Concise Report

Changing patterns of medication use in patients with rheumatoid arthritis in a Medicaid population

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Objective. To examine changes in patterns of medication utilization in patients with RA.

Methods. Data from Tennessee Medicaid (TennCare) databases (1995–2004) were used to identify adults with both a diagnosis of RA and at least one DMARD prescription each year. Annual age-specific utilization of DMARDs, glucocorticoids, NSAIDs and narcotics was measured on the last day of each year to determine the point prevalence of use of these agents.

Results. Records from 23,342 patients with treated RA were analysed. Most patients were females (78%) and white (74%). The median age was 57 yrs (interquartile range: 48–65). The proportion of patients who had a current DMARD prescription on the index date increased from 62% in 1995 to 71% in 2004 ($P<0.001$). MTX was the most commonly used DMARD. By the end of 2004, 22% of patients had a current prescription for a biologic, and etanercept represented 51% of all biologic therapies. During the study period, the overall utilization of glucocorticoids decreased from 46% to 38% ($P<0.001$), whereas NSAID utilization increased from 33% to 38% ($P<0.001$), and use of narcotics increased from 38% to 55% ($P<0.001$). A secondary analysis that identified RA patients based on diagnosis codes alone, showed similar patterns, but lower DMARD utilization which increased from 33% to 52% overall and from 0% to 16% for biologics.

Conclusions. The utilization of DMARDs increased in TennCare patients with RA, and by 2004, use of biologics was substantial. Although glucocorticoid utilization decreased, use of both NSAIDs and narcotics increased.

Key words: Rheumatoid arthritis, Disease modifying anti-rheumatic drugs, Epidemiology.

Introduction

The treatment of RA with DMARDs provides control of disease activity, slows joint erosions and improves quality of life. Thus, DMARDs have become the foundation of RA treatment [1]. Novel biologic DMARDs have been licensed for use in RA and data from specialized registries have consistently shown a progressive increase in the utilization of both traditional and biologic DMARDs. However, information on RA treated in the community is limited [2–4]. Moreover, pain control is an important goal in the treatment of RA [1, 5] and although DMARDs can control disease activity, additional pain treatment is often necessary [5]. There is a scarcity of information on changes in the utilization of non-DMARD concurrent medications for RA. We analysed the changes in patterns of utilization of DMARDs, glucocorticoids, NSAIDs and narcotics in RA patients enrolled in TennCare, Tennessee’s Medicaid programme.

Methods

Study population

TennCare, the managed-care Medicaid agency in Tennessee, provided free access to healthcare insurance to Medicaid-eligible patients and those who lacked other access to healthcare. TennCare covered ~21% of the population of Tennessee in 2005, mostly low-income persons. The major enrolment categories for the programme are children, pregnant women, persons with disabilities and those who require care in nursing facilities.

Statistics

There is also an overrepresentation of females and non-white persons, compared with the Tennessee population [6].

Identification of patients with RA

From 1995 through 2004, we identified all TennCare enrollees aged ≥18 yrs who had a coded diagnoses of RA (ICD9-CM: 714.0, 714.1, 714.2, 714.3, 714.4, 714.81) and had at least one DMARD prescription filled. This combination of diagnosis codes and DMARD use had a sensitivity of 83% and a specificity of 85% in identifying RA patients in administrative databases [7].

A previous study suggested DMARD discontinuation was frequent [8], so we estimated current medication utilization using a sequence of annual cross-sectional assessments on a specific index date (31 December of each year). On that date, cohort members were required to have at least 365 days of continuous enrolment in TennCare during which they had a diagnosis of RA and filled at least one DMARD prescription. Since serious comorbidities may affect medication utilization, we excluded patients with serious medical conditions identified during the baseline year including solid organ transplantation, HIV/AIDS, cancer (except non-melanoma skin cancers), chronic renal disease requiring dialysis, liver failure and respiratory failure.

