which keeps good records. Because Enna is on high ground and is therefore colder on average than at the coast, and also because the high MS prevalence found might have been due to chance, similar studies have been

undertaken in two small coastal towns of Sicily—Agrigento, a rural city in south Sicily,⁷ and Monreale.

Table 1 Hospitalised prevalence of MS among immigrants resident in Greater London and the West Midlands

GREATER LONDON RESIDENTS Hospital first admissions 1960-72				
	EUROPE		Total	Expected
	Men	Women		
Germany	3	31	34	29.2
Italy	12	12	24	27.2
Poland	18	7	25	25.4
Austria	1	8	9	11.0
France	4	7	11	9.8
Belg/Lux	0	2	2	3.9
Netherlands	1	2	3	4.3
Hungary	3	4	7	6.1
Spain	0	8	8	16.4*
Other	8	21	29	24.8
Total	50	102	152	158.1
Cyprus (Greek and Turkish Cypriots)	11	12	23	35.0*
GREATER LONDON AND WEST MIDLANDS				
	Men	Women	Total	Expected
Malta	0	0	0	9.7

*Significantly less than expected $p > 0.05$.

The expected number is calculated, age-standardised, from the United Kingdom-born rates.

Table 2 Probable MS patients resident in Monreale city, prevalence day, 30 June 1980

MEN						
No.	Age (years)	Date and first symptoms	Remission	Relapse	Remission	Examination
1	42	1973 Weakness in legs	Yes	1975 Lost vision rt. eye. Diplopia, weakness legs, ataxic arms, impotence, bladder symptoms	Improved ACTH	Nystagmus, visual evoked response delayed, scanning speech, ataxic arms, spastic gait, hyperreflexia, abdominals absent, Babinski rt, pale discs (Cazzullo, Gallarate MS)
2	26	1971 Diplopia, retention of urine	Yes	1972 Weak rt. arm. 1974 Difficulty in walking.	Improved ACTH	Pale discs, visual evoked response (ver) delayed, nystagmus, ataxia, spastic legs, Babinski r. and l. +, scanning speech, vibration sense reduced in legs, position sense poor, CSF globulin increased, seven cells
3	21	1975 Vertigo attacks, shortly after ataxic gait, weakness legs, paraesthesia legs	Yes	Jan 1980 after 'flu, loss of vision lt. eye. Pain left face, ptosis lt. eye, ataxia, dysarthria, dysgraphia, paraesthesia legs, bladder symptoms	Yes ACTH	Jan. 1980. Milan MS diagnosed. July 1980. Improved Nystagmus, pale disc left, reflexes brisk L>R. Ataxia slight, ankle clonus R+L
4	43	1962 Weakness lt. leg	Yes	1966 Difficulty in walking, weakness both legs L>R and rt. arm. Well documented attacks and remissions until 1977, since when unable to walk	Many attacks and remissions. ACTH helped	1966. Legs spastic, jerk reflexes brisk. L. Babinski ↑, clonus both ankles, abdominal reflexes absent. July 1980. Severe scanning speech, nystagmus, ataxia arms, spastic legs, clonus Babinskis ↑↑ Vibration sense absent in legs
5	48	1971 Partial loss vision lt. eye + diplopia. A few weeks later paraesthesia and weakness lt. arm, rt. facial pain	Yes	1974 Diplopia, weakness rt. arm	Yes ACTH	July 1980. Pallor both discs. Weak rt. arm, jerk reflexes brisk, R>L. Babinskis ↓↓ in remission
6	72	1925-30 1955-60 Vertigo attacks. Weakness both legs, spastic paraparesis Diagnosed 1960. MS	Yes Improved 1964-68, could walk long distances	1972 Severe weakness both legs + rt. arm, later lt. arm. Spastic tetraparesis L>R. Unable to walk since 1975	No	July 1980. Unable to walk, spastic tetraparesis. Optic discs pale, no nystagmus jerk reflexes brisk R>L. Clonus both ankles, Babinskis ↑↑ vibration sense absent in legs, incontinent urine, X-ray spine diffuse spondylosis (slight)
WOMEN						
1	45	1954 Blurring vision both eyes. Paraesthesia lt. leg, unsteady gait	Yes	Ataxia, weakness legs, poor vision, dysarthria	Improved ACTH	12/4/79. Spastic paresis, ataxia, scanning speech, nystagmus, hyperreflexia, Babinski rt., Arnold Chiari excluded. 21/7/79. Improved since 12/4/79
2	43	1956 Hemianopia	Complete	1967 Weakness in legs, vertigo, tremor arms, speech difficult. 1968 Relapse weakness arms and legs	Yes	18/4/79. Paraparesis, bladder symptoms, pale discs, nystagmus, ver delayed, reflexes brisk R>L, vibration sense absent lt. Babinski lt., Rombergism. 21/7/79. Improved again

