

**Objectives:** To explore the status of the immunologic balance between Th17 cells and Treg cells in patients with SPA, and to assess the effect of low dose IL-2 on the peripheral CD4+ T cells.

**Methods:** Two hundred and two patients, who met the Assessment of Spondyloarthritis International Society (ASAS) criteria were enrolled and given conventional therapy, including Nonsteroidal Anti-inflammatory Drugs (NSAIDs), biological agents, Sulfasalazine, glucocorticoid. Eighty seven patients were not only given conventional therapy, but also injected subcutaneously low-dose IL-2 (50 WIU/day for 5 days). Clinical and laboratory indicators were compared before and after IL-2 treatment. The CD4+ T cells in peripheral blood were measured by multicolor flow cytometry. The side effects were observed in the course of therapy.

**Results:** The absolute number and ratio of CD4 + CD25 + FOXP3 + regulatory T cells in peripheral blood of patients with SPA was significantly decreased compared with the healthy control group, (25.13 (18.76,37.37) vs. 33.06 (22.87,42.33),  $P < 0.001$ ); Th17/Treg (0.29 (0.18, 0.49) vs. 0.20 (0.15, 0.34),  $P = 0.001$ ). The absolute number of Treg cells increased more than 3-times (22.70 (14.47, 30.10) vs. 67.87 (48.21, 105.82),  $p < 0.001$ ) after 5 days of low-dose IL-2 treatment. Th17/Treg was significantly higher (0.32 (0.18, 0.57) vs. 0.20 (0.15, 0.34),  $P < 0.001$ ) before treatment compared with healthy controls.

**Conclusions:** The decrease of CD4 + CD25 + FOXP3 + Treg cells might play a key role in the pathogenesis of SpA. Low dose IL-2 therapy can restore and maintain the balance of Th17 and Treg cells by increasing Treg cells numbers selectivity. The therapy is safe. More attention should be paid on the long term benefits of low-dose IL-2 therapy in the further research.

#### References:

- Wu Y, Ren M, Yang R, Liang X, Ma Y, Tang Y, et al. Reduced immunomodulation potential of bone marrow-derived mesenchymal stem cells induced CCR4 + CCR6 + Th/Treg cell subset imbalance in ankylosing spondylitis. *Arthritis Res Ther*. 2011;13:R29.
- Jandus C, Biolley G, Rivals JP, Dudler J, Speiser D, Romero P. Increased numbers of circulating polyfunctional Th17 memory cells in patients with seronegative spondylarthritis. *Arthritis Rheum*. 2008;58:2307-17.
- Wendling D, Guillot X, Prati C. The IL-23/Th 17 pathway in spondyloarthritis: the royal road. *Joint Bone Spine* 82(1), 1-4 (2015).

**Disclosure of Interest:** None declared

**DOI:** 10.1136/annrheumdis-2017-eular.2648

### THU0378 IMPACT OF THE ADALIMUMAB PATIENT SUPPORT PROGRAM ON CLINICAL OUTCOMES IN ANKYLOSING SPONDYLITIS: RESULTS FROM THE COMPANION STUDY

L. Bessette<sup>1</sup>, C. Thorne<sup>2</sup>, B. Millson<sup>3</sup>, K. Charland<sup>3</sup>, K. Donepudi<sup>3</sup>, T. Gaetano<sup>4</sup>, V. Remple<sup>4</sup>, M. Latour<sup>4</sup>, M.-C. Laliberté<sup>4</sup>. <sup>1</sup>Department of Medicine, Laval University, Quebec City; <sup>2</sup>Southlake Regional Health Centre, Newmarket; <sup>3</sup>QuintilesIMS, Kirkland; <sup>4</sup>AbbVie Corporation, St. Laurent, Canada

**Background:** Adalimumab (ADL) is a TNF-alpha inhibitor indicated for various inflammatory autoimmune diseases including ankylosing spondylitis (AS). Patients receiving ADL in Canada are eligible to enroll in the AbbVie Care patient support program (PSP) which provides them with personalized services including ongoing care coach calls (CCC). In a previous study, rheumatology patients enrolled in AbbVie Care receiving CCC demonstrated significantly greater persistence and adherence to ADL than patients that did not receive CCC (no-CCC).

**Objectives:** The objective of this study was to examine if ADL patients receiving CCC through the ADL PSP had an increased likelihood of achieving controlled disease state as determined by a Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) score <4 compared to those not receiving CCC.

