Direct med. costs/€ (excl. medication)	1,618	381	- 1,237	1,823	692	- 1,131
Comedication/€	498	417	- 81	417	414	- 3
Biologicals/€	0	19,082	+ 19,082	21,673	19,082	- 2,591
Medication/€	498	19,498	+ 19,000	22,091	19,496	- 2,595
Absenteeism/€	2,991	892	- 2,099	3,028	464	- 2,564
Total/€	5,107	20,771	+ 15,664	26,942	20,653	- 6,289

Table 1. Costs per patient and year (Subgroup patients with RA)

Conclusion: Costs of healthcare utilization, as well as work disability decreased after starting GLM within an observation period of 24 months, for pts. with RA, PsA, and AS, respectively. Due to the high costs of TNFi therapy, drug costs in the group of biologic-naïve pts. rose markedly. Savings were generated in the group of pts. pre-treated with biologics.

REFERENCES:

- [1] K. Krüger, et al. *BMJ Open* 2018
- [2] K. Krüger, et al. *Rheumatology International* 39 (1) 2019

Acknowledgement: Health Economics Research Zentrum, Burgdorf, Germany

Disclosure of Interests: Klaus Krueger: None declared, Gerd Rüdiger Burmester Consultant for: Roche, Sanofi-Genzyme, Speakers bureau: Roche, Sanofi-Genzyme, Siegfried Wassenberg Grant/research support from: Roche Pharma, Consultant for: Abbvie, BMS, Chugai, Roche, Novartis, Pfizer, MSD, Speakers bureau: Abbvie, BMS, Pfizer, Janssen, Chugai, Celgene, Roche, Novartis, MSD, Astrid Thiele Consultant for: Biogen, Celgene, Chugai, Hexal, Janssen, Lilly, MSD, Novartis, Pfizer, UCB, Matthias Thomas Employee of: MSD Sharp & Dohme GmbH Germany

DOI: 10.1136/annrheumdis-2019-eular.4059

THU0654

INFLUENCE OF THE NEW PHARMACOLOGICAL AND NON-PHARMACOLOGICAL APPROACHES IN RHEUMATOID ARTHRITIS ON WORK PARTICIPATION: A SYSTEMATIC LITERATURE REVIEW

Famke Wildemeersch¹, Peggy Jacques^{2,3}, Philippe Carron^{1,3}, Xavier Janssens¹.
¹University of Ghent, Ghent, Belgium; ²University of Ghent, Rheumatology, Ghent, Belgium; ³Inflammation Research Center, Flanders Institute of Biotechnology, Ghent, Belgium

Background: Rheumatoid arthritis (RA) is a chronic and progressive autoimmune disease that frequently has a negative impact on work participation among patients. Even more, patients with RA are at greater risk to become work disabled, have a reduced work productivity (presenteeism) or increased sick leave (absenteeism) compared to the general population. This outcome can be related to the World Health Organization International Classification of Functioning, Disability and Health (the WHO ICF framework), that is useful in understanding the impact of RA regarding functioning. Since 2000, the management of RA has made significant progress. With the establishment of the new ACR/EULAR criteria and the treat-to-target (T2T) strategies, patients are nowadays diagnosed and treated earlier. Furthermore, the improvement of the management of RA has led to much better results regarding disease activity and joint destruction. However, many of these patients are confronted with additional fees when contracting private insurances, since the risk assessment by insurances is mainly based on historical data.

Objectives: This systematic literature review was performed to study the influence of new pharmacological and non-pharmacological approaches on work participation among patients with RA with the objective to improve the risk assessment of RA patients when contracting private insurances.

Methods: A systematic literature review from January 1990 until January 2018 was performed using Pubmed, Embase and Web of Science. Different search terms were used in each database: employment, workplace, sick leave, absenteeism, work capacity and international classification of functioning, disability and health. All studies assessing one of the search terms were analysed.

Results: Finally, 49 relevant articles were selected. The selected studies were subdivided according to study design (RCT versus cohort study) and disease duration of the studied patients. Studies that examined the value of an adequate early intervention were grouped separately. Overall, studies on the impact of the non-pharmacological approach were limited and very heterogeneous. Positive results of pharmacological agents (combination of DMARDs or biologic therapy) on work participation could be demonstrated in patients with recent-onset RA. Long-term observational studies showed an association between initiation of new therapeutic

strategies and a reduction in work disability among patients with RA. However a causal relation was difficult to confirm because of the study design. Moreover, some studies pointed out other contextual factors that also influence work disability such as political policy, demographic changes in age distribution or educational level.

