Novartis, AbbVie, Amgen, BMS, Crescendo, Genentech, Janssen, Lilly, Merck, Pfizer, UCB, D. van der Heijde Consultant for: AbbVie, Amgen, Astellas, AstraZeneca, BMS, Boehringer Ingelheim, Celgene, Daiichi, Eli Lilly, Galapagos, Janssen, Merck, Novartis, Pfizer, Roche, Sanofi Aventis and UCB, Employee of: Imaging Rheumatology BV, C. Karki Employee of: Corrona, LLC, M. Liu Employee of: Corrona, LLC, R. Pandurengan Employee of: Corrona, LLC, Y. Park Employee of: Novartis, J. Greenberg Shareholder of: Corrona, LLC, Consultant for: Lilly, Genentech, Janssen, Novartis, Pfizer, Employee of: Corrona, LLC
DOI: 10.1136/annrheumdis-2017-eular.1530

THU0387 THE CLINICAL IMPORTANCE OF THE THYROID NODULES DURING TUMOR NECROSIS FACTOR-ALPHA INHIBITOR THERAPY IN PATIENTS WITH AXIAL SPONDYLOARTHRITIS

R. Terlemez¹, K. Akgün², D. Palamar², H. Sari². ¹Physical medicine and rehabilitation, Şişli Hamidiye Etfal Research and Training Hospital; ²Physical medicine and rehabilitation, Istanbul University Cerrahpasa Faculty of Medicine, Istanbul, Turkey

Background: TNF is a pivotal regulator of inflammation and the cytokine system. Besides this, there is no doubt that TNF has a major role in cancer biology. TNF has a dual defensive and offensive role in carcinogenesis (1). TNF-blocking treatment has led to improvements in the management of inflammatory diseases. Even though their efficacy as anti-inflammatory drugs is well-proven, there are some concerns about the adverse effects of anti-TNF therapy (2). Basic research suggests that the evaluation of infections and malignancy as major adverse effects should be performed effectively (3). However, some studies conducted so far have dubious notions that anti-TNF therapy increases the risk of cancer (3,4).

Objectives: Objective: The clinical importance of the thyroid nodules in patients with axial spondyloarthritis (ax-SpA) rests with the need to exclude thyroid malignancy. The aim of this study is to assess the risk of thyroid malignancy in ax-SpA patients receiving anti-TNF therapy.

Methods: From September 2015 until December 2015, 70 patients diagnosed with ax-SpA according to ASAS criteria, were included in the research. Forty of the patients had received anti-TNF therapy, and 30 of the patients were anti-TNF naïve. A clinician from the Physical Medicine and Rehabilitation clinic performed ultrasonography on all patients to screen for thyroid nodule(s). If thyroid ultrasonography revealed an abnormal finding, the patient was referred to a radiologist.

Results: The mean (SD) age was 38±9.87 years; % 75.7 of the patients were male. None of the demographic differences between the groups were statistically significant. Fifteen of the forty patients that received anti-TNF therapy and eleven of the thirty anti-TNF naïve patients had thyroid nodule(s). Four patients from the anti-TNF group underwent fine needle aspiration biopsy, and two of them were diagnosed with papillary thyroid carcinoma. None of the nodules in anti-TNF naïve patients required biopsy. When compared to the normal population, the standardized incidence ratio (SIR) was found to be increased in both male (SIR: 2.03% 95 CI: 1.9 to 18) and female (SIR: 2.7% 95 CI: 2.6 to 24) cases.

Conclusions: We see a mild increase in thyroid malignancies in ax-SpA patients that received anti-TNF therapy. Consequently, the thyroid gland should also be taken into consideration while screening for malignancy before anti-TNF therapy.

References:

- [1] Wajant, Harald. The role of TNF in cancer. Death Receptors and Cognate Ligands in Cancer. Springer Berlin Heidelberg, 2009. 1–15.
- [2] Dixon, W. G., et al. Influence of anti-tumor necrosis factor therapy on cancer incidence in patients with rheumatoid arthritis who have had a prior malignancy: results from the British Society for Rheumatology Biologics Register. Arthritis care & research 62.6 (2010): 755–63.
- [3] Bongartz, Tim, et al. Anti-TNF antibody therapy in rheumatoid arthritis and the risk of serious infections and malignancies: systematic review and meta-analysis of rare harmful effects in randomized controlled trials. Jama 295.19 (2006): 2275–85.
- [4] Askling, Johan, et al. Risks of solid cancers in patients with rheumatoid arthritis and after treatment with tumour necrosis factor antagonists. Annals of the rheumatic diseases 2005;64:1421–6.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2017-eular.1013

THU0388 EFFICACY AND SAFETY OF ADALIMUMAB IN PATIENTS WITH NON-RADIOGRAPHIC AXIAL SPONDYLOARTHRITIS: RESULTS FROM THE 28-WEEK OPEN-LABEL PERIOD OF THE ABILITY-3 STUDY