WOMEN

No.	Age (years)	Date and first symptoms	Remission	Relapse	Remission	Examination
3	41	1971 Diplopia, retention urine	Complete	1972 Paraesthesia legs, weakness rt. arm. 1974 Difficulty in walking	Yes partial	Pale discs, nystagmus, ver delayed, ataxia, spastic legs, scanning speech, hyperreflexia, Babinski +, abdominals -. (Gallarate diagnosed MS) CSF globulin increased
4	62	1958 Lost vision rt. eye	Complete	1963 Vertigo, weakness lt. leg, lost temperature sensation lt. foot 1967 Relapse for one month, unable to walk, paraesthesia hands 1971 Relapsed, weakness legs 1973 Relapsed	Improved ACTH Improved Improved	Discs pale, ataxia hands, hyperreflexia L>R, Babinskis + R + L
5	43	1976 Paraesthesia legs. Weak rt. leg	Remissions and relapses	1978 Blurred vision both eyes 1979 Severe attack, Slight fever, speech impaired, walking difficult, vertigo, (All in a few days). Improved a little and relapsed, unable to walk	Yes ACTH	Feb. 1979. Mentally slowed, speech scanning, ataxia gross, nystagmus, vision poor, pale discs. lt. side weaker than rt. Rhythmic involuntary movements hands, hyperreflexia, spastic legs, Babinski + rt., Abdominals -, two tomograms show low density area around 4th ventricle. August 1980. As in 1979. Some deterioration

POSSIBLE MS

1	52	1950 Aged 22. Ill 7 weeks typhoid fever, developed severe loss of vision 1959 Aged 31. Pain and slight weakness lt. leg, sciatica diagnosed	No improvement in vision, still very poor vision Yes	1961 Pain and weakness, lt. leg, X-ray spine normal. 1963 Spasm fingers lt. hand, weakness lt. arm. 1964 Return of symptoms lt. arm, pain rt. face 1971 Paraesthesia lt. arm, improved with ACTH	Yes Yes	1963. Tender on pressure rt. face, all jerk reflexes brisk, ankle clonus R + L, weakness lt. arm and lt. leg, CSF globulin "2+" EEG diffuse slow waves 1971. Chorio retinal degeneration diagnosed by ophthalmologist. EEG normal July 1979 (Authors). Very poor vision, severe retinal damage, walks normally, no ataxia, no nystagmus, jerk reflexes brisk L>R, vibration sense diminished left. Babinskis ↓↓ Lt. ankle clonus. August 1980 (Authors). No further symptoms. Improved since July 1979. Some pain weakness lt. leg. Examination as in 1979 but no clonus lt. leg (Opinion possible MS only)
---	----	--	---	---	----------------	---

Monreale is a cathedral city and district only nine kilometres from the large university city of Palermo in northern Sicily. It is at a latitude 38° North 13°17' East, and has a yearly average temperature of 18°

centigrade. The average humidity is 60° and average yearly precipitation is 77.8 mm. The total area is 529 km² and the population in 1979 was 25 403 (12 514 men, 12 889 women). It has a population

density of 47 inhabitants per km². There is no diagnostic hospital in Monreale and patients are usually investigated at the hospitals in nearby Palermo, particularly at the Clinica Neurologica of the University of Palermo (Director, Professor Agostino Rubino).

