EULAR 2023

