The Journal of Pain, Vol 10, No 9 (September), 2009: pp 976-983
Available online at www.sciencedirect.com

Comparison of Health Care Use and Costs in Newly Diagnosed and Established Patients With Fibromyalgia

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Abstract: **In 2004, the American Pain Society (APS) issued evidence-based fibromyalgia treatment recommendations. The objective of this claims database analysis is to describe prescription and medical use in patients with newly diagnosed and established fibromyalgia. Privately insured patients with 2+ myalgia/myositis claims (1999 to 2005) were categorized as newly diagnosed or established; this dichotomy involves comparisons between prediagnosis (S1) and postdiagnosis (S2) stages in the newly diagnosed and between newly diagnosed (S2) and established patients (S3). Use of APS guideline medications increased across stages: selective serotonin reuptake inhibitors (SSRIs) (S1, S2, S3: 20.6%, 22.9%, 25.3%), serotonin norepinephrine reuptake inhibitors (SNRIs) (4.5%, 6.4%, 8.9%), pregabalin/gabapentin (5.4%, 7.4%, 8.8%), benzodiazepines (19.0%, 21.1%, 24.2%), non-benzodiazepine sedatives (9.1%, 11.5%, 13.7%) (all $P < .0001$), and opioids (39.5%, 43.3%, 43.9%; S1 vs S2, $P < .0001$; S2 vs S3, $P = .2835$). Use of multiple therapeutic classes also increased across stages: 3+ classes (7.1%, 9.6%, 11.8%) (all $P < .0001$). Office visits to providers increased, on average, after diagnosis: primary care (70.9%, 78.3%, 76.3%; all $P < .0001$), chiropractors (28.8%, 51.1%, 53.3%; all $P < .0001$), rheumatologists (4.2%, 9.9%, 10.5%; S1 vs S2, $P < .0001$; S2 vs S3, $P = .0595$), mental health (6.4%, 7.3%, 8.3%; S1 vs S2, $P < .0001$, S2 vs S3, $P = .0003$). Average health care costs rose after diagnosis in the newly diagnosed group (S1: $6555 vs S2: $8654, $P < .0001$).**

Perspective: ***This paper investigates prescription drug and medical care use with respect to stages of fibromyalgia diagnosis. Established fibromyalgia patients use more medical resources and have higher rates of concomitant medication use than newly diagnosed fibromyalgia patients. Findings can help educate providers regarding optimal drug treatment patterns in this population.***

Key words: *Fibromyalgia, medication use, health care costs, treatment patterns.*

Fibromyalgia is characterized by chronic, widespread pain and a constellation of other symptoms such as fatigue, sleep disturbances, and depression. The American College of Rheumatology (ACR) defines the presence of fibromyalgia as a history of widespread pain for at least 3 months.[10] Estimates of the prevalence of fibromyalgia range from 2.1% to 5.7% in general practice and up to 20% in specialized rheumatology settings.[17] Fibromyalgia imposes substantial suffering and costs to individuals as well as third-party payers.[4,11-14,16] In the United Kingdom, high costs have been reported in the 10 years preceding a patient's first fibromyalgia diagnosis.[1] Controversies exist regarding whether a diagnosis predicates more resources through learned illness behavior or reduces unnecessary care. Costs may be exacerbated by chronicity of disease, a predilection toward polypharmacy,[3,16] and varying standards of care for managing complex symptoms and comorbidities.

In 2004, the American Pain Society (APS) issued fibromyalgia treatment recommendations for diagnosis through evaluation and elimination of other possibilities and for increasing functionality and reducing pain with recommended treatments.[6,7] Once the diagnosis is confirmed, recommended pharmacological treatment

Received October 6, 2008; Revised February 19, 2009; Accepted March 18, 2009.
Supported by Eli Lilly and Company.
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1526-5900/$36.00

doi:10.1016/j.jpain.2009.03.012

includes tricyclic antidepressants (TCAs), selective serotonin reuptake inhibitors (SSRIs), or tramadol for pain.[6]

Recent guideline updates include recommendations for use of serotonin norepinephrine reuptake inhibitors (SNRIs), venlafaxine, and duloxetine, as well as anticonvulsants, gabapentin, and pregabalin.[2,8] The APS guidelines also include cognitive behavioral therapy and moderate aerobic and muscle strengthening exercises. Multidisciplinary strategies are preferable, particularly among patients who have not previously responded adequately.[6] Aside from tramadol, opioid analgesics should be prescribed with caution and only after all other therapies have been exhausted.[7,8]

