in identifying higher risk individuals. An integrated care approach may contribute to the awareness of healthcare professionals to develop appropriate interventions.

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SAT0088

NO INCREASED RISK OF FALLS IN PATIENTS TREATED WITH BIOLOGICS COMPARED TO THOSE UNDER CSDMARDS

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Background: Adults with rheumatoid arthritis (RA) have an increased risk of falling. Previous studies on causes of falls have neither sufficiently nor adequately considered the effects of bDMARDs. In addition, a risk analysis of the individual substances has been lacking until now.

Objectives: To analyze the fall risk under exposure to TNFi's, abatacept (ABA), rituximab (RTX) and tocilizumab (TOC) in comparison to csDMARDs taking co-medication and other risk factors such as disease activity, comorbidities and other biological risks into account.

Methods: Data of RA patients observed in RABBIT from 01/2009 - 02/2018 with a follow-up of up to 5 years was used for the analysis. In accordance with consensus guidelines, a fall was defined as "an unexpected event in which participants come to rest on the ground, floor or other lower level" [1].

Effects of bDMARDs were examined using "inverse probability weighting" (IPW) with time-varying treatment on a monthly basis. Directed acyclic graphs were applied to support causal considerations.

Results: The percentage of patients with falls (2.7%) was significantly lower than the previously reported 10% and 50% [2]. This underreporting is explained by the fact that falls in RABBIT are reported by the physicians and are not recorded in patient diaries. In line with other studies, falls occurred with older age, longer disease duration, poorer physical function and higher DAS28. Patients with a higher number of comorbidities had a significantly higher risk of falling. The number of patients treated with analgesics was higher in the fall group and fallers had higher glucocorticoid doses. However, the values for pain and fatigue were comparable between the two groups (Table 1). The descriptive analysis showed that patients starting second / third line biologics therapy had a shorter duration from the initiation of treatment to the fall event than patients starting with csDMARDs. None of the regression models showed an increased risk for biologics compared to csDMARDs.

Conclusion: None of the inferential analyses could demonstrate an increased risk of falling for any of the bDMARDs compared to csDMARDs. Although descriptive analyses pointed to an earlier fall event in patients treated with second-/third line biologics, these results could be explained by their particular characteristics. These patients tended to be older and were more affected by RA. This suggests that these risks override the effects of bDMARDs.

Table 1. Characteristics at baseline in fallers and non-fallers

	Faller	Non- Faller
N	263	9405
Age, years	62.9 (11.9)	57.3 (12.6)
BMI, kg/m ²	27.4 (5.8)	27.3 (5.5)
Female, %	79.5	74.2
Disease duration, years	10.8 (9.8)	8.7 (8.5)
ACPA+, %	46.4	55.1
RF+, %	59.7	65.3
DAS28	5 (1.3)	4.8 (1.3)
% of full physical function	61.2 (24.2)	67.3 (22.7)
Joint replacement, yes %	16.3	9.8
Pain, 0 – 10 scale	5.8 (2.3)	5.8 (2.3)
Fatigue, 0 – 10 scale	5.1 (2.7)	5.2 (2.7)
No. of comorbidities	3.4 (3)	2.2 (2.2)
Osteoporosis, %	33.5	14.4
Analgesics, yes %	24	15.8
Glucocorticoid dose, mg/d	6 (5.1)	5.4 (6.3)

Values are means (SDs) unless otherwise specified

Table 2. Results of weighted* Cox regression, Reference are csDMARDs

Variables	Univariate HR	95% CI	Weighted HR	95% CI
TNFi's	1.12	(0.85; 1.48)	1.05	(0.80; 1.39)
ABA	1.00	(0.57; 1.74)	0.98	(0.57; 1.70)
RTX	1.39	(0.88; 2.22)	1.09	(0.65; 1.81)
TOC	0.88	(0.59; 1.33)	0.77	(0.50; 1.18)

*Include: age, disease duration, gender, education, joint replacement, fatigue, functional status, pain, stiffness, analgesics, no. of comorbidities, selected comorbidities

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SAT0089

FEATURES OF THE SECRETION OF INTERLEUKIN-6, INTERLEUKIN-10, TUMOR NECROSIS FACTOR ALPHA IN PATIENTS WITH RHEUMATOID ARTHRITIS ASSOCIATED WITH ANEMIA

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Background: Anemia is widespread in rheumatic patients and is an important extra-articular manifestation that correlates with physical disability and increased mortality. The pathogenesis of such anemia is complex and multifactorial, including due to the influence of pro-inflammatory cytokines.

Objectives: Our aim was to study the characteristics of the secretion of interleukin-6 (IL-6), interleukin-10 (IL-10), tumor necrosis factor-alpha (TNF-α) in patients with rheumatoid arthritis (RA) with anemia of chronic diseases (ACD), iron deficiency anemia (IDA) and a combination of ACD / IDA, as well as to study the effect of these cytokines on the development of anemia.