**Methods:** A longitudinal analysis using de-identified aggregate-level data collected through the AbbVie Care PSP was performed. Probabilistic matching was used to link patient-level records from the ADL PSP database to records from the QuintilesIMS longitudinal prescription transactions database (LRx). Patients were indexed on the date of their first ADL transaction between January 2010 and October 2015. The ADL PSP database included patient measurements of the BASDAI, a measure of disease activity. To be eligible, patients had to have a baseline BASDAI measurement between 90 days before and 30 days after their index date and have had a follow-up BASDAI measurement 6 to 18 months later. Only patients that were confirmed to be persistent on ADL as confirmed through the LRx records were included in the comparison. Controlled disease (BASDAI <4) at the time of the follow-up BASDAI assessment was compared in patients having received CCC and patients without CCC. Robust Poisson regression was used to estimate the adjusted relative risk (RR) of controlled disease. Analyses were adjusted for patient age group, sex, region, prior biologic use, days lapsed between BASDAI assessments, and baseline disease control status category.

**Results:** A total of 249 AS patients met eligibility criteria and 123 (49%) of these had received CCC. Of the 249 patients, 184 (74%) had controlled disease (BASDAI <4) at the follow-up assessment, 98 (80%) in the CCC group and 86 (68%) in the no CCC group. In the multivariable regression analysis, there was a 23% increased likelihood of achieving controlled disease in the CCC group relative to the group without CCC (RR=1.23, 95% confidence interval: 1.06-1.42; p-value =0.0055).

**Conclusions:** AS patients receiving tailored services through the ADL PSP in the form of care coach calls have an increased likelihood of achieving controlled

disease within 6 to 18 months. These results may help refine interventions aiming at improving clinical outcomes in AS patients.

**Acknowledgements:** Project management support for this study was provided by Jennifer Glass from QuintilesIMS. Analytical support was provided by Marc Duclos from QuintilesIMS. This support was funded by AbbVie.

**Disclosure of Interest:** L. Bessette Grant/research support from: Abbvie, Amgen, BMS, Janssen, Roche, UCB, Pfizer, Merck, Celgene, Sanofi, Lilly, Novartis, Consultant for: AbbVie, Amgen, BMS, Janssen, Roche, UCB, Pfizer, Celgene, Lilly, Novartis, Speakers bureau: AbbVie, Amgen, BMS, Janssen, Roche, UCB, Pfizer, Merck, Celgene, Lilly, Novartis, C. Thorne Grant/research support from: Abbvie, Amgen, Celgene, CaREBiodam, Lilly, Novartis, Pfizer, Consultant for: AbbVie, Amgen, Celgene, Centocor, Genzyme, Hospira, Janssen, Lilly, Medexus/Medac, Merck, Novartis, Pfizer, Sanofi, Speakers bureau: Medexus/Medac, B. Millson Consultant for: AbbVie, Employee of: QuintilesIMS, K. Charland Consultant for: AbbVie, Employee of: QuintilesIMS, K. Donepudi Consultant for: AbbVie, Employee of: QuintilesIMS, T. Gaetano Shareholder of: AbbVie, Employee of: AbbVie, V. Remple Shareholder of: AbbVie, Employee of: AbbVie, M. Latour Shareholder of: AbbVie, Employee of: AbbVie, M.-C. Laliberté Shareholder of: AbbVie, Employee of: AbbVie

**DOI:** 10.1136/annrheumdis-2017-eular.6529

### THU0379 IMPACT OF TIME SINCE DIAGNOSIS, AGE, AND NUMBER OF PRIOR NON-STEROIDAL ANTI-INFLAMMATORY DRUGS ON 52-WEEK CLINICAL RESPONSE TO ADALIMUMAB IN PATIENTS WITH ANKYLOSING SPONDYLITIS

J. Sieper<sup>1</sup>, A. Deodhar<sup>2</sup>, M. Hohnik<sup>3</sup>, Y. Zhang<sup>4</sup>, M. Dougados<sup>5</sup>, <sup>1</sup>Charité Universitätsmedizin Berlin, Berlin, Germany; <sup>2</sup>Oregon Health & Science University, Portland, United States; <sup>3</sup>AbbVie, Ljubljana, Slovenia; <sup>4</sup>AbbVie Inc., N Chicago, United States; <sup>5</sup>René Descartes University and Hôpital Cochin, Paris, France

**Background:** Ankylosing spondylitis (AS) patients (pts) were found to respond better to TNF inhibitors (TNFi) if treated early in the disease course.<sup>1</sup> The actual disease onset and hence disease duration is not always known. Previously, younger age was found to have the largest positive impact on clinical outcomes following 12 weeks (wks) of adalimumab (ADA) treatment.<sup>2</sup>

**Objectives:** The objective of this analysis was to examine the impact of time since diagnosis, age, and number of prior NSAIDs as surrogates for disease duration on clinical outcomes in AS pts from ATLAS trial treated with ADA for 52 wks.