R. Landewé¹, J. Sieper², R. Inman³, A.L. Pangan⁴, X. Wang⁴, J.K. Anderson⁴. ¹University of Amsterdam, Amsterdam, Netherlands; ²Charité Universitätsmedizin Berlin, Berlin, Germany; ³Toronto Western Hospital, Toronto, Canada; ⁴AbbVie, North Chicago, United States

Background: Adalimumab (ADA) significantly improved clinical response at wk 12 vs placebo in patients (pts) with non-radiographic axial spondyloarthritis (nr-axSpA) in the ABILITY-1 study. The subsequent, ongoing ABILITY-3 study is assessing continuation vs withdrawal of ADA in nr-axSpA pts who respond to ADA.

Objectives: Evaluate the efficacy and safety of ADA during the open-label lead-in period of ABILITY-3.

Methods: ABILITY-3 has a 28-wk lead-in open-label ADA (40 mg every other wk) period; pts who achieve sustained remission (Ankylosing Spondylitis Disease Activity Score inactive disease [ASDAS ID] at wks 16, 20, 24 and 28) are randomized to double-blind placebo (withdrawal) or ADA (continuation) for 40 wks (ongoing). From wk 20–28, pts who did not achieve ASDAS ID were discontinued. Adult pts with nr-axSpA (fulfilling Assessment of SpondyloArthritis international Society [ASAS] criteria but not modified New York criteria) with objective evidence of inflammation in the sacroiliac joints or spine on MRI or elevated hs-CRP at screening; active disease at baseline (defined by ASDAS ≥2.1, BASDAI ≥4, and total back pain score ≥4); and inadequate response to ≥2 NSAIDs were eligible.

Results: Of 673 pts enrolled, 51% were women and mean BASDAI was 7.0±1.4 (Table). At wk 28, 305 (45%) pts were randomized (ASDAS ID: 33% at wk 12, 44% sustained at wk 28; nonresponder imputation) and 368 (55%) pts discontinued (not achieving sustained remission, n=300 [45%]; other reasons, n=68 [10%]). In observed analysis, 59%, 35%, and 22% of pts achieved ASDAS40, ASDAS ID, and ASAS partial remission, respectively, at wk 12, similar to wk 12 data from ABILITY-1 pts with objective inflammation at baseline. The proportions of pts achieving ASDAS20, ASDAS40, ASDAS ID, ASDAS CII, and ASDAS MI increased, and mean BASDAI and back pain scores decreased over time (observed analysis; Figure). Adverse events (AEs) were reported by 468 pts (70%), most commonly nasopharyngitis (n=121 [18%]), upper respiratory tract infection (n=81 [12%]), and headache (n=56 [8%]); serious AEs occurred in 19 (3%) pts.

Table 1. Baseline Characteristics

Mean ± SD	(n=673)
Age	37.3±11.1
White, n (%)	651 (97)
Female, n (%)	343 (51)
Symptom duration, y	7.7±7.7
HLA-B27 positive, n (%)	515 (77)
TJC	6.5±10.4
SJC	1.9±4.0
MASES	3.4±3.5
PGA-disease activity	6.5±1.5 n=671
Patient-pain	7.4±1.7
BASDAI	7.0±1.4
ASDAS	3.6±0.8
hs-CRP	9.6±15.0
BASFI	5.3±2.2
HAQ-S	2.1±0.6

BASFI, Bath Ankylosing Spondylitis Functional Index; HAQ-S, Health Assessment Questionnaire for the Spondyloarthropathies; hs-CRP, high-sensitivity C-reactive protein; MASES, Maastricht Ankylosing Spondylitis Enthesitis Score; PGA, physician global assessment; SJC, swollen joint count; TJC, tender joint count.

BASDAI, Bath Ankylosing Spondylitis Disease Activity Index; CII, clinically important improvement; MI, major improvement.

Patients who did not achieve ASDAS ID were discontinued at week 20–28 visits.

Conclusions: Baseline disease activity was higher in ABILITY-3 pts than reported in prior trials. After 28 wks of open-label ADA therapy, disease activity improved and sustained remission was achieved in 44% of pts. Efficacy and safety in this nr-axSpA population were consistent with findings from ABILITY-1.

Acknowledgements: AbbVie funded the study and approved the abstract for submission. Medical writing support was provided by Maria Hovenden, PhD, of Complete Publication Solutions, LLC (North Wales, PA) and was funded by AbbVie.