Methods: There were examined 69 (54 (7 men /47 women, 50.6 ± 4.1 years) with anemia, 15 (6 men/9 women, 53.5 ± 2.74 years) without anemia) of RA patients. According to the criteria of Van Santen and Worwood, by determining the transferrin saturation index (TSI), ferritin, C-reactive protein (CRP), patients were divided into 4 groups: group 1 - ACD, 22 (5/17) patients (hemoglobin 79 [IQR, 95.6-111], red blood cells 3.5 [IQR, 3.6-4], TSI 25 [IQR, 14.7-26.2], ferritin 326.2 [IQR, 197.8-451.7], CRP 63.7 [IQR, 10.2-104.8]), group 2 - ACD / IDA, 18 (0/18) patients (hemoglobin 101 [IQR, 94-114], red blood cells 3.9 [IQR, 4-4.4], TSI 12.5 [IQR, 7.7-15], ferritin 50.1 [IQR, 11.9-74.9], CRP 45.8 [IQR, 17.6-54.9]), group 3 - IDA, 14 (2/12) patients (hemoglobin 108 [IQR, 100-115], red blood cells 4.5 [IQR, 4.1-4.9], TSI 9.7 [IQR 3-14], ferritin 21.8 [IQR, 7.2-28.9], CRP 8.6 [IQR, 2.7-8.6]), group 4 (control) - 15 patients without anemia (hemoglobin 141.4 [IQR, 133-147], red blood cells 4.6 [IQR, 4.3-4.9], TSI 23.1 [IQR, 16.6-27.8], ferritin 78.5 [IQR, 36-90.7], CRP 4.6 [IQR, 1.2-5.8]). The diagnosis of rheumatoid arthritis was made based on the 2010 ACR/EULAR classification criteria. The number of red blood cells and hemoglobin levels were determined on a Sysmex XS-500i analyzer (Japan). Concentrations of ferritin, CRP, TSI were determined on an Olympus Au 480 analyzer (Beckman Coulter, USA). Concentrations of IL-6, IL-10, and TNF-α were determined using a Stat Fax 2100 analyzer (Awareness Technology Inc., USA). The significance of differences between several unrelated groups was determined using the Kruskal-Wallis test at a significance level (p) of less than 0.05. To assess the relationship between the variables, the Spearman correlation coefficient (r) was calculated.

Results: In the ACD group, there were the highest concentrations of CRP, ferritin in comparison with the other groups (p < 0.05). TSI in the ACD group was higher compared with the IDA and ACD / IDA groups (p < 0.05) and did not differ from the control group (p > 0.05). The maximum concentration of IL-6 was found in the ACD group (36.2 [IQR, 6.7-41]) compared with the ACD / IDA group (21.7 [IQR, 7.2-20.4]) (p < 0.05) and the IDA group (5.9 [IQR, 1.5-3.7]) (p < 0.05) and without anemia (2.7 [IQR, 1.5-3]) (p < 0.05). Regarding IL-10 and TNF-α, no intergroup

differences were found. A moderate correlation was found between the number of red blood cells and the concentration of IL-6 ($r = -0.3$), IL-10 ($r = -0.4$), TNF- α ($r = -0.3$). The relationship between the concentration of hemoglobin and IL-6 ($r = -0.6$), IL-10 ($r = -0.4$), TNF- α ($r = -0.3$) was revealed.

Conclusion: In RA patients, IDA, ACD, as well as their combination, may occur. It is very important to clarify the genesis of anemia. ACD should be isolated separately because it has a complex pathogenesis, one of the important components of which are cytokines and their effect on erythropoiesis. The increased concentration of IL-6 in the group of patients with ACD, as well as the presence of a correlation between IL-6, red blood cells and hemoglobin, indicate the importance of this cytokine in the development of anemia. An increase in the concentration of ferritin and CRP also reflects the inflammatory genesis of anemia in patients with this anemia. The presence of a correlation between IL-10, TNF- α and hemogram indices suggests their influence on the development of anemia.

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SAT0090

EFFECTS OF ADHERENCE TO MEDITERRANEAN DIET ON RHEUMATOID ARTHRITIS IMPACT OF DISEASE (RAID) SCORE

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Background: Mediterranean diet (MD) is a well-balanced, nutritionally adequate and potentially anti-inflammatory diet that encompasses all food groups. Presently, there are conflicting data about the benefits of MD in rheumatoid arthritis (RA). Not enough evidence support a role of MD in the prevention and treatment of RA, and a modest impact of MD on laboratory parameters has been described. Greater effect on subjective aspects of the disease such as joint pain, morning stiffness, and fatigue was reported.

Objectives: To investigate whether the adherence to MD affects RA perception as measured by Rheumatoid Arthritis Impact of Disease (RAID) score.

Methods: Consecutive patients <65 years with RA attending our outpatient clinic were enrolled in this cross-sectional study. For each patient we collected: 1) RAID that consists of 7 single-item domains (pain, functional disability, fatigue, sleep, physical well-being, emotional well-being and coping), each rated by patients on an 11-point numerical rating scale from 0 (best) to 10 (worst) [1], and 2) MD score, a self-reported questionnaire that evaluates the adherence to MD through the consumption of 11 food groups, ranging from 0 (no adherence) to 55 (high adherence) [2]. Univariate analysis was performed using MD score as independent variable. Moreover, to evaluate the adjusted relationship between the single item of RAID and MD score, a multiple regression model was used.