Annual use of APS-recommended medications[8] has been reported in previous studies.[3,16] Berger,[3] using administrative data, reported that fibromyalgia patients (identified with ICD-9-CM diagnosis code 729.1) were approximately 5 times more likely than control patients to use antidepressants in a year; in that sample, 38.7% of fibromyalgia patients used antidepressants, of which TCAs (11.2%), SSRIs (22.5%), and other antidepressants (19.6%) were most commonly used. White[16] reported annual use rates of 6.0% for tricyclics, 4.6% for tetracyclics, 19.4% for SSRIs, and 8.2% for SNRIs; other medications included anticonvulsant medications (9.6%) and tramadol (7.8%).

Investigating variations in medication use among patients diagnosed with fibromyalgia may provide important information about treatment after diagnosis. If the rate of APS-recommended medications rises after diagnosis and the rate of nonrecommended medications declines, this may suggest that physicians need not resort to medications that are not recommended by the APS unless all other treatment options have been exhausted.

Two studies reported data on use after diagnosis using UK medical data.[1,9] Hughes[9] found that whereas rates of use declined in the year after diagnosis, in the long term, rates returned to levels observed before diagnosis. Annemans[1] used trend analyses to predict costs assuming the diagnosis was never made. These results suggested that a diagnosis of fibromyalgia led to cost savings due to a decrease in use. To our knowledge, no research has focused on rates of guideline-related pharmaceutical use in a fibromyalgia population, nor has any investigated the effects of disease stage on medical use, drugs prescribed, or costs incurred in a US population.

The management strategy for fibromyalgia may change over the course of illness. To investigate changes in treatment, our research uses US retrospective claims data to evaluate the use of APS guideline-mentioned pharmaceutical interventions in patients with at least 2 medical claim diagnoses of myalgia or myositis (ICD-9-CM diagnosis code 729.1), following previous studies.[3,11,16] We investigate changes over the course of illness, both before and after initial diagnosis among the newly diagnosed and between newly diagnosed and those with established diagnosis. We compare per-patient medical use, pharmaceutical treatment, and total health care costs (ie, payments by third-party payers to providers) and also quantify the prevalence of comorbidities based on the timing of diagnosis. Preliminary study findings on medication use were previously presented at the APS annual meeting.[15]

Methods

Data

Research samples were derived from a large administrative claims database of 31 large self-insured companies in the United States (Ingenix employer database). Although not intended to be representative of the US population, the 31 companies in the database have national operations, span a broad array of industries and occupations, and cover approximately 6.3 million covered lives, including employees and dependents.

The Ingenix database contains de-identified enrollment data, medical claims, prescription drug claims, and employee disability claims (1999 through 2005). Enrollment data include monthly eligibility and demographic information. Medical claims provide facility and provider specialty categories, ICD-9 diagnosis codes, payments to providers by insurers, dates of service, and other typical claims data elements. Prescription drug claims provide National Drug Codes (NDCs), dosage, days supply, prescription drug fill dates, and payments. It was not necessary for this study to undergo institutional review because all data are de-identified but linkable with encrypted patient identifiers. Any identifiers that originated with these data were removed by the data licensor before its receipt by the authors.

Study Sample

The study sample included patients who had 2+ diagnoses of ICD-9 code 729.1 (myalgia or myositis not otherwise specified), following the criteria used in prior published research.[3,11,15] We refer to patients meeting sample criteria as patients with fibromyalgia, although the diagnosis code may also indicate other conditions that manifest in widespread pain. Two or more claims with ICD-9 code 729.1 were required to ensure that the sample included patients with a consistent history of widespread pain and to exclude patients with a diagnosis that may have been subsequently ruled out. Of the total number of patients in the database, 1.6% had at least 2 fibromyalgia diagnoses. This is somewhat lower than the 2% to 6% prevalence estimates reported in the literature[17] but still consistent with prior literature because our sample reflects an employed working-age population.

For the purposes of this study, disease progression of patients with widespread pain was classified into 2 mutually exclusive study cohorts to provide information for 3 stages. Cohort 1 consisted of newly diagnosed patients, which provided a comparison between prediagnosis and newly diagnosed stages (S1 and S2). Cohort 2 contained patients exhibiting an established pattern of the condition (S3) and thus served as a comparison to S2. Patients in Cohort 1 were required to have 1 year of continuous eligibility before the date of their first fibromyalgia