Conclusion: The large heterogeneity in terms of patient population, study design and outcome measures limits interpretation of the data. However, this systematic literature review could demonstrate that the effect of a treatment is of utmost importance and not the treatment itself. This emphasizes also the importance of early intervention with pharmacological agents regarding work productivity outcomes in RA. In addition, the impact of personal and environmental factors on work participation may not be neglected.

REFERENCES:

Disclosure of Interests: : None declared
 DOI: 10.1136/annrheumdis-2019-eular.4028

Epidemiology, risk factors for disease or disease progression

THU0655

LONG-TERM OUTCOME OF JUVENILE IDIOPATHIC ARTHRITIS: COMPARISON OF BIOLOGIC AND METHOTREXATE ERAS

Gabriella Giancane^{1,2}, Valentina Muratore³, Valentina Marzetti⁴, Neus Quilis Marti¹, Belén Serrano Benavente¹, Francesca Bagnasco¹, Alessandra Alongi¹, Adele Civino⁵, Lorenzo Quartulli⁶, Alessandro Consolaro^{1,2}, Angelo Ravelli^{1,2}. ¹I.R.C.C.S. Giannina Gaslini, Clinica Pediatrica e Reumatologia, Genova, Italy; ²Università degli Studi di Genova, Genoa, Italy; ³IRCCS Fondazione Policlinico San Matteo, Clinica Pediatrica, Pavia, Italy; ⁴Ospedale Generale Provinciale, Pediatria, Macerata, Italy; ⁵Ospedale Vito Fazzi, Lecce, Italy; ⁶Azienda Ospedaliera Cardinale G. Panico, Tricase, Italy

Background: After nearly two decades from the start of the Biologic era, systematic analyses of patient with juvenile idiopathic arthritis (JIA) have shown a high frequency of attainment of inactive disease (ID) and satisfactory levels of physical function and quality of life. However, whether and to what extent the disease prognosis has improved in comparison with the methotrexate (MTX) era is still uncertain.

Objectives: To compare the long-term disease state, in terms of activity and damage, of children with JIA who had their disease onset in MTX or Biologic eras.

Methods: Patients were included in MTX or Biologic era cohort depending on whether their disease presentation occurred before or after January 2000. Patients in the MTX era cohort and part of the patients in the Biologic era cohort were taken from a previous cross-sectional study published by our group,¹ which enrolled 310 patients with disease onset between December 1986 and December 2002. An additional sample of patients with onset in the Biologic era was enrolled in a subsequent prospective cross-sectional study, which included all consecutive patients meeting the ILAR criteria for JIA, who were seen consecutively at the Istituto Gaslini of Genoa, Italy, between January 2015 and June 2017. All patients had disease duration ≥ 5 years and underwent a prospective cross-sectional assessment, which included measurement of disease activity and damage. ID and low disease activity (LDA) states were defined according to Wallace, JADAS10 and cJADAS10 criteria. Articular and extra-articular damage was assessed with the Juvenile Arthritis Damage Index (JADI).

Results: MTX and Biologic era cohorts included 239 and 269 patients, respectively. Patients were divided in the "functional phenotypes" of oligoarthritis and polyarthritis. At cross-sectional visit, patients in the Biologic era cohort with either oligoarthritis or polyarthritis had consistently higher frequencies of ID and LDA than patients in the MTX era cohort. The measurement of disease damage at cross-sectional visit revealed that the frequency of impairment of > 1 JADI-Articular items was higher in MTX than in Biologic era cohort (17.6% versus 11% in oligoarthritis and 52.6% versus 21.8% in polyarthritis). Likewise, frequency of involvement of > 1 JADI-Extraarticular item was higher in MTX than in Biologic era cohort (26.5% versus 16.2% in oligoarthritis and 31.4% versus 13.5% in polyarthritis). The sole JADI items that were detected in more than 5% of patients in the Biologic era cohort were temporomandibular damage in oligoarthritis and polyarthritis, ankle damage in polyarthritis and leg-length inequality in oligoarthritis. The analysis of the temporal trend of damage development over the 25 years of our analysis (1986-2011) highlighted

the marked decrease in damage over time and the more pronounced decline in the Biologic era (Figure 1).