Study medications

Medication utilization was measured using information from the TennCare pharmacy files. Study medications included synthetic DMARDs (MTX, SSZ, HCQ, LEF, gold salts, penicillamine, ciclosporin and AZA), biologics (etanercept, infliximab, adalimumab and anakinra), glucocorticoids (both oral and injectables), NSAIDs (including Cox-2 inhibitors) and narcotic analgesics.

Statistical analysis

We estimated the proportion of RA patients who were using study medications on 31 December each year (point prevalence) and evaluated age-specific changes in medication use over time using cross-sectional time-series analyses that accounted for patients contributing more than one observation. In addition, we analysed
medication utilization among patients who were not receiving DMARDs on the index date. This study was approved by the Institutional Review Board of Vanderbilt University and the Bureau of TennCare.

Sensitivity analysis
Since the application of a specific RA definition in our study enriched our cohorts with RA patients prescribed DMARDs who likely had more severe disease, we performed a secondary analysis using more lenient selection criteria that included patients identified with only one in-patient or two out-patient coded visits for RA (at least 1 month apart).

Results
During the study period, we identified 24,250 patients with RA. Approximately 3–4% of patients were excluded because of serious comorbidities in each cohort. The number of patients who met selection criteria increased from 1007 in 1995 to 3466 in 2004 (total number = 23,342). Overall, the average proportion of female patients was 78%, the median age was 57 yrs [interquartile range (IQR): 48–65], 74% of patients were white and 53% lived in urban areas. Nearly 68% of patients were eligible for TennCare based on disability and 1% of them were nursing home residents.

Medication utilization
The proportion of RA patients receiving at least one study medication (DMARD, NSAID, glucocorticoid or narcotic) on the index date increased from 88% in 1995 to 91% in 2004 (P < 0.001). The median number of non-study medications received by patients with RA increased from 2 (IQR: 1–4) in 1995 to 5 (IQR: 3–8) in 2004.

Approximately 62% of patients were receiving DMARDs alone or in combination with other DMARDs (5–17%) and a decrease in its use as a single agent (31–24%). The overall utilization of HCQ decreased (P < 0.001), SSZ use remained stable over time (P = 0.371) and LEF utilization increased (P < 0.001). The utilization of other synthetic DMARDs decreased over time (P < 0.001 for each) (Fig. 2A). The use of biologics (alone or in combination with other DMARDs) started in 1998 and by the end of 2004, 22% of treated patients were receiving biologics (P < 0.001). Etanercept accounted for 51% of biologic utilization in 2004.

Approximately 10% of RA patients used DMARDs alone (without concurrent glucocorticoids, NSAIDs or narcotics) and this proportion remained relatively stable over time, whereas use of DMARDs and glucocorticoids (with or without NSAIDs) decreased. The concurrent utilization of DMARDs and narcotics (with or without NSAIDs or glucocorticoids) increased from 23% in 1995 to 41% in 2004 (Fig. 2B).

Medication utilization in Non-DMARD users
Although filling one DMARD prescription in the past year was a selection criterion, some RA patients were not receiving DMARDs on the index date. These patients had an overall median age of 56 yrs (IQR: 46–65). Approximately 79% were females, 71% were white and 51% lived in urban areas. Nearly 66% were enrolled in TennCare based on disability and 1%
of them were nursing home residents. Overall, the proportion of patients without study medications on the index date decreased over time. In addition, the proportion of RA patients receiving glucocorticoids or NSAIDS or both without DMARDs decreased over time; whereas the utilization of narcotics (with or without NSAIDS or glucocorticoids) remained relatively stable (see Supplementary Fig. 1, available as supplementary data at Rheumatology online).