Method

The 24 general practitioners, the medical officer of health, the four doctors, and the non-medical assistants in the Monreale Health Department, the ophthalmologists, the Monreale clergy, and chemists collaborated in the study. The archives of the Clinica Neurologica, the Ospedale Civico and the Ospedale Villa Sofia, Palermo, the Clinica Neurologica, Messina, the Clinica Neurologica, Naples, the Clinica Neurologica, Rome, and the Centro Studi Sclerosi Multipla, Gallarate, Milan, were searched for possible MS patients resident in Monreale. The records of the insurance groups, the Office of Handicapped Persons, the two gymnasia, and the Centro Regionale Siciliano Medullo-Lesi were also searched.

Results

Eleven patients were found with probable MS (six men and five women) on prevalence day, 30 June 1980, and an additional woman patient had possible MS (Table 2). No patients were found with a history of retrobulbar neuritis only. A male cousin of woman patient no. 4 (Table 2) had a classical history of MS but he died in November 1978, before prevalence day, and was therefore not included.

The first symptom among the 11 patients with probable MS was retrobulbar neuritis in three, diplopia, paraesthesia and vertigo in two each respectively, and vertigo and paraparesis in one each. All the patients had had remissions of symptoms.

The median age of onset in the 11 patients with probable MS was 27.5, the median age at diagnosis was 33.7, and the median age on prevalence day, 30 June 1980, was 44.6. Two men had their first symptoms at the early age of 16. Two men and one woman were unable to walk and confined to their beds or chairs. Two men patients and four women were ataxic and/or spastic in gait, but able to walk without aids or with a stick. One patient only was symptom-free. Ten of the 11 patients were born in Monreale. It appears probable that some MS patients, diagnosed or undiagnosed, living in Monreale have not yet been found.

Conclusion

The prevalence of probable MS in Monreale city in this first study is 43.3 per 100 000, and of probable and possible MS, 47.2 per 100 000. If Monreale had the same prevalence as Enna city (52.9 per 100 000) the expected number of patients with probable MS would be 13 and the number of patients found, 11, is not significantly different.

We thank Professor Agostino Rubino, Professor Vincenzo Bonavita, Professor Carlo Cazzullo, Professor Giorgio Macchi and Dr. Mario Anastasi and especially all the doctors working in Monreale city and the MS patients themselves.

This study and other studies on the prevalence of multiple sclerosis in Enna city, in Agrigento city, and in the Republic of San Marino, were carried out under a contract with the Commission of the European Economic Community. These studies were under the aegis of the Committee for Medical Research and Public Health (CRM) Specialised Working Group in Epidemiology and Clinical Trials.

Reprints from Dr. Geoffrey Dean, Director, the Medico-Social Research Board, 73 Lower Baggot Street, Dublin 2.

References

- ¹Borri P, Tavolato B, Ballatari E, Cazzullo CL. Epidemiological survey on multiple sclerosis in Italy. *Riv Patol Nerv Ment* 1976; **97**: 205-000.
- ²Savettieri G, Giordano D, Lupo L *et al.* Epidemiological survey on multiple sclerosis in the city of Palermo (Italy). *Acta Neurol* 1978; **33**: 526-000.
- ³Bramanti P, Messina C, Scuderi D, Vita G. An epidemiological study of multiple sclerosis in the provinces of Messina. *Acta Neurol* 1978; **33**: 532-00.
- ⁴Dean G, McLoughlin H, Brady R, Adelstein AM, Tallett-Williams J. Multiple sclerosis among immigrants in Greater London. *Br Med J* 1976; **i**: 861-00.
- ⁵Vassallo L, Elian M, Dean G. Multiple sclerosis in southern Europe. II: Prevalence in Malta in 1978. *J Epidemiol Community Health* 1979; **33**: 111-3.
- ⁶Dean G, Grimaldi G, Kelly R, Karhausen L. Multiple sclerosis in southern Europe. I: Prevalence in Sicily in 1975. *J Epidemiol Community Health* 1979; **33**: 107-10.
- ⁷Dean G, *et al.* The prevalence of multiple sclerosis in Sicily. II: Agrigento city. *J Epidemiol Community Health* 1981; **35**: 118-22.