AB0288

PERSISTENTLY ACTIVE DISEASE IN PATIENTS WITH NEW-ONSET RHEUMATOID ARTHRITIS DURING THE FIRST YEAR OF TIGHT CONTROL AND AGGRESSIVE THERAPY: PREVALENCE AND CLINICAL PREDICTORS IN DIFFERENT CRITERIA SETS

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Background: Early intervention and aggressive therapy of rheumatoid arthritis (RA) improves prognosis, however a substantial proportion of patients under guideline-based care remain persistently active disease (PAD) in the first year.

Objectives: To investigate the proportion of PAD (LDA/MDA/HDA) in real-life practice and identify its prognostic factors in early RA (≤ 2 years) patients receiving tight-controlled conventional synthetic disease-modifying antirheumatic drugs (csDMARD) treatment at 1 year of follow-up.

Methods: In our observational RA cohort, patients were usually three-monthly followup and step-up csDMARD escalation treatment at the discretion of physicians in the first year. Disease activity and remission were assessed by four commonly-used indices (DAS28-ESR, CDAL, SDAI, and Boolean criteria). Logistic regression was used to estimate odds ratios (ORs) and their 95% confidence intervals (CIs) for PAD by 12 months.

Results: The study included 303 DMARD-naïve early RA patients completing one year follow-up schedule, who were mostly female (72%) with a mean age of 55, and a median disease duration of 6 months. Most patients were in MDA or HDA at baseline and most of them (83.5%) received csDMARDs combination in the first year. 26.4-55.1% of participants did not reach remission by 12 months. Compared to patients experienced remission, patients in PAD were frequently in female, elder, shorter disease duration, and high baseline disease activity components, including SJC, TJC, PGA, EGA, ESR, CRP and glucocorticoids use. In multivariate logistic regression analyses, female (OR=1.34-1.58), increasing age (OR=1.03-1.10), longer disease duration (OR=1.45-1.78), higher baseline SJC (OR=1.11-1.25), EGA (OR=1.02-1.08) showed the independent association with the increased risk for PAD, across all criteria. Higher ESR (OR=1.05) was an independent risk factor for PAD, measured by DAS28-ESR.

Conclusion: Our results indicated around one-third of RA participants receiving guideline-based healthcare had PAD in the first year. Female, increasing age, long disease duration, higher SJC, EGA, and ESR at baseline independently increased the risk of PAD.

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2019-eular.947

AB0289

PREDICTION OF CARDIOVASCULAR EVENTS IN RHEUMATOID ARTHRITIS PATIENTS USING PROTEIN BIOMARKERS AND CLINICAL FACTORS

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Background: The ACC/AHA recommends preventive strategies for patients with a high-predicted risk of atherosclerotic cardiovascular disease (CVD). RA patients are at higher risk for CVD events, yet the role of systemic inflammation and the influence of traditional CVD risk factors are unclear with respect to risk prediction in RA.

Objectives: A simple and accurate algorithm for predicting CVD event risk that considers systemic inflammation might help risk assessment for RA patients and optimize preventive care.

Methods: We derived a U.S. cohort of RA patients by linking multi-biomarker disease activity (MBDA) test data to Medicare claims data. Patients had to have ≥ 1 year Medicare coverage prior to the date of their first MBDA test, which was designated as baseline. Exclusions were past MI, stroke, or cancer. Follow-up ended at the earliest of: 1) CVD event; 2) death; 3) loss of coverage; or 4) 12/31/2016, the latest date for which the Medicare claims database was evaluated. CVD events were defined as incident MI, stroke or fatal CVD event, and were identified using validated algorithms (PPV $\geq 80\%$). The leptin-adjusted MBDA score (Curtis et al., *Rheumatology* 2018) and its 12 individual protein biomarkers were evaluated as predictors of CVD events, as were other variables, including demographics, healthcare utilization, CVD-related comorbidities and medications, and RA-related features (e.g. DMARD/biologic use, glucocorticoid use). The cohort was randomly split 2:1 to use

2/3 of patients for training and 1/3 for validation. Cox proportional hazard regression with LASSO was used for variable selection based on minimization of 10-fold cross-validated error + 1 SE. Model calibration (observed vs. expected) and discrimination were assessed for predicted CVD events at 3 years. Analyses are ongoing; model performance results are reported for the cross-validated training data.

Results: A total of 26,261 eligible RA patients were analyzed; mean (SD) age 68.6 (10.2) years, 80.1% female, 72.6% white, 23% diabetes, 43% statin use, 56% methotrexate, 44% on biologics/tofacitinib, 55% steroids, and median (IQR) adjusted MBDA score 40 (32-49). A total of 477 CVD events occurred over mean (SD) follow-up time of 1.7 (1.2) years yielding a CVD incidence rate of 16.5 (95% CI 15.0-18.0)/1000py. The most important predictors in these LASSO-selected models were age, beta-blocker use, sex, diabetes, adjusted MBDA score and a subset of individual MBDA biomarkers. The best performing model had a cross-validated area under the receiver operator curve of 0.70 and good observed: expected prediction at 3 years (Figure).

Figure 1

Conclusion: Preliminary results from this approach suggest that a simple algorithm consisting of a limited number of protein biomarkers and clinical measures can provide an accurate method to predict short-term CVD risk in RA. **Acknowledgement:** The work for this abstract was funded by an industry/academic collaboration between Myriad and University of Alabama at Birmingham.

Disclosure of Interests: Jeffrey Curtis: None declared, Fenglong Xie: None declared, Lang Chen: None declared, Eric H. Sasso Shareholder of: Myriad Genetics, Inc., Employee of: Crescendo Bioscience, Inc., Elena Hitraya Shareholder of: Myriad, Employee of: Myriad, Jerry Lanchbury Shareholder of: Myriad, Employee of: Myriad, Darl Flake Shareholder of: Myriad Genetics, Inc., Employee of: Myriad Genetics, Inc., Alexander Gutin Shareholder of: Myriad, Employee of: Myriad, Cheryl Chin Shareholder of: myriad stock, Employee of: myriad, Cynthia S. Crowson: None declared

DOI: 10.1136/annrheumdis-2019-eular.6323

AB0290

TREAT-TO-TARGET (T2T) IS NOT ENOUGH: IDENTIFY FACTORS LEADING TO A MISMATCH BETWEEN T2T AND HAQ AMONG RA PATIENTS THROUGH DATA MINING FROM SMART SYSTEM OF DISEASE MANAGEMENT (SSDM)

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Background: T2T, achieving a DAS28 score lower than 2.6 (remission) or below 3.2 (low disease activity), is the main management strategy recommended by ACR and EULAR. HAQ is the most widely used in assessments of physical function in RA. However, the T2T may not always associate with good HAQ.

Objectives: To quantify phenomenon of mismatch between the T2T and the HAQ in RA patients and identify influential factors from real-world data mining in SSDM.