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Title

Exploring readily available prognostic biomarkers to predict risk of adverse health-related outcomes in rheumatoid arthritis

Priority 1 (Research Category)

Musculoskeletal and rheumatology

Presenters

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Abstract

Context: There is a need to identify biomarkers capable of predicting risk of mortality and cardiovascular events in people with rheumatoid arthritis (RA). Ideally, such biomarkers should be simple, easy to measure and readily available in a clinical care setting to minimise burdens on patients and healthcare providers. Objective: Investigate associations, if any, between selected prognostic biomarkers, which are potentially readily available in a clinical care setting, and the risk of all-cause mortality and major adverse cardiovascular events (MACE; myocardial infarction/stroke) in a population-based RA cohort. Study Design and Analysis: Prospective analysis of cohort data. Cox proportional hazards models were used to analyse associations between selected biomarkers and all-cause mortality/MACE. Biomarkers included: body mass index (BMI), body fat percentage, waist circumference, waist-to-hip ratio, hand grip strength, usual walking pace, number of chronic pain sites, systolic blood pressure (BP), total cholesterol, high density lipoprotein (HDL)-cholesterol, glycated haemoglobin (HbA1c), C-reactive protein (CRP) and rheumatoid factor. All biomarkers listed were included in multivariable models for both outcomes which were also adjusted for age, sex, socioeconomic status and number of additional long-term conditions. Setting or Dataset: UK Biobank (population-based cohort of 502,414 participants, aged 37-73 years). Population Studied: 5,658 (1.1%) participants with self-reported RA (mean age 59 [standard deviation 7.13]; 69.8% female). Intervention/Instrument: None. Outcomes Measures: All-cause mortality and MACE. Results: 670 deaths and 370 MACE were recorded during available follow-up (median 11.3 and 8.9 years, respectively). Biomarkers associated with higher risk of all-cause mortality: underweight BMI (<18.50kg/m2) (hazard ratio 3.87 [95% confidence interval 1.94-7.72]), CRP 3-10mg/L (1.45 [1.16-1.83]) and CRP >10mg/L (1.76 [1.34-2.32]). Biomarkers associated with higher risk of MACE: underweight BMI (3.85 [1.18-12.49]), low hand grip strength (1.46 [1.10-1.95]), slow usual walking pace (1.62 [1.20-2.21]), raised systolic BP (≥140mmHg) (1.61 [1.22-2.12]) and CRP >10mg/L (1.55 [1.09-2.22]). Conclusions: A multidimensional approach to risk assessment, combining simple, readily available measures, may provide important prognostic information for RA populations at primary/secondary care level, while minimising the extent/impact of testing on patients.