Disclosure of Interests: None declared
DOI: 10.1136/annrheumdis-2020-eular.4311

AB0650

BIOsimilar INFliximab EXPERIENCE IN SPONDYLOARTHRITIS PATIENTS: TREASURE REAL LIFE RESULTS

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Background: Biosimilar infliximab (bio-INF) was approved for all indications of the reference product in several countries. It has been marketed since 2014 in Turkey and used in the same indications with its bio-originator.

Objectives: Herein, we aimed to analyse clinical features and the drug survival rates of spondyloarthritis patients who have received bio-INF.

Methods: This multicenter, prospective observational cohort study used the Treasure database in which web-based registration of rheumatoid arthritis and SpA patients are being performed in 13 centers across different regions of Turkey. Age, gender, and acute phase responses (erythrocyte sedimentation rate and C-reactive protein), HAQ scores, VAS patient global, VAS fatigue, VAS pain, VAS physician global, BASDAI, BASFI, ASDAS ESH and ASDAS CRP values, clinical findings of SpA patients, number of patients who has received bio-INF as first line therapy or after switch, treatments which are used before bio-INF, the reasons for switching bio-INF to another biologic DMARD and drug survival rates were retrospectively evaluated.

Results: A total number of 231 SpA (94 (40.7 %) female, 137 (59.3%) male, mean age 43±11 yrs) patients have received biosimilar infliximab in the database. Of the 231 patients 127 (55%) had received bio-INF as first line therapy, whereas 104 (46 (19.9%) 2nd choice, 58 (25.1%) 3rd choice) patients used switching after another biologic DMARD. Previously used biologic and synthetic DMARDs were adalimumab (28.6%), etanercept (22.5%), golimumab (9.1%), original infliximab (8.2%), secukinumab (13.4%), methotrexate (23.8%), leflunomid (10.4%), sulphasalazine (60.6%). The baseline and first visit (3. Months) diseases activity scores were shown in Table 1. Drug survival rates were 79.1 in 12. months, 65.5 in 24. months and 54.6 in 60. months. (Figure 1). The most common reasons for switching from biosimilar infliximab to another biologic DMARD is secondary (25(10.8%)), and primary ineffectiveness (22(9.5%)). Other reasons to discontinuation of treatment are psoriasis (5 (2.1%)), infusion reaction (3(1.2%)), allergic reaction (22(8.8 %)), chest pain (3(1.2%)), dyspnea (1 (0.4%)), vasculitis (1 (0.4%)) and patient or doctor wish (7 (3.4%)).

Conclusion: The results of this real life data provides evidence that biosimilar infliximab is an effective and safe treatment option with long term use in SpA patients. Drug survival rates of bio-INF is similar to its bio-originator.

Table 1. Disease activity scores

	Baseline visit	3.month	p
	median (Q1-Q3)	median (Q1-Q3)	
HAQ score	0,63 (0,4-1)	0,25 (0-1)	<0,001
BASDAI	6,2 (4,8-7)	2,8 (1-5)	<0,001
BASFI	5,05 (3,3-6)	2,1 (0,45-4)	<0,001
VAS Patient Global	70 (50-80)	30 (10-50)	<0,001
VAS Doctor Global	60 (40-70)	30 (20-40)	<0,001
VAS Pain	50 (3-80)	30 (10-50)	0,572
VAS fatigue	70 (50-80)	40 (10-65)	<0,001
ESR	24 (11-45)	11 (6-23)	<0,001
CRP	12,1 (4,4-30)	3,91 (2,19-9)	<0,001
ASDAS ESR	3,12 (2,51-4)	2,05 (1,39-3)	<0,001
ASDAS CRP	3,53 (2,86-4)	2,21 (1,5-3)	<0,001

*Wilcoxon Signed Rank Test

Figure 1. Drug survival rates

Disclosure of Interests: Nazife Sule Yasar Bilge: None declared, Timuçin Kaşifoğlu: None declared, Sedat Kiraz: None declared, Ali İhsan Ertenli: None declared, Ediz Dalkılıç: None declared, Cemal Bes: None declared, Hakan Emmungil: None declared, Belkis Nihan Seniz: None declared, Burcu Yağız: None declared, Muhammet Çınar: None declared, Servet Akar: None declared, Önay Gerçik: None declared, Duygu Ersözülü: None declared, Gezmiş Kimyon: None declared, Ridvan Mercan: None declared, Omer Karadağ: None declared, Yavuz Pehlivan: None declared, Levent Kılıç: None declared, Umut Kalyoncu Consultant of: Abbvie, Amgen, Janssen, Lilly, Novartis, UCB

DOI: 10.1136/annrheumdis-2020-eular.3918

AB0652

MACHINE LEARNING TO PREDICT EARLY TNF INHIBITOR USERS IN PATIENTS WITH ANKYLOSING SPONDYLITIS

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Background: Tumor necrosis factor (TNF) inhibitors are important drugs in treating patients with ankylosing spondylitis (AS). However, they are not used as a first-line treatment for AS. There is an insufficient treatment response to the first-line treatment, non-steroidal anti-inflammatory drugs (NSAIDs), in over 40% of patients. If we can predict who will need TNF inhibitors at an earlier phase, adequate treatment can be provided at an appropriate time and potential damages can be avoided. There is no precise predictive model at present. Recently, various machine learning methods show great performances in predictions using clinical data.