**Methods:** ATLAS<sup>3,4</sup> was a phase 3 randomized double-blind placebo (PBO)-controlled trial evaluating the safety and efficacy of originator ADA in pts with active AS who failed NSAID therapy. In this post hoc analysis, pts who received at least one dose of ADA during the PBO-controlled period or open label extension and received prior NSAID(s) at baseline (BL) were categorized by BL: (1) time since diagnosis (<2 vs ≥2; <5 vs ≥5; <10 vs ≥10 years [y]), (2) age (<35, 35-45, and >45 y), and (3) number of prior NSAIDs (≤2 vs >2). The effect of time since diagnosis, age, and number of prior NSAIDs on AS outcome measures following 52 wks of ADA treatment was examined.

**Results:** At wk 52, 274 pts had received at least one dose of ADA and had at least one prior NSAID at BL. A majority of pts were ≥5 y since AS diagnosis (188 [68.6%]), ≤45 y of age (163 [59.5%]), HLA-B27+ (213 [77.7%]), and had ≤2 prior NSAIDs (158 [57.7%]). Pts with shorter time since diagnosis were generally younger (late thirties). Across all subcategories, >70% of pts were male. The BL disease activity measures were numerically similar across most categories. Following 52 wks of ADA treatment, the proportions of pts achieving ASAS20 and ASAS40 responses were numerically higher and mean decreases in BASDAI and BASFI scores from BL larger in subcategories with shorter time since diagnosis, younger age, and fewer prior NSAIDs (Table). There were significant differences in ASAS40, BASDAI, and BASFI scores between time since diagnosis (<2 vs ≥2 and <5 vs ≥5 y) and age (<35 vs >45 y) subcategories.

Table. Clinical Responses Following 52 Weeks of ADA Exposure in Patients Categorized by Time Since Diagnosis, Age, and Prior NSAID(s).

Outcome measure	Time since diagnosis (years)						Age (years)			Prior NSAID(s)	
	<2 (n=53)	≥2 (n=221)	<5 (n=86)	≥5 (n=188)	<10 (n=150)	≥10 (n=124)	<35 (n=76)	35-45 (n=87)	>45 (n=111)	≤2 (n=158)	>2 (n=116)
ASAS20, n (%)	39 (73.6)	152 (69.2)	64 (74.4)	129 (68.1)	105 (70.0)	87 (70.2)	58 (76.3)	63 (72.4)	71 (64.0)	115 (72.8)	77 (66.4)
ASAS40, n (%)	35 (66.0)	104 (47.1)	53 (61.6)	66 (35.1)	53 (35.3)	56 (45.2)	47 (61.9)	46 (41.5)	48 (43.3)	86 (54.4)	55 (47.7)
BASDAI, mean (SD) <sup>†</sup>	-4.1 (2.0)	-3.0 (2.0) <sup>*</sup>	-3.9 (2.0)	-3.9 (2.0) <sup>*</sup>	-3.5 (2.0)	-3.9 (2.0)	-3.7 (2.0)	-3.2 (2.0) <sup>**</sup>	-3.2 (2.0) <sup>**</sup>	-3.3 (2.0)	-3.0 (2.0)
BASFI, mean (SD) <sup>†</sup>	-2.6 (2.0)	-2.3 (2.0) <sup>*</sup>	-2.7 (2.0)	-2.1 (2.0) <sup>**</sup>	-2.4 (2.0)	-2.1 (1.9) <sup>*</sup>	-2.7 (2.0)	-2.3 (1.9) <sup>**</sup>	-2.0 (2.0) <sup>**</sup>	-2.6 (2.0)	-2.0 (2.0)

<sup>†</sup>p-values are based on Pearson's Chi-square test for comparison: \*\*\*, P < .001; \*\*, P < .01; \*, P < .05.

<sup>‡</sup>Change from baseline to week 52.

NSAID = Non-Steroidal Anti-inflammatory drug; ASAS = Assessment of Spondyloarthritis International Society classification criteria; BASDAI = Bath Ankylosing Spondylitis Disease Activity Index; SD = Standard Deviation; BASFI = Bath Ankylosing Spondylitis Functional Index.

**Conclusions:** Following 52 wks of ADA treatment, shorter time since diagnosis and younger age were associated with greater clinical responses and improvements in disease activity and functionality. Although younger age (<35 vs >45 y) had significant positive impact on the clinical outcomes similar to wk 12 results, shorter time since diagnosis (<2 vs ≥2 and <5 vs ≥5 y) was also associated with better 52-wk clinical outcomes. These results suggest that early effective treatment intervention may improve long-term clinical outcomes in AS pts.

#### References:

- Rudwaleit, M. et al. *Ann Rheum Dis*, 2004; 63:665-70.
- Sieper, J. et al., *Arthritis Rheumatol*. 2016; 68 (suppl 10).
- Van der Heijde, D. et al., *Ann Rheum Dis*, 2007; 67:1218-21.