Conclusion: Our study provides evidence of the remarkable prognostic improvement obtained with the recent therapeutic advance in JIA.

REFERENCES:

- [1] Solari et al. Arthritis Care Res. 2008;59:1571–9.

Figure 1. Trend in disease damage throughout methotrexate and biologic era.

Disclosure of Interests: Gabriella Giancane: None declared, Valentina Muratore: None declared, Valentina Marzetti: None declared, Neus Quilis Marti: None declared, Belén Serrano Benavente: None declared, Francesca Bagnasco: None declared, Alessandra Alongi: None declared, Adele Civino: None declared, Lorenzo Quartulli: None declared, Alessandro Consolaro Grant/research support from: AbbVie, Pfizer, Angelo Ravelli Grant/research support from: Angelini, AbbVie, Bristol-Myers Squibb, Johnson & Johnson, Novartis, Pfizer, Reckitt Benkiser, and Roche, Consultant for: Angelini, AbbVie, Bristol-Myers Squibb, Johnson & Johnson, Novartis, Pfizer, Reckitt Benkiser, and Roche, Speakers bureau: Angelini, AbbVie, Bristol-Myers Squibb, Johnson & Johnson, Novartis, Pfizer, Reckitt Benkiser, and Roche

DOI: 10.1136/annrheumdis-2019-eular.5488

THU0656 IMMUNE CHECKPOINT INHIBITORS IN PATIENTS WITH CANCER AND RHEUMATOLOGIC DISEASES: A SYSTEMATIC REVIEW OF THE LITERATURE

Noha Abdel-Wahab^{1,2}, Houssein Safa³, Maria A. Lopez-Olivo⁴, Adi Diab³, Maria Suarez-Almazor⁴. ¹University of Texas MD Anderson Cancer Center, Section of Rheumatology and Clinical Immunology, Houston, United States of America; ²Faculty of Medicine, Assiut University Hospital, Department of Rheumatology and Rehabilitation, Assiut, Egypt; ³University of Texas MD Anderson Cancer Center, Melanoma Medical Oncology, Houston, United States of America; ⁴University of Texas MD Anderson Cancer Center, Section of Rheumatology and Clinical Immunology, Houston, United States of America

Background: Immune checkpoint inhibitors (ICI) have resulted in unprecedented advances in the treatment of cancer, with remarkable survival benefits, unseen with traditional treatment. While the benefits of ICI have been clearly documented, a myriad of immune-related-adverse events (irAEs) have been recognized in multiple organs and systems, secondary to persistent activation of the immune system.

Objectives: To systematically review the literature and provide an updated summary on adverse events associated with the use of ICI therapy in patients with cancer and rheumatologic diseases.

Methods: Five electronic databases were searched through 2018 with no restrictions. Articles were screened and selected by two independent investigators using a 2-step approach. Case reports, series, and observational studies describing patients diagnosed with rheumatologic disease prior to initiation of ICI for treatment of concomitant cancer were included.

Results: A total of 69 patients in 27 publications were identified. Median age was 65 (38-87) years; 50% were female; 90% had metastatic melanoma; and 64% were receiving anti-cytotoxic T-lymphocyte-associated protein 4 (anti-CTLA-4) antibody. Rheumatoid arthritis was the most common in 64% (n=32). Other rheumatologic diseases included 16 spondyloarthritis (7 psoriatic arthritis, 4 ankylosing spondylitis, 1 reactive arthritis, and 4 unspecified), 8 sarcoidosis, 6 vasculitis (3 eosinophilic granulomatosis with polyangiitis, and 1 each with granulomatosis with polyangiitis, Behcet's diseases, and polymyalgia rheumatica), 2 each with systemic lupus erythematosus and scleroderma, and 1 each with rheumatic fever, Sjögren's syndrome, and myositis. Overall, 73% (n=50) had an adverse event after initiation of ICI; 33% (n=32) had an exacerbation of the

underlying disease, and 55% (n=38) had *de novo* irAEs. Patients with active diseases at ICI initiation seemed to have more disease flare than those with inactive disease (61% vs. 29%; $p = 0.03$), while no differences were observed in *de novo* irAEs (36% vs. 39%). Patients with rheumatoid arthritis were reported to have more flares with anti-CTLA-4 antibody (63% vs. 33%), while those with spondyloarthritis reported more flares with anti-programmed cell death 1 agents (63% vs. 29%); however numbers were small. Patients receiving immunosuppressive therapy at ICI initiation had fewer adverse events than those not receiving treatment (26% vs. 44%). Most flares and irAEs were managed with corticosteroids, and 13% required additional disease modifying anti-rheumatic drugs. Adverse events improved in 64% and did not require discontinuation of ICI therapy. In melanoma patients, disease control rate was 44%. In all patients, no treatment related mortality was reported.