Results: 205 RA patients were enrolled: median age at visit 53 (q1-q3: 44-59) years, female 80.5 %. The median MD and RAID score were 35 (q1-q3: 32-39) and 2.42 (q1-q3: 0.63-4.51) respectively.

RAID total score had a statistically significant negative relationship with MD score (regression coefficient -0.08; p-value=0.016). Concerning the single RAID items, a statistically significant negative association was found for pain (regression coefficient -0.08; p-value=0.025), functional disability (regression coefficient -0.13; p-value<0.001), sleep (regression coefficient -0.08; p-value=0.041), physical well-being (regression coefficient -0.08; p-value=0.027) and coping (regression coefficient -0.11; p-value=0.008).

Multiple regression analysis to evaluate the relationship between significant RAID items and MD score did not show any statistical significance as all items are strongly related to each other.

Conclusion: To our knowledge, this is the first study addressing the relationship between the adherence to MD and the perception of RA impact. A better MD adherence was associated with lower self-reported composite total RAID score as well as lower pain, functional disability, sleep, physical well-being and coping. The effect of MD adherence on overall RAID is relevant but, at the same time, a prominent effect of one single item on the others could not be documented. This study confirmed the importance of non-pharmacological interventions, such as diet, in RA management.

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SAT0091

SURVEY OF CARDIOVASCULAR DISEASE AND RISK FACTOR MANAGEMENT IN PATIENTS WITH RHEUMATOID ARTHRITIS ACROSS 5 WORLD REGIONS: RESULTS FROM THE SURF-RA

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Background: Patients with rheumatoid arthritis (RA) are at high risk for cardiovascular disease (CVD).

Observational data suggest a need for improved risk factor recording and management in such subjects.

Objectives: The aim of this survey was to evaluate updated information on CVD risk factors, comorbidities, RA and CVD preventive medication in patient with RA.

Methods: The audit is termed SURvey of cardiovascular disease Risk Factors in patients with Rheumatoid Arthritis (SURF-RA) and was performed in 53 centres in 19 countries across 5 world regions during 2014 and 2019. SURF-RA is part of the SURF family of audits which have been performed in patients with CHD, in primary care², and now in patients with stroke and SLE. Data including demographics, RA disease characteristics, CVD, risk factors and medications was collected. The survey was approved by the Data Protection Officer (2017/7243) and a General Data Protection evaluation has been performed (10/10-2018).

Results: Among 14 503 patients with RA in West (n= 8 493) and East (n=923) Europe, Latin (n=407) and North (n=4030) America and Asia (n=650) the mean (SD) age was 59.9 (13.6) years, and 2/3 or more were female (table). RA disease duration was comparable across the world regions, ranging from 9.9 to 12.6 years. The average disease activity was low [disease activity score including 28 joints and C-reactive protein; DAS28CRP: mean (SD): 2.6 (1.2)]. The prevalence of atherosclerotic CVD (ASCVD) was lowest in Latin America (2.5%) and highest in East Europe (21.4%), and this pattern was similar regarding familial premature CVD. The mean prevalence (% of each entity) of blood pressure above 140/90 mmHg was 5.3%, of low density lipoprotein cholesterol > 2.5 mmol/L: 63.3%. Overall, 29% used anti-hypertensive medication, lowest in West Europe (17.4%) and highest in East Europe (57.0%), and 26.4% used lipid lowering agent(s), lowest in Asia (7.2%) and highest in North America (31.1%). Body mass index > 30 kg/m² was present in 26.6%, with the smallest waist circumference in Asia [mean (SD): 84.1 (13.6) cm] and highest in East Europe [92.5 (15.5) cm]. The proportion of current smokers was on average: 16.2 %, lowest in Asia (7.8%) and highest in East Europe (28.5%).

Conclusion: The high prevalence of CVD risk factors and ASCVD in patients with RA across five world regions shows that there is still an unmet need for vigilance and improved implementation of preventive measures in this high CVD risk patient population.

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	All	West Europe	East Europe	Latin America	North America	Asia	p-value
Number of patients	14503	8493	923	407	4030	650	
Age mean(SD)	59.8 (13.6)	60.7 (13.2)	58.8 (11.8)	52.8 (11.6)	59.4 (14.8)	55.7 (13.1)	<0.001
Sex female (%)	74.5	74.1	78.5	92.4	72.2	77.3	
Disease duration (yrs) mean(SD)	10.8 (9.5)	10.5 (9.5)	12.1 (9.3)	9.9 (7.5)	12.6 (9.8)	10.5 (9.8)	<0.001
DAS28-CRP mean(SD)	2.6 (1.2)	2.5 (1.1)	2.9 (1.2)	2.8 (1.3)	2.8 (1.2)	2.8 (1.4)	<0.001
Atherosclerotic CVD (%)	13.3	11.4	21.4	2.5	16.2	10.3	<0.001
Lipid lowering medication (%)	26.4	25.1	28.5	22.4	31.1	7.2	<0.001
Any anti-hypertensive (%)	29.0	17.4	57.0	24.8	46.8	31.8	<0.001

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