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## Predictive Factors of Treatment Response to a Second TNF- $\alpha$ Inhibitor in Patients with Ankylosing Spondylitis - Results from the Portuguese Register Reuma.pt

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Araújo, F.(1); Sepriano, A.(1); Madureira, P.(2); Aguiar, R.(3); Bernardo, A.(2); Silva, C. (4); Sousa, E. (5); Pimentel-Santos, F.(6); Sequeira, G.(7); Canhão, H.(5); Santos, H.(4); Garcia, J.(8); Pereira Silva, J. Alberto(5); Canas Silva, J.(9); Oliveira, M.(10); Salvador, M. J.(11); Nero, P.(1); Monteiro, P. (12); Nóvoa, T. (13); Branco, J. C. (14);

1 Centro Hospitalar de Lisboa Ocidental, Hospital Egas Moniz; 2 Centro Hospitalar São João; 3 Centro Hospitalar Baixo Vouga; 4 Instituto Português Reumatologia; 5 Centro Hospitalar Lisboa Norte, Hospital Santa Maria; 6 Centro Hospitalar de Lisboa Ocidental, Hospital Egas Moniz, e CEDOC, Faculdade Ciências Médicas Universidade Nova Lisboa; 7 Hospital de Faro; 8 Centro Hospitalar Médio Tejo; 9 Hospital Garcia Orta; 10 Centro Hospitalar Cova Beira; 11 Centro Hospitalar e Universitário de Coimbra; 12 Centro Hospitalar Tondela-Viseu; 13 Hospital Divino Espírito Santo; 14 CEDOC, Faculdade Ciências Médicas Universidade Nova Lisboa, e Centro Hospitalar de Lisboa Ocidental, Hospital Egas Moniz;

**Introduction:** Approximately one-third of patients with ankylosing spondylitis (AS) treated with tumor necrosis factor inhibitors (TNFi) needs to switch their biological therapy. However, a significant clinical response only occurs in half of switcher patients. The objective of this study was to determine predictive factors of treatment response at 12 weeks in AS patients switching treatment to a second TNFi.

**Material and Methods:** Patients with AS (1984 modified New York classification criteria) switching treatment to a second TNFi were identified in the Rheumatic Diseases Portuguese Register, Reuma.pt. Data was extracted at baseline (at second TNFi start) and at 12 weeks of follow-up. Variables included in the analysis were age, race, gender, BMI, education level, work status, tobacco and alcohol consumption, disease duration, time to diagnosis, peripheral arthritis, extra-articular manifestations, ESR, CRP, HLA-B27 positivity, previous DMARD and steroid therapy, BASDAI, ASDAS, BASFI, BASMI, first TNFi used, reason and time to switch. Univariable logistic regression analysis of baseline predictors of BASDAI response (improvement  $\geq 2$  units or 50%) was performed and variables with a p-value $<0.25$  were re-tested in multivariable regression models.

**Results:** Of the 334 AS patients treated with biologicals, 85 (25.4%) switched to a second TNFi. Reasons for switch included treatment failure (16; 18.8%), adverse events (25; 29.4%) and other reasons (44; 51.8%) like refractory extra-articular manifestations, surgery or patient preferences. Patients were included in the analysis if they stayed in therapy at least for 3 months and have BASDAI at baseline and at 3 months available. Forty-nine patients were analyzed, 22 responders (44.9%) and 27 non-responders (55.1%). BASDAI clinical response at 12 weeks was predicted by BASMI (p=0.04; OR 3.8 [95% CI 1.0, 14.1]) adjusting for gender, erythrocyte sedimentation rate and age at biological treatment onset. No other statistical significant demographical, clinical or laboratorial predictors were found.

**Discussion and conclusions:** We found 45% switchers who responded to the second TNFi. An increased BASMI score was an independent predictor of BASDAI clinical response to a second TNFi in AS patients. The inclusion of a greater number of patients in future studies may allow the determination of further predictive factors.