Physical and mental comorbidities in a managed care population with multiple sclerosis

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INTRODUCTION
• Many individuals with multiple sclerosis (MS) have comorbid conditions.1 In a 2009 study of 3,610 individuals with MS enrolled in the North American Research Consortium on Multiple Sclerosis (NARCOMS) Registry by Merlie et al., 36.7% reported >1 physical comorbidity.

• The most commonly reported comorbidities for individuals with MS include hypertension, diabetes, arthritis, inflammatory bowel syndromes, and lung disease.2

• Sleep disorders and depression are also reported more frequently in individuals with MS than for the general population.3

• The presence of comorbid conditions may affect the course of multiple sclerosis, including the time between the onset of MS symptoms and diagnosis, the MS phenotype, the risk of disability progression, health-related quality of life, and treatment decisions.4

• The study by Merlie et al.5 offered insights into the type and prevalence of subjective, patient-reported comorbidities seen with MS based on a predefined list of conditions. As an alternative approach to evaluate the most prevalent comorbid conditions and symptoms in a population with MS, the prevalence of other conditions that were not represented in the Merlie study can be assessed.

OBJECTIVE
• To determine the rates of comorbidities in a US managed care population in order to complement prior investigations of patient-reported MS comorbidities.

METHODS

Data source
• This study used retrospective administrative claims data, including medical and pharmacy claims data and enrollment data, from a large US health plan with national coverage.

Study population
• Adult full-year health plan members with evidence of MS were identified in the claims database between January 1, 2005, and December 31, 2009 (Identification period).

• Eligible patients met 1 of the following 3 inclusion criteria during the identification period:
  • - Medical claim with a primary diagnosis for MS (International Classification of Diseases, 9th Revision, Clinical Modification [ICD-9-CM] code 340.9) during an inpatient hospital stay
  • - Medical claim with primary MS diagnosis codes 550-577 days apart
  • - Evidence of disease-modifying treatment (DMT), including interferon-β, interferon-β 1b, glatiramer acetate, or natalizumab.

• The date of the first claim that met the inclusion criteria was defined as the index date.

• Patients with index dates based on claims for sulfasalazine were excluded if they had medical claims with a primary or secondary diagnosis for Crohn’s disease (ICD-9-CM 555.x) during the identification period.

• Ages 18 years and <64 years at the time of the index date.

• Continuous enrollment in the health plan with medical and pharmacy benefits for 6 months prior to the index date.

• Patients were observed after the index date (follow-up period) through earlier disenrollment from the plan on December 31, 2009.

RESULTS

Study population
• The total population included 18,039 MS patients.

• The mean standard deviation (SD) age was 44.2±12.2 years.

• The percentage of patients in each age category and by gender is summarized in Figure 1.

• The mean SD follow-up period was 2.8±4.8 years.

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Rates of comorbid conditions overall
• The most prevalent medical comorbidities included other nervous system disorders (9%), circulatory-metabolic disorders (6%), pain, sleep problems, and mental health (5%), lack of coordination, sensory problems, other connective tissue disorders (2%), musculoskeletal pain, joint replacement, peripheral neuropathy, and infection, interventional disc disorders, and other back problems (1%).

• The most prevalent mental health comorbidities were mood disorders (4%), depressive disorders, bipolar disorders (1%).

• Rates of comorbidities by gender
  • Disorders of mood/vegetative symptom and essential hypertension were more prevalent among male patients than among female patients (P<0.05) for both comparisons.

  • Female patients had higher rates of all other comorbidities than male patients (P<0.05) for all comparisons.

CONCLUSIONS
- In this study population, the most common comorbid conditions in MS patients were nervous system disorders, circulatory-metabolic disorders, musculoskeletal pain, joint replacement, peripheral neuropathy, and infection, interventional disc disorders, and other back problems.

- Female patients had higher rates of most comorbidities and most physical comorbidities in comparison with the exception of disorders of lipid metabolism and essential hypertension.

- The rates of most comorbid conditions generally increased with increasing age.

- Understanding the patterns of comorbid conditions and their association with age and gender in MS patients may allow for the improvement of MS management strategies and health plan policies to improve patient outcomes.

Table 1. Rates of comorbidities in at least 20% of patients in the overall population

<table>
<thead>
<tr>
<th>Comorbidity</th>
<th>&lt;20%</th>
<th>20-49%</th>
<th>50+</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical conditions</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other nervous system disorders</td>
<td>13,889 (76.9)</td>
<td>3,002 (16.7)</td>
<td>658 (4.3)</td>
<td>0.001</td>
</tr>
<tr>
<td>Other connective tissue disorders</td>
<td>7,889 (43.6)</td>
<td>2,754 (15.3)</td>
<td>2,936 (17.8)</td>
<td>0.001</td>
</tr>
<tr>
<td>Musculoskeletal pain, joint replacement, peripheral neuropathy, and infection, interventional disc disorders, and other back problems</td>
<td>7,892 (43.6)</td>
<td>2,754 (15.3)</td>
<td>2,936 (17.8)</td>
<td>0.001</td>
</tr>
<tr>
<td>Mental health</td>
<td>3,444 (19.1)</td>
<td>1,540 (8.4)</td>
<td>610 (3.8)</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Table 2. Rates of relevant comorbidities by age

<table>
<thead>
<tr>
<th>Comorbidity</th>
<th>19-44</th>
<th>45-54</th>
<th>55-64</th>
<th>65+</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical conditions</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other nervous system disorders</td>
<td>2,203 (56.9)</td>
<td>1,565 (43.2)</td>
<td>594 (16.4)</td>
<td>1,732 (50.3)</td>
<td>0.001</td>
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<tr>
<td>Other connective tissue disorders</td>
<td>1,052 (52.4)</td>
<td>781 (37.4)</td>
<td>288 (13.2)</td>
<td>1,032 (43.6)</td>
<td>0.001</td>
</tr>
<tr>
<td>Musculoskeletal pain, joint replacement, peripheral neuropathy, and infection, interventional disc disorders, and other back problems</td>
<td>1,031 (50.4)</td>
<td>751 (36.4)</td>
<td>276 (12.8)</td>
<td>970 (41.4)</td>
<td>0.001</td>
</tr>
<tr>
<td>Mental health</td>
<td>568 (26.9)</td>
<td>288 (13.1)</td>
<td>110 (4.6)</td>
<td>682 (29.6)</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Figure 1. Percentage of patients (N=18,039) in each age category and by gender (<20%, 20-49%, 50+).

Figure 2. Rates of comorbidities in at least 20% of male and female patients.

Reference