Objectives: We aim to generate an artificial neural network (ANN) model to predict early TNF inhibitor users in patients with ankylosing spondylitis.

Methods: The baseline demographic and laboratory data of patients who visited Samsung Medical Center rheumatology clinic from Dec. 2003 to Sep. 2018 were analyzed. Patients were divided into two groups: early TNF inhibitor users treated by TNF inhibitors within six months of their follow-up (early-TNF users), and the others (non-early-TNF users). Machine learning models were formulated to predict the early-TNF users using the baseline data. Additionally, feature importance analysis was performed to delineate significant baseline characteristics.

Results: The numbers of early-TNF and non-early-TNF users were 90 and 509, respectively. The best performing ANN model utilized 3 hidden layers with 50 hidden nodes each; its performance (area under curve (AUC) = 0.75) was superior to logistic regression model, support vector machine, and random forest model (AUC = 0.72, 0.65, and 0.71, respectively) in predicting early-TNF users. Feature importance analysis revealed erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), and height as the top significant baseline characteristics for predicting early-TNF users. Among these characteristics, height was revealed by machine learning models but not by conventional statistical techniques.

Conclusion: Our model displayed superior performance in predicting early TNF users compared with logistic regression and other machine learning models. Machine learning can be a vital tool in predicting treatment response in various rheumatologic diseases.

Disclosure of Interests: None declared
DOI: 10.1136/annrheumdis-2020-eular.3743

AB0653

SURVIVAL OF BIOLOGIC THERAPY AS SECOND LINE IN PATIENTS WITH ANKYLOSING SPONDYLITIS. EXPERIENCE IN A TERTIARY CARE CENTRE

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Background: In ankylosing spondylitis (AS) patients with lack of response to a first line of biologic disease modifying antirheumatic drugs (bDMARD), switching to another bDMARD is recommended, aiming either to the same or different therapeutic target. In several previous studies a decrease in drug survival has been noted when tumor necrosis factor alpha inhibitors (TNFi) are used as second or third treatment line (1,2).

Objectives: Primary endpoint: To evaluate survival of bDMARD as second line treatment in patients with AS non responding to TNFi either because of lack or loss of efficacy. Secondary: To evaluate the impact on drug survival of several variables such as sex, HLA, peripheral arthritis, radiologic sacroiliitis, CRP, BASFI, BASDAI or bDMARD class.

Methods: Observational, longitudinal and retrospective observational study. We included 67 patients diagnosed with AS who received treatment on second line with bDMARD (TNFi or anti IL7) after discontinuation of TNFi as first line of treatment. We analyze patients older than 18 yo, with at least 3 months of continuous treatment before and after switch, seen in our Hospital from 2006 to 2019. Data were collected regarding to demographics, HLA B27 positivity and functionality and activity index, CRP and treatment with cDMARDs.

Results: All 67 patients included were still on follow up after switching to second bDMARD. Median age was 37 yo, 56.7% were male and 31%, smokers. 35.8% patients had axial AS; 1.5% peripheral arthritis; 62.7%, mixed and 9%, dactylitis. 76.1% had radiographic sacroiliitis and 74.6%, HLA B 27+. As first bDMARD, the most common was Infliximab (IFX) (47.8%), followed by Adalimumab (ADA) (19.4%) and Etanercept (ETN 14.9%). Mean survival was 32.4 months (IFX, 37 months; ETN, 45; Golimumab, 32.3 and ADA, 24.1). The commonest cause of treatment suspension was loss of efficacy (LoE) (56.7%), followed by lack of efficacy (LaE) (17.6%) and adverse effects (AE) (16.4%).

As second bDMARD the most frequent was ADA (35.8%), followed by ETN (34.3%), Golimumab (9%), IFX (7.5%) and Secukinumab (6%) with a mean survival of 45 months (ETN 63.8, ADA 45.7, Golimumab 32). Treatment was discontinued in 47.8% of patients because of LoE (17.9%), LaE (17.9%) and EA (11.9%). A total of 16 AE were recorded, of which 6% were infections and 9%, allergic reactions. Regarding the analysis of the impact of other variables on drug survival, there was statistically significant differences on HLA B 27 carrier status ($p=0.012$), in which we observed an increase on survival when the patient is HLA B27 + and in whom BASDAI is higher before switching ($p=0.02$).

Conclusion: In our study, we did not observe differences in survival of second line bDMARD in patients with AS regarding type of TNFi, case of discontinuation or type of radiographic involvement in the first line of treatment. Patients with HLA B27+ and high value of BASDAI at the beginning of second bDMARD showed an increased on drug survival. Contrary to literature, we did not see significant differences regarding CRP.