Conclusion: About one third of patients with pre-existing rheumatologic autoimmune disease flared after receiving ICI therapy for treatment of cancer. However, flares and irAEs can often be managed and may not require discontinuation of cancer therapy. Prospective longitudinal studies are needed to evaluate potential differences among diseases and to determine optimal toxicity therapy while conserving antitumor immunity.

Disclosure of Interests: : None declared

DOI: 10.1136/annrheumdis-2019-eular.6541

THU0657 ASSOCIATION OF DIET AND SPICES WITH TREATMENT OUTCOME IN ASIAN INDIAN PATIENTS WITH RHEUMATOID ARTHRITIS – A CROSS SECTIONAL STUDY

Harshini Alur Shivakumar¹, Ramya Aithala¹, L Jeyaseelan², Debashish Danda¹.

¹Christian Medical College, Clinical Immunology and Rheumatology, Vellore, India;

²Christian Medical College, Biostatistics, Vellore, India

Background: Influence of diet on inflammation, specially foods like fish oil, spices like turmeric, capsacin, garlic etc. are reported in published literature. However, a well-designed study on this subject amongst Asian Indian patients is lacking.

Objectives: To analyze whether the type and quantity of intake of various food constituents, with particular reference to Indian spices, makes an impact on the control of disease activity in patients with Rheumatoid arthritis(RA)

Methods: Patients diagnosed as RA by the ACR 2010 criteria and receiving standard triple drug therapy in our clinic between June 2017 and June 2018, for at least one year were enrolled. Disease activity was assessed during the routine OPD visit. They were administered a food frequency questionnaire^[1] pertaining to the quality as well as quantity of food and spice intake. Analysis was done using multivariate logistic regression

Results: A total of 400 patients were included with 86.75% females. 67.75% patients were in disease remission, 10% had mild disease activity and 22.25% moderate to high disease activity; only 18.09% were vegetarians and the rest consumed non-vegetarian food. Median age was 47.99years(SD 10.67),median duration of illness prior to presentation to our clinic was 7years(IQR 4,10), median ESR was 37mm/hr(IQR 23,52), median CRP was 5.34mg/L(IQR 2.04,12.4), and median DAS28CRP was 2.07(IQR 1.64,2.97). Patients with DAS28CRP of <2.6 were compared with those >3.2. Statistically higher consumption of ginger, garlic, turmeric and coriander were noted amongst patients in remission. Similar results were obtained when patients with DAS28CRP of <1.4 were compared with DAS28CRP >5.1. Nonsignificant numerical differences were noted for intake of food constituents like wheat, total pulse, vegetables, fruit, milk and fish

Dietary items	n	DAS28CRP <2.6		DAS28CRP > 3.2		P value
		Quantity in grams	Median (IQR)	Quantity in grams	Median(IQR)	
ginger	244	4.17	(2.67, 6.67)	80	2.08 (1.39, 3.33)	0.0001
garlic	253	4.17	(2.78, 6.67)	78	2.08 (1.67, 3.33)	0.0001
turmeric	267	1.11	(0.71, 1.67)	88	0.83 (0.51, 1.11)	0.0003
jeera	215	0.55	(0.37, 0.83)	64	0.42 (0.28, 0.75)	0.0138
cinnamon	64	0.42	(0.28, 0.55)	24	0.35 (0.25, 0.52)	0.7212
cloves	85	0.42	(0.28, 0.55)	28	0.33 (0.2, 0.45)	0.6754
coriander	230	1.11	(0.67, 1.67)	78	0.67 (0.48, 1.11)	0.0001
pepper	179	0.42	(0.33, 0.67)	57	0.37 (0.28, 0.55)	0.0351
chilli	259	2.08	(1.67, 3.33)	88	1.67 (1.02, 2.82)	0.0023