

PREDICTIVE FACTORS OF RESPONSE AT 12 WEEKS IN PATIENTS WITH ANKYLOSING SPONDYLITIS STARTING BIOLOGICAL THERAPIES - RESULTS FROM THE PORTUGUESE REGISTER - REUMA.PT

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Introduction & Objective

- Identifying predictors of response to biological therapies in patients with Ankylosing Spondylitis (AS) is of utmost importance, especially in view of the costs and potential side effects of these agents.
- Objective:** To determine baseline predictive factors of response to biological therapies at 12 weeks in patients with AS in daily clinical practice.

Methods

- Patients with AS under biological therapy and followed in the Rheumatic Diseases Portuguese Register (Reuma.pt) were included in this analysis. Reuma.pt is used as an electronic medical record and assessments are performed by rheumatologists. Patients with information at baseline and 12 weeks of follow-up were included in the analysis (n = 197).
- Univariable logistic regression analysis of baseline predictors of ASDAS (improvement ≥ 1.1) and BASDAI response (improvement ≥ 2 units or $\geq 50\%$) were performed.
- Variables with a p-value < 0.1 were re-tested in multivariable models. When both ASDAS and CRP (or ASDAS and BASDAI) were significant in the univariable analysis, they were included in separate multivariable models, in order to avoid collinearity-problems.
- Forward selection was performed until the best-fit model was obtained, taking confounding effects into account. Interactions were tested.

Results

TABLE 1. BASELINE DEMOGRAPHIC AND CLINICAL CHARACTERISTICS OF THE POPULATION

	Mean (SD) or N (%) N = 197
Age at start of first biologic (years)	41.2 (12.0)
Age at start of first biologic >40 years (%)	92 (47%)
Gender (% male)	121 (61%)
HLA-B27 (%)	133 (81%)
Disease duration (years)	8.0 (8.2)
ASDAS	3.68 (0.95)
BASDAI (0-10)	5.97 (1.96)
Educational level (years)	10.2 (4.8)
Back pain (0-10)	5.9 (2.5)
Elevated CRP (≥ 5 mg/l) (%)	148 (75%)
Biologic drug	
- Etanercept (%)	41 (21%)
- Infliximab (%)	79 (40%)
- Adalimumab (%)	70 (36%)
- Golimumab (%)	7 (4%)
ASDAS response achieved at 12 weeks	105 (64%) (N = 164)
BASDAI response achieved at 12 weeks	113 (58%) (N = 194)

TABLE 2. BASELINE PREDICTIVE FACTORS OF ASDAS RESPONSE ($\Delta \geq 1.1$) AT 12 WEEKS

	Univariable regression OR (95% CI) (n = 132-164)	p-value	Multivariable regression 1 OR (95% CI) (n = 125)	Multivariable regression 2 OR (95% CI) (n = 163)
Age at start of first biologic (<40 vs ≥ 40)	2.80 (1.45; 5.43)	0.002	**	4.04 (1.86; 8.78)
Gender (male vs female)	2.02 (1.05; 3.88)	0.035	3.01 (1.20; 7.57)	**
ASDAS	2.77 (1.78; 4.29)	<0.001	3.98 (2.19; 7.21)	¶
BASDAI (0-10)	1.10 (0.93; 1.30)	0.267	§	§
Educational level (years)	1.08 (1.00; 1.16)	0.056	1.11 (1.01; 1.21)	**
Back pain (≥ 4 vs <4; 0-10)	0.41 (0.17; 0.98)	0.045	0.27 (0.09; 0.84)	**
Elevated CRP (≥ 5 mg/l) (%)	7.00 (3.18; 15.41)	<0.001	¶	9.33 (3.89; 22.35)
Body mass index (kg/m ²)	0.94 (0.87; 1.01)	0.089	**	**
ESR (mm/h)	1.03 (1.01; 1.04)	0.001	§	§

§ Not included in the multivariable model **Not selected during multivariable regression analysis (p ≥ 0.05). ¶ Excluded from the model due to collinearity; the same model is repeated with this variable included

TABLE 3. BASELINE PREDICTIVE FACTORS OF BASDAI RESPONSE ($\Delta \geq 2$ or $\Delta \geq 50\%$) AT 12 WEEKS

	Univariable regression OR (95% CI) (n = 132-164)	p-value	Multivariable regression 1 OR (95% CI) (n = 174)	Multivariable regression 2 OR (95% CI) (n = 193)
Age at start of first biologic (<40 vs ≥ 40)	3.99 (2.18; 7.32)	<0.001	3.02 (1.56; 5.84)	3.43 (1.82; 6.44)
Gender (male vs female)	2.73 (1.50; 4.96)	0.001	2.39 (1.21; 4.74)	2.73 (1.36; 5.45)
ASDAS	1.34 (0.96; 1.87)	0.084	1.47 (1.03; 2.10)	¶
BASDAI (0-10)	1.07 (0.93; 1.24)	0.343	§	1.20 (1.01; 1.43)
Educational level (years)	1.04 (0.98; 1.16)	0.202	§	§
Back pain (≥ 4 vs <4; 0-10)	0.63 (0.30; 1.34)	0.232	§	§
Elevated CRP (≥ 5 mg/l) (%)	1.66 (0.86; 3.18)	0.130	§	§
Body mass index (kg/m ²)	0.93 (0.87; 1.00)	0.055	**	**
ESR (mm/h)	1.01 (1.00; 1.02)	0.263	§	§

§ Not included in the multivariable model **Not selected during multivariable regression analysis (p ≥ 0.05). ¶ Excluded from the model due to collinearity; the same model is repeated with this variable included

- ASDAS response at 12 weeks (table 2) was predicted by male gender, higher educational level, lower back pain and higher baseline ASDAS. When ASDAS was removed from the baseline predictors, both a younger age and higher CRP were significant predictors of ASDAS response.
- A BASDAI response at 12 weeks (table 3) was independently predicted by age (<40 years), gender (male), baseline BASDAI (per unit) or ASDAS (per unit), depending on which was tested in the model.

Conclusions

- CRP is an important predictor of ASDAS response, but not of BASDAI response.
- A better response can be expected in males and younger patients.
- Baseline disease activity predicts a response at 12 weeks.
- The ASDAS predicts both ASDAS and BASDAI response and the BASDAI only predicts the BASDAI response.