The prevalence of multiple sclerosis in Sicily I: Monreale city

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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.\(^1\) 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>
<thead>
<tr>
<th>Greater London and West Midlands</th>
<th>Men</th>
<th>Women</th>
<th>Total</th>
<th>Expected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater London Residents</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital first admissions 1960–72</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Europe</td>
<td>Men</td>
<td>Women</td>
<td>Total</td>
<td>Expected</td>
</tr>
<tr>
<td>Germany</td>
<td>3</td>
<td>31</td>
<td>34</td>
<td>29·2</td>
</tr>
<tr>
<td>Italy</td>
<td>12</td>
<td>12</td>
<td>24</td>
<td>27·2</td>
</tr>
<tr>
<td>Poland</td>
<td>18</td>
<td>7</td>
<td>25</td>
<td>25·4</td>
</tr>
<tr>
<td>Austria</td>
<td>1</td>
<td>8</td>
<td>9</td>
<td>11·0</td>
</tr>
<tr>
<td>France</td>
<td>4</td>
<td>7</td>
<td>11</td>
<td>9·8</td>
</tr>
<tr>
<td>Belg/Lux</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>3·9</td>
</tr>
<tr>
<td>Netherlands</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4·3</td>
</tr>
<tr>
<td>Hungary</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>6·1</td>
</tr>
<tr>
<td>Spain</td>
<td>0</td>
<td>8</td>
<td>8</td>
<td>16·4*</td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
<td>21</td>
<td>29</td>
<td>24·8</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>102</td>
<td>152</td>
<td>158·1</td>
</tr>
<tr>
<td>Cyprus (Greek and Turkish Cypriots)</td>
<td>11</td>
<td>12</td>
<td>23</td>
<td>35·0*</td>
</tr>
</tbody>
</table>

| Greater London Residents         |     |       |       |          |
| Hospital first admissions 1960–72|     |       |       |          |
| Europe                           |     |       |       |          |
| 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*    |

\(^*\)Significantly less than expected p >0·05.

The expected number is calculated, age-standardised, from the United Kingdom-born rates.
# MS in Monreale city, Sicily

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

### MEN

<table>
<thead>
<tr>
<th>No.</th>
<th>Age (years)</th>
<th>Date and first symptoms</th>
<th>Remission</th>
<th>Relapse</th>
<th>Remission</th>
<th>Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>42</td>
<td>1973 Weakness in legs</td>
<td>Yes</td>
<td>1975</td>
<td>Improved</td>
<td>Nystagmus, visual evoked response delayed, scanning speech, ataxic arms, spastic gait, hyperreflexia, abdominals absent, Babinski rt, pale discs (Cazzullo, Pallarate MS)</td>
</tr>
<tr>
<td>2</td>
<td>26</td>
<td>1971 Diplopia, retention of urine</td>
<td>Yes</td>
<td>1972</td>
<td>Improved</td>
<td>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</td>
</tr>
<tr>
<td>5</td>
<td>48</td>
<td>1971 Partial loss vision lt. eye + diplopia. A few weeks later paraesthesia and weakness lt. arm, rt. facial pain</td>
<td>Yes</td>
<td>1974</td>
<td>Diplopia, weakness rt. arm</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### WOMEN

<table>
<thead>
<tr>
<th>No.</th>
<th>Age (years)</th>
<th>Date and first symptoms</th>
<th>Remission</th>
<th>Relapse</th>
<th>Remission</th>
<th>Examination</th>
</tr>
</thead>
</table>
### WOMEN

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<thead>
<tr>
<th>No.</th>
<th>Age (years)</th>
<th>Date and first symptoms</th>
<th>Remission</th>
<th>Relapse</th>
<th>Remission</th>
<th>Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>41</td>
<td>1971 Diplopia, retention urine</td>
<td>Complete</td>
<td>1972 Parasthesia legs, weakness rt. arm.</td>
<td>Yes partial</td>
<td>Pale discs, nystagmus, vert delayed, ataxia, spastic legs, scanning speech, hyperreflexia, Babinski +, abdominals –. (Gallarate diagnosed MS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1974 Difficulty in walking</td>
<td></td>
<td>CSF globulin increased</td>
</tr>
<tr>
<td>4</td>
<td>62</td>
<td>1958 Lost vision rt. eye</td>
<td>Complete</td>
<td>1963 Vertigo, weakness lt. leg, lost temperature sensation lt. foot</td>
<td>Improved ACTH</td>
<td>Discs pale, ataxia hands, hyperreflexia L&gt;R, Babinskiis + R + L</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1967 Relapse for one month, unable to walk, parasthesia hands</td>
<td>Improved</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1971 Relapsed, weakness legs</td>
<td>Improved</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>43</td>
<td>1976 Parasthesia legs. Weak rt. leg</td>
<td>Remissions and relapses</td>
<td>1978 Blurred vision both eyes</td>
<td>Yes ACTH</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1979 Severe attack, Slight fever, speech impaired, walking difficult, vertigo, (All in a few days), Improved a little and relapsed, unable to walk</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### POSSIBLE MS

<table>
<thead>
<tr>
<th>No.</th>
<th>Age (years)</th>
<th>Date and first symptoms</th>
<th>Remission</th>
<th>Relapse</th>
<th>Remission</th>
<th>Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>52</td>
<td>1950 Aged 22. Ill 7 weeks typhoid fever, developed severe loss of vision</td>
<td>No improvement in vision, still very poor vision</td>
<td>Yes</td>
<td>1961 Pain and weakness, lt. leg, X-ray spine normal.</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1963 Spasm fingers lt. hand, weakness lt. arm.</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1971 Parasthesia lt. arm, improved with ACTH</td>
<td></td>
</tr>
</tbody>
</table>

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
MS in Monreale city, Sicily

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 Sclerosis 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 gymnasias, 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


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