Chronic Disease Research Group

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Prevalence of Glomerulonephritis in the U.S.: Insights from a Large Administrative Dataset

Introduction

Glomerulonephritis (GN) is a serious disorder which can lead to end stage renal disease (ESRD), other major morbidity, or death. However, little is known about the burden due to GNs. Using a large employer group health plan database, comprising > 8 million individuals annually, was utilized for this retrospective cohort study of individuals from 2007-11 (inclusive).

Methods

The Optum Clinformatics employer group health plan database, comprising > 8 million individuals annually, was utilized for this retrospective cohort study of individuals from 2007-11 (inclusive).

Adults (age > 18 years) only were studied

We divided GNs into those arising from 2 "sources": a systemic immunologic disease (e.g., systemic lupus erythematosus) versus those that were primary in nature (that is, presumably limited to the kidney).

To identify primary GNs, we used a relatively specific approach in which two ICD-9 claims ± 30 days apart for a GN, plus an additional claim for a manifestation of renal disease (e.g., hematuria, proteinuria) were required.

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Prevalence of Glomerulonephritis in the U.S:

Newly-diagnosed GN patients were followed for a GN or manifestation of renal disease ≥30 days apart

We calculated the prevalence of GN’s per 100,000 enrollees by dividing the number of GN cases by the total number of individuals in the database from 2007-11

For patients who were enrolled in the plan - 1 year and who had no GN claims within that year, incidence rates were calculated by dividing cases of newly-diagnosed GNs by total follow-up time. Follow-up started from 1 year after enrollment

Censoring occurred at the end of plan enrollment, development of ESRD, or end of the final year of observation (2011)

Newly-diagnosed GN patients were followed for development of ESRD or for hospitalization

Methods (cont)

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Results

Mean age of enrollees was 41.0 ± 14.1 years

Mean age of prevalent patients with a primary GN was 51.3 ± 14.2 years, while incident patients were 53.0 ± 13.7 years old

Mean age of prevalent patients with a GN from a systemic immunologic disease was 55.2 ± 15.8 years; for an incident patient, 58.0 ± 15.0 years

Overall, 50.6% of the cohort was female. For primary GNs, 41.7% of prevalent and 40.4% of the incident patients were female

For GNs from a systemic immunologic disease, 69.0% of incident patients with GN, per 1000 patient-years, by category (primary versus secondary)

Table 1. Incidence and prevalence of glomerulonephritis, 2007-2011, by GN category (primary vs secondary)

Table 2. Rate of ESRD in incident GN patients, per 1000 patient-years, by category (primary versus secondary)

Table 3. Hospitalization rates in incident patients with GN, per 1000 patient-years, by category (primary versus secondary)

Table 4. Hospitalization burden, in days, in incident patients with GN, by category (primary versus secondary)

Conclusions

For the first time in a large, population-based administrative dataset, incidence and prevalence of GNs have been estimated

Primary GNs are about 1/3 more prevalent than GNs resulting from systemic immunologic diseases

However, progression to ESRD in incident patients with a primary GN is much more than twice as compared to patients with a GN from a systemic immunologic disease

Hospitalization burden in GNs is substantial, with patients who have systemic immunologic diseases spending an average of 24 days in the hospital over less than two years. Total hospitalization rate was nearly twice as high in incident patients with GNs due to systemic immunologic diseases

More work investigating the epidemiology of GNs, including patterns of drug use in GNs, is ongoing

Limitations of this study include the fact that detailed, patient-level data from the medical record is not available in this administrative dataset. Also, mortality data and race classification is not available without influence from Questcor.

CDRG Investigators collected, analyzed and interpreted the data and composed the manuscript without influence from Questcor.

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