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Disclosure of Interests: None declared
DOI: 10.1136/annrheumdis-2020-eular.6581

AB0654

IMPACT OF GENDER ON PATIENT PROFILE AND TREATMENT RESPONSE IN ANKYLOSING SPONDYLITIS PATIENTS TREATED WITH TNF- α INHIBITORS

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Background: Ankylosing spondylitis (AS) was historically seen as a predominantly male disease and although recent data showed a more homogenous sex prevalence there is still a long delay and more often a misdiagnosis in women. Also, studies showed that there might be gender-attributable differences regarding clinical characteristics, radiographic damage and response to treatment.

Objectives: The aim of this study was to assess gender differences in AS patients regarding the clinical presentation, disease activity, functional status and response to tumor necrosis factor-alpha inhibitor (TNF- α inhibitor) therapy.

Methods: This retrospective analysis included 59 AS patients treated with first TNF- α inhibitor for at least 12 weeks. TNF- α inhibitor therapy introduction and response was determined according to ASAS-EULAR management recommendations for AS. Clinical and demographic parameters were compared between the female and male patients.

Results: Twenty-four patients (40,68%) were females and 35(59,32%) were males. Women were older than male at moment of study ($p=0,049$), at the time of diagnosis ($p=0,05$) and when starting biologic therapy ($p=0,009$). Moreover, they had a longer diagnosis delay ($p=0,017$) compared to men. Prevalence of HLA-B27 status and the rate of peripheral arthritis, dactylitis, enthesitis, uveitis or inflammatory bowel disease (IBD) were not different between two groups. Disease activity and functional status were also similar in both groups. Males had a significantly longer drug survival time for first biologic ($p=0,031$). One female patient (4.2%) and 4 male patients (11,4%) showed primary or secondary inefficacy to TNF- α inhibitor ($p=0,61$). All 5 non-responders switched to second TNF- α inhibitor and showed a good clinical response. The comparison of the demographic features, clinical characteristics, disease activity, functional status and response to TNF- α inhibitor therapy according to the gender are presented in Table 1.

Conclusion: In our cohort, the presence of the female gender was related to longer diagnosis delay compared to males. Non-response rate for the first TNF- α inhibitor was similar between groups, but men had longer drug survival time for the first biologic.

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Table 1. Comparison of the baseline demographic, clinical characteristics and treatment response between female and male patients treated with TNF- α inhibitor

	female (n=24)	male (n=35)	P Value
Age (years), mean $\pm$ SD	49,08 $\pm$ 12,94	42,56 $\pm$ 11,96	0,049
Age at onset (years), mean $\pm$ SD	31,6 $\pm$ 9,5	27,7 $\pm$ 9,18	0,117
Age at diagnosis (years), mean $\pm$ SD	39,02 $\pm$ 11,22	33,06 $\pm$ 11,36	0,05
Diagnosis delay (years), mean $\pm$ SD	7,39 $\pm$ 3,45	5,36 $\pm$ 2,86	0,017
Age at TNF- α inhibitor initiation (years), mean $\pm$ SD	46,4 $\pm$ 12,25	38,08 $\pm$ 11,14	0,009
HLA-B27 positivity n (%)	17 (70,8%)	32 (91,4%)	0,086
Family history n (%)	10 (41,7%)	15 (42,9%)	1
Peripheral arthritis n (%)	16 (66,7%)	17 (48,6%)	0,26
Enthesitis n (%)	3 (12,5%)	6 (17,1%)	0,9
Dactylitis n (%)	0 (0%)	3 (8,6%)	0,385
Uveitis n (%)	8 (33,3%)	9 (25,7%)	0,732
Inflammatory bowel disease n (%)	3 (12,5%)	5 (14,3%)	1
BASDAI score at TNF- α inhibitor initiation, mean $\pm$ SD	6,33 $\pm$ 1,69	6,11 $\pm$ 1,77	0,637
BASFI score at TNF- α inhibitor initiation, mean $\pm$ SD	5,68 $\pm$ 1,39	6,09 $\pm$ 1,39	0,272
ASDAS-CRP score at TNF- α inhibitor initiation, mean $\pm$ SD	3,87 $\pm$ 0,93	3,78 $\pm$ 1,02	0,743
Duration of first TNF- α inhibitor use (months), mean $\pm$ SD	35,33 $\pm$ 26,66	51,54 $\pm$ 28,25	0,031
Non-responders to first TNF- α inhibitor n (%)	1 (4,2%)	4 (11,4%)	0,611

Disclosure of Interests: None declared
DOI: 10.1136/annrheumdis-2020-eular.2047

AB0655

IMPACT OF BIOLOGIC THERAPY ON WORK IMPAIRMENT IN REAL LIFE IN AXIAL SPONDYLOARTHRITIS PATIENTS: DATA FROM REGISPONSERBIO

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