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AB1243 TRAINING AND VALIDATION OF A MULTIVARIATE PREDICTOR OF RISK OF RADIOGRAPHIC PROGRESSION FOR PATIENTS WITH RHEUMATOID ARTHRITIS

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Background: The multi-biomarker disease activity (MBDA) score, adjusted for age, sex and adiposity ($MBDA_{adj}$), has been shown to be better than several conventional disease activity measures for predicting risk for radiographic progression (RP) in patients with rheumatoid arthritis (RA).[1] Serologic status and other non-disease activity measures are also predictive of RP risk. Combining them with the $MBDA_{adj}$ should result in a stronger prognostic test for RP than any one measure alone.
Objectives: Develop a multivariate model for predicting risk for RP that includes the adjusted MBDA score and other known predictors of RP.
Methods: Four RA cohorts were used, two for training (OPERA and BRASS, n=555) and two for validation (SWEFOT and Leiden, n=397). Each pair of cohorts was heterogeneous in disease duration and treatment history. BMI data were not available for one validation cohort, so a BMI surrogate was modeled using forward selection with the two training cohorts and 3 others (CERTAIN, InFoRM, RACER) (N=1411). An RP risk score was then trained using forward selection in a linear mixed-effects regression, considering disease-related and demographic variables as predictors of change in modified total Sharp score over one year (ΔmTSS), with a random effect on cohort. The RP risk score was validated as a predictor of RP with two cutoffs (ΔmTSS >3 and >5) using logistic mixed-effects regression. Odds ratios (OR) and 95% profile likelihood-based confidence intervals (CI) were calculated from the models and significance was assessed by likelihood ratio tests. Risk curves were generated to show probability of RP as a function of the RP risk score.
Results: The BMI surrogate included leptin, sex, age and age^2 and correlated well with BMI (ρ = 0.76). In training, the most significant independent predictors of RP were $MBDA_{adj}$ ($p = 9.3 \times 10^{-5}$), seropositivity (p = 0.00020), BMI surrogate score (p = 0.013) and use of targeted therapy (p = 0.0026). The final model was: RP risk score = 0.024 x $MBDA_{adj}$ + 0.093 if seropositive – 0.063 x BMI surrogate score – 0.61 if using a targeted therapy. In validation, the OR (95% CI) of the RP risk score for predicting ΔTSS >3 or >5 were 2.2 (1.6, 3.2) ($p = 2.6 \times 10^{-6}$) and 3.1 (2.0, 5.0) ($p = 5.7 \times 10^{-8}$), respectively (Figure 1). The odds of a patient having RP increases by 50% for each 21-unit or 15-unit increase in $MBDA_{adj}$, for RP defined as ΔTSS >3 or >5, respectively.

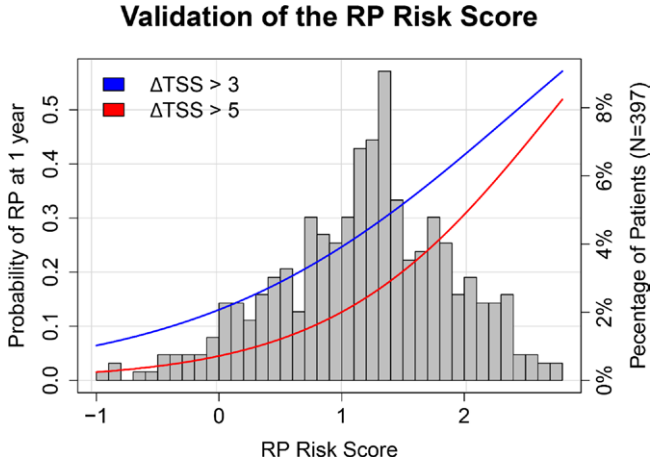

Figure 1.

Conclusion: A multivariate model containing adjusted MBDA score, seropositivity, a BMI surrogate and use of targeted therapy has been trained and validated as a prognostic test for radiographic progression in RA.

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AB1244 PROGNOSTIC FACTORS IN IGG4-RELATED DISEASE: A LONG-TERM MONOCENTRIC CHINESE COHORT STUDY

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Background: Through initial response to treatment with GC, the patients with IgG4-related disease (IgG4-RD) exhibited high relapse rate after reduction or withdrawal of GC treatment, indicated the unsatisfactory prognosis for IgG4-RD. It is of clinical significance to develop new informative risk factors for refractory and relapsed disease.
Objectives: To evaluate the prognosis of IgG4-RD and identify predictive factors for treatment resistance and disease relapse in a Chinese cohort.
Methods: 102 patients newly diagnosed with IgG4-RD were followed for 6-111 months. Clinical data were compared between patients whose disease went into remission and those who suffered refractory or relapsed disease. Predictive factors for refractory and relapsed disease were calculated by univariate analysis.
Results: Among the 78 patients who received medical treatment with regular follow-up, 55 (59.8%) patients sustained clinical remission, and 23 (25%) patients suffered refractory or relapsed disease. The mortality and incidence of malignancy were both 4.35% during follow-up. Serum TNF-α ≥ 13 pg/ml, sIL-2R ≥ 1010 pg/ml, TC < 3.55 mmol/L, LDL < 2.0 mmol/L, IgG > 20.2 g/L, GC withdrawal, and treatment without immunosuppressor (IM) during the maintenance period (OR 3.23) were predictive factors for refractory and relapsed IgG4-RD. The combination of GC and IM treatment was protective (OR 0.338) against refractory and relapsed IgG4-RD.
Conclusion: Serum TNF-α, sIL-2R, LDL, TC, IgG, GC withdrawal, and treatment without IM during the maintenance period were predictive factors for refractory and relapsed IgG4-RD. Treatment with GC and IM may protect against refractory and relapsed IgG4-RD.

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