Sensitivity analysis

The application of less-specific selection criteria increased our number of total patients included (from 23 342 to 37 547). Compared with our primary analysis, there were no material differences in the distribution of demographic data and although the overall and age-stratified changes in patterns of medication use were similar, estimates of medication utilization were consistently lower. Overall DMARD utilization increased from 33% in 1995 to 52% in 2004 ($P < 0.001$). MTX use increased from 19% to 30% ($P = 0.005$), with the increase primarily in combination use with other DMARDs). Overall biologic use increased from 0% in 1998 to 16% in 2004 ($P < 0.001$) whereas glucocorticoid utilization showed a non-significant decrease from 36% to 35% ($P = 0.409$). Overall use of NSAIDS and narcotics increased during the study period from 32% to 37% ($P < 0.001$) and from 36% to 56% ($P < 0.001$), respectively.

Discussion

We examined changes in medication utilization in RA patients who were enrolled in TennCare from 1995 to 2004 and had evidence of treatment with a DMARD in the prior year. DMARD utilization increased over time indicating that more RA patients who used DMARDs, remained on therapy, and were current users on the index date. We also documented a substantial uptake of the combination of MTX with other DMARDs, and the more recently approved LEF and biologic DMARDs. Although glucocorticoid use declined, we observed a modest increase in NSAID use and a large increase in narcotic utilization, especially among RA patients who were concurrently using DMARDs.

Unlike some previous studies of DMARD utilization that identified RA patients relying on diagnosis codes alone, we applied a previously validated algorithm to identify RA patients through administrative data. Since all patients filled a prescription for at least one DMARD in the prior year, our methods overestimate DMARD use in all patients with RA. However, this definition is useful for examining patterns of utilization among those patients judged to be eligible for DMARD therapy and the reported changes were consistently observed when we applied a less-specific definition in our sensitivity analysis.

Even though DMARD utilization increased during the study period, a substantial proportion of RA patients were not receiving DMARDs at the index date. Given the body of evidence supporting the benefits of DMARD therapies, these estimates would suggest suboptimal treatment of RA [3, 4, 9]. However, there are some alternate explanations. The proportion of identified patients who met ACR criteria for RA is unknown. Although our selection criteria likely reduced patient misclassification, any residual misclassification could partially explain this apparent under-treatment [4, 9]. Moreover, the proportion of patients that were in disease remission is unknown. These patients might have discontinued their treatment before the index date. Interestingly, ~10% of patients were not using any study drugs on the index dates. Using data from the Norfolk Arthritis Register, other investigators reported that 18% of patients who initially met ACR criteria for RA were in drug-free disease remission after 3 yrs [9, 10]. The lack of information on disease duration or disease activity measurements in our databases precluded similar assessments. Furthermore, our study did not assess DMARD doses or prescriber’s specialty [3].

Although our findings are consistent with previous studies that showed increasing utilization of DMARDs among all and Older RA enrollees is currently unknown. Studies on the patterns of narcotic utilization among RA patients in other populations, and their risks and benefits, would be informative.
Although the precise reasons for DMARD-prescribing preferences cannot be assessed in our study, these changes could reflect the incomplete efficacy or relative toxicity profiles of older synthetic DMARDs and the trend towards more aggressive management of inflammation, including combination therapies, LEF and biologics. Similarly, the reasons for the changes in the utilization of non-DMARD medications cannot be determined but the observed declines in glucocorticoid utilization could be related to improved disease control resulting from early initiation of DMARD therapy, use of DMARD combination therapies, the introduction of new DMARDs or to concerns about the toxicity of these medications [13]. In the same way, the most recent decline observed in NSAID utilization could be related to the recognition of their gastrointestinal and cardiovascular toxicity.

In accordance with current recommendations for the treatment of RA, the utilization of DMARDs has increased during recent years among TennCare patients with RA. Information on the effectiveness and safety of DMARDs and concurrent medications must inform individual decisions to initiate or continue treatment with these therapies.

Rheumatology key messages

- The utilization of DMARDs has increased during recent years among TennCare patients diagnosed with RA.
- The utilization of narcotic analgesics has also increased in this population.

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Supplementary data

Supplementary data are available at *Rheumatology* Online.

References