Disclosure of Interest: R. Landewé Grant/research support from: Abbott, Amgen, Centocor, Novartis, Pfizer, Roche, Schering-Plough, UCB, and Wyeth, Consultant

for: Abbott/AbbVie, Ablynx, Amgen, Astra-Zeneca, Bristol Myers Squibb, Celgene, Janssen (formerly Centocor), Galapagos, GlaxoSmithKline, Novartis, Novo-Nordisk, Merck, Pfizer, Roche, Schering-Plough, TiGenix, UCB, and Wyeth, Speakers bureau: Abbott/AbbVie, Amgen, Bristol Myers Squibb, Janssen (formerly Centocor), Merck, Pfizer, Roche, Schering-Plough, UCB, and Wyeth, J. Sieper Grant/research support from: AbbVie, Merck, Pfizer, and UCB, Consultant for: AbbVie, Merck, Pfizer, and UCB, Speakers bureau: AbbVie, Merck, Pfizer, and UCB, R. Inman Grant/research support from: AbbVie, Amgen, Janssen, Lilly, and Novartis, A. Pangan Employee of: AbbVie, X. Wang Employee of: AbbVie, J. Anderson Employee of: AbbVie

DOI: 10.1136/annrheumdis-2017-eular.6119

THU0389 IS THERE ANY ROLE OF IMMUNOGENICITY ON THE RESPONSE TO THE ANTI-TUMOR NECROSIS FACTOR ALPHA THERAPY IN PATIENTS WITH ANKYLOSING SPONDYLITIS: THE FIRST RESULTS OF A PROSPECTIVE COHORT STUDY

S. Akar¹, M. Cinar², G. Sargin³, O. Karadag⁴, G. Kinikli⁵, M. Ozmen¹, O. Gercik¹, U. Kalyoncu⁴, S. Yilmaz², T. Senturk³, G. Keser⁶, G. Hatemi⁷, F. Yargucu⁶, Y. Ozguler⁷, A. Cefle⁸, D. Kozaci⁹, D. Solmaz¹, B. Kisacik¹⁰.
¹Rheumatology, Katip Celebi University Faculty of Medicine, Izmir; ²Rheumatology, Gulhane Military Hospital, Ankara; ³Rheumatology, Adnan Menderes University Faculty of Medicine, Aydin; ⁴Rheumatology, Hacettepe University Faculty of Medicine; ⁵Rheumatology, Ankara University Faculty of Medicine, Ankara; ⁶Rheumatology, Ege University Faculty of Medicine, Izmir; ⁷Rheumatology, Istanbul University Cerrahpasa Faculty of Medicine, Istanbul; ⁸Rheumatology, Kocaeli University Faculty of Medicine, Kocaeli; ⁹Biochemistry, Ankara Yildirim Beyazid University Faculty of Medicine, Ankara; ¹⁰Rheumatology, Gaziantep University Faculty of Medicine, Gaziantep, Turkey

Background: Although anti-tumour necrosis factor agents (anti-TNFs) are very effective in most patients with ankylosing spondylitis (AS) significant proportion of patients quit the treatment due to non-response or adverse events. The development of anti-drug antibodies (ADAs) and low serum drug levels might have a mechanistic role in loss of efficacy of or the development of adverse events in patients treated with anti-TNFs. There is limited data regarding the immunogenicity of anti-TNFs in patients with AS.

Objectives: Therefore the aim of this study was to evaluate the relationship between the formation of ADAs, serum trough drug levels and clinical response to anti-TNFs in patients with AS.

Methods: In total 350 AS patients with a new anti-TNF agent prescription in the last two weeks period were planned to include this multi-center prospective observational cohort study. Herein we are presenting the data of first 102 patients who had >3months follow-up. Clinical data and serum samples were collected at baseline and at every three months of treatment. Serum drug levels and ADAs were measured by ELISA in one center to avoid inter-assay variability.

Results: 102 biologic naïve AS patients (75 [74%] male, mean (±SD) age; 37.2±10.7 years) who started anti-TNF agents (14 infliximab [13.7%], 27 adalimumab [26.5%], 33 etanercept [32.4%] and 28 golimumab [27.5%]) were included in the present analysis. In comparison to baseline values BASDAI, ASDAS-CRP and CRP values were significantly decreased in third months of follow-up ($P<0.001$) (table). At 12 weeks of follow-up 9 patients (9%; 2 on infliximab and 7 adalimumab) had ADAs and 20 (20%; 10 on adalimumab, 4

Table 1. Baseline and third month's follow-up indicators of activity and response in AS patients treated with anti-TNF agents

	Baseline	Third month
BASDAI	6.8±5.2	3.2±1.9
ASDAS-CRP	4.1±2.5	2.0±1.1
CRP	23.8±32.8	7.9±13.9

infliximab, 4 golimumab and 2 etanercept) had no detectable drug levels. The presence of ADAs were significantly correlated with serum drug levels ($P<0.001$). Up to 12 months of follow-up none of patients treated etanercept developed ADAs. Third month BASDAI and ASDAS-CRP values were significantly higher in patients with ADAs (BASDAI values were 5.2±1.4 vs 3.0±1.8; $P<0.001$ and ASDAS-CRP values were 3.1±1.0 vs 1.9±1.1; $P<0.001$) (figure) and patients with no detectable drug levels BASDAI values were 4.1±1.8 vs 2.9±1.8; $P=0.012$ and ASDAS-CRP values were 2.7±1.3 vs 1.9±1.0; $P=0.015$).

Conclusions: ADAs against anti-TNF agents might develop as early as 12 weeks of treatment. Our results confirm that ADA development may hinder the anticipated response to anti-TNF agents in patients with AS.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2017-eular.3729

THU0390 EFFECT OF REHABILITATION ON THE CHEST EXPANSION IN PATIENTS WITH ANKYLOSING SPONDYLITIS

S.D. Jandric. Department for FRM, Faculty of Medicine, University of Banjaluka, Banja Luka, Republic of Srpska, Bosnia and Herzegovina

Background: Ankylosing spondylitis (AS) is a form of chronic inflammatory arthritis that leads to pain, stiffness, progressive spinal deformity, and spinal fusion, limitation of the spine, rib cage motion and severe functional impairment. Pulmonary function is altered in AS owing mainly to the limited chest expansion.

Objectives: The purpose of this study was to investigate the effect of rehabilitation on the limited chest expansion measured by respiratory index and relationship between duration of the rehabilitation and age, disease onset, disease duration and respiratory index in patients with AS during physical treatment and rehabilitation.

Methods: The study was designed as a retrospective study that included 47 consecutive AS patients (33 male and 14 female), average age of 52.53±11.58 years that were hospitalized and treated in rehabilitation center. Average duration of the rehabilitation was 17.77±5.92 days. Respiratory index was measured for all AS patients at the beginning and at the end of rehabilitation with a centimeter ribbon. Student's t-test and Pearson's test of correlation were used for statistically analysis.

Results: Average disease duration was 13.35±8.74 years, disease onset was at 39.64±12.87 years. Respiratory index was 1.98±1.34 cm at beginning of rehabilitation and 3.01±1.75 cm at the end of rehabilitation. The difference was statistically significant ($t=8.025$, $p<0.001$). Pearson's test of correlation was shown statistically significant correlation between value of respiratory index at beginning and at the end of rehabilitation ($r=0.872$, $p<0.001$). Duration of the rehabilitation (hospital days) statistically significant correlate with value of respiratory index at beginning rehabilitation ($r=-0.289$, $p<0.05$), but not with age, disease duration and disease onset ($p>0.05$).

Conclusions: The physical therapy and rehabilitation has led to the improvement the respiratory index in patients with AS, which confirms its effectiveness. The value of respiratory index at beginning rehabilitation is associated with duration of the rehabilitation. Significant limitation in respiratory index indicates longer hospital stay. These results could be having importance in planning of rehabilitation of patients with AS.

References:

- [1] Reveille JD, Ximenes A, Ward MM. Economic considerations of the treatment of ankylosing spondylitis. *Am J Med Sci.* 2012;343(5):371–4.
- [2] Berdal G, Halvorsen S, van der Heide D, Mowe M, Dagfinrud H. Restrictive pulmonary function is more prevalent in patients with ankylosing spondylitis than in matched population controls and is associated with impaired spinal mobility: a comparative study. *Arthritis Res Ther.* 2012;14(1):R19.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2017-eular.2669

THU0391 FEMALE GENDER IS ASSOCIATED WITH A POORER RESPONSE TO TNF INHIBITORS IN ANKYLOSING SPONDYLITIS

T. Rusman, M.T. Nurmohamed, J.C. van Denderen, I. Visman, I.E. van der Horst-Bruinsma. Amsterdam Rheumatology immunology Center |Departments of Rheumatology VU University Medical Center & Reade, Amsterdam, Netherlands

Background: Limited data are available on the influence of gender and lifestyle factors, such as smoking, alcohol consumption and Body Mass Index (BMI) on disease activity and response to TNF inhibitors (TNFi) in ankylosing spondylitis (AS).

Objectives: This study aimed to determine whether these factors influence age at diagnosis, disease activity and response to TNFi.

Methods: In a prospective study, clinical data (age, gender, C-reactive protein, Ankylosing Spondylitis Disease Activity Score (ASDAS), Bath Ankylosing Spondylitis Disease Activity Score (BASDAI), Bath Ankylosing Spondylitis Functional Index (BASFI) and Bath Ankylosing Spondylitis Metrology Index (BASMI), smoking, alcohol consumption and BMI) were collected in AS patients from an observational cohort, who started or switched treatment with TNFi. Data were collected at baseline and after 6, 12 and 24 months. Independent T-tests and linear regression analyses were performed to assess the influence of gender and lifestyle factors on age at diagnosis and disease activity.