Epidemiology, risk and prediction of risk

OP0266
HIGHER RISK OF LUPUS MORTALITY IN URBANIZED THAN IN LESS-URBANIZED NEIGHBORHOODS

Keywords: Geographical differences, Systemic lupus erythematosus, Prognostic factors
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Background: Lupus mortality differs by sex, race/ethnicity, and geographical region in the United States, with females, blacks, and residents of the South census region experiencing higher age-standardized mortality rates relative to their respective reference groups, as revealed by the analysis of aggregated mortality data using the CDC-WONDER database (Yen E, et al, Ann Intern Med 2017; Singh RR and Yen E, Lupus 2018). These aggregate data are limited by observation at the population level. We seek to examine mortality data at the individual level to characterize how where you live can impact your risk of death from lupus. Specifically, how living in a specific neighborhood as defined by the rural-urban continuum codes (RUCC) can influence your overall lupus mortality.

Objectives: Analyze the risk of lupus death relative to all-cause deaths (other than lupus) by RUCC adjusted for sex, race/ethnicity, and age groups.

Methods: We used the individual mortality dataset provided by the Centers for Disease Control and Prevention. The study population comprises all (>99%) deaths in the United States from 2006 to 2011. The primary outcome is lupus deaths defined as the cause of death identified from ICD 10 codes (M321, M328, M329). The primary exposure is the RUCC listed on the death certificate at the time of death. We constructed a multivariate logistic regression model adjusting for sex, ethnicity/race, and age. We also analyzed for potential effect modifiers between RUCC and other demographic variables.

Results: From 2006 to 2011, there were 5,430 lupus deaths and 6,286,020 all-cause deaths in the United States. The adjusted odds of lupus vs. all-cause deaths was higher in metro-urbanized area than in less urbanized (odds ratio 0.729 [95% CI 0.651 to 0.816], p<0.0001), thinly populated (0.951 [0.845-1.070], p=NS), and non-metro urbanized (0.951 [0.845-1.070], p=NS). The odds of lupus/all-cause deaths was higher in non-Hispanic black (2.758 [2.573-2.957], p<0.0001), Hispanic (2.350 [2.150-2.568], p<0.0001), and non-Hispanic other (2.242 [1.975-2.546], p<0.0001) than in non-Hispanic white persons; lower in males (0.121 [0.112-0.131], p<0.0001) than females, and in age group 45-64 years (0.586 [0.548-0.627], p<0.0001) and ≥65 years (0.124 [0.115-0.133], p<0.0001) than in <45 year group. There was an interaction between area and RUCC in influencing lupus death rate, with higher lupus/all-cause death in non-metro urbanized (p<0.001) and less urbanized areas (p=0.034) than in metro-urbanized areas in decedents ≥65 years.

Conclusion: This study reveals an association between rural-urban residence and odds of dying from lupus after adjusting for sex, ethnicity/race, and age. Comprehensive studies to identify determinants of higher lupus deaths in metro-urbanized areas are needed to address the poor lupus outcome in the high-risk populations.

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OP0267
THE PREDICTIVE ACCURACY OF CARDIOVASCULAR RISK PREDICTION TOOLS IN INFLAMMATORY ARTHRITIS

Keywords: Diagnostic tests, Cardiovascular disease, Prognostic factors
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Background: Cardiovascular risk prediction tools designed for the general population often underestimate and occasionally overestimate cardiovascular risk in individuals with rheumatoid arthritis. Incidence of cardiovascular disease is also recognised to be increased in individuals with other inflammatory arthritides.

Objectives: To investigate performance of three common cardiovascular risk prediction tools, (QRISK-3, Framingham Risk Score and Reynolds Risk Score) in patients with rheumatoid arthritis (RA), psoriatic arthritis (PsA) and ankylosing spondylitis (AS). We also compare performance in patients with psoriasis, since it is closely related to PsA, and a non-inflammatory disease, osteoarthritis (OA).

Methods: We utilise primary care records from the Clinical Practice Research Datalink (CPRD) Aurum database and identify individuals with diagnostic codes for each condition. We calculated their 10-year cardiovascular risk using each tool, and compared this to their observed outcomes. Discrimination (how well the tool separates CVD cases and non-cases) was assessed using time-dependent (to account for censoring in follow up) Area-under-ROC-curve (AUC), sensitivity, specificity, positive and negative predictive values (using 10% and 20% predicted risk to determine high risk of CVD). Calibration (how well predicted risks match observed risks) of each risk prediction tool was assessed by comparing the observed and predicted risks in deciles of predicted risk for each disease group.

Results: Time-dependent AUC for QRISK3 ranged between 0.697 for patients with osteoarthritis to 0.815 for patients with psoriasis, indicating reasonably good predictive performance (Figure 1). AUC for the Framingham Risk Score were similar, whilst the Reynolds Risk Score achieved slightly lower AUCs in this cohort, ranging between 0.640 for patients with osteoarthritis and 0.752 for patients with psoriasis. In general, the Framingham Risk Score was reasonably well calibrated for each condition but underpredicted risk for patients with RA or OA. The Reynolds’s Risk Score tended to underpredict CVD risk, whilst the QRISK3 score overpredicted CVD risk, especially for the most high-risk individuals.

Conclusion: In general, CVD risk for individuals with RA, AS, PsA, psoriasis, or OA were less accurately predicted using each of the 3 CVD risk prediction tools than the reported accuracies in the original publications. There is a need for specific risk prediction tools for rheumatic conditions.

Figure 1. ROC curves for cardiovascular risk prediction in each rheumatic disease using the QRISK3, Framingham and Reynolds Risk Scores.

Acknowledgements: This study was supported by a grant from a charitable organisation, the Psoriasis and Psoriatic Arthritis Alliance (PAPAA).

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OP0268
IMPACT OF MENOPAUSAL TREATMENTS IN FUNCTIONAL DECLINE ON WOMEN WITH RHEUMATOID ARTHRITIS

Keywords: Pregnancy and reproduction, Rheumatoid arthritis, Real-world evidence
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Background: Women with Rheumatoid Arthritis (RA) experience changes in disease development and progression surrounding reproductive and hormonal events, including menopause. In our prior work, women with RA had better functional status prior to menopause and experienced worsening functional decline after menopause [1].

Objectives: The purpose of this study is to investigate how menopausal treatments affect functional decline in women with RA.

Methods: Women with RA participating in the Forward Databank from 2000 through 2022 with a reported menopausal status or not having a menstrual period for 1 year were eligible. Women who were on hormonal contraceptive were excluded. Hormonal replacement therapy (HRT) users were matched 1:1

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