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When does the increased mortality risk appear in rheumatoid arthritis? A distributed data analysis comparing mortality in two Canadian provinces

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Introduction

Rheumatoid arthritis (RA) is chronic inflammatory arthritis. For decades studies showed that RA patients died earlier than their general population counterparts. Some inception cohorts have failed to detect an increased mortality risk, possibly due to limited follow-up or to improvement in mortality risk in cohorts of more recent onset.

Objectives and Approach

We evaluated mortality risk in RA patients and estimated when the increased risk appears. Using a common protocol, we conducted distributed analyses using administrative data, of incident RA patients in British Columbia (BC) and Ontario (ON) over 2000-2015. We identified all RA patients (using validated criteria), and identified non-RA comparators, matched 1:2 on age, sex and index years. Adjusted hazard ratios (HRs) were estimated using multivariable Cox regression, controlling for comorbidities and other factors. To estimate when the increased risk appeared we included an interaction with follow-up time, to detect if and how the HR varied by RA duration.

Results

Among 13834 RA patients in BC (27668 comparators), 66% were female with a mean age of 58 years at cohort entry. Among 27405 RA patients in ON (54810 comparators), 70% were female with a mean age of 56 years. The prevalence of individual comorbidities was comparable across RA cohorts. During follow-up, 23% of RA patients in each province died, with corresponding crude mortality rates of 2.3 deaths per 100 person-years in both provinces. Multivariable analyses detected an increased mortality risk in RA by 6 years of follow-up, with a linear relationship suggesting further increase over time. By 10 years, the adjusted HR was 1.14 (95% CI 1.07,1.22) in BC and 1.13 (95% CI 1.08,1.18) in ON.

Conclusion/Implications

In 2 large Canadian RA inception cohorts, a small increased mortality risk appeared after 6 years of RA duration and increased to a 14% (in BC) and 13% (in ON) increased mortality risk after 10 years, suggesting increased efforts to prevent disease progression and optimizing comorbidity management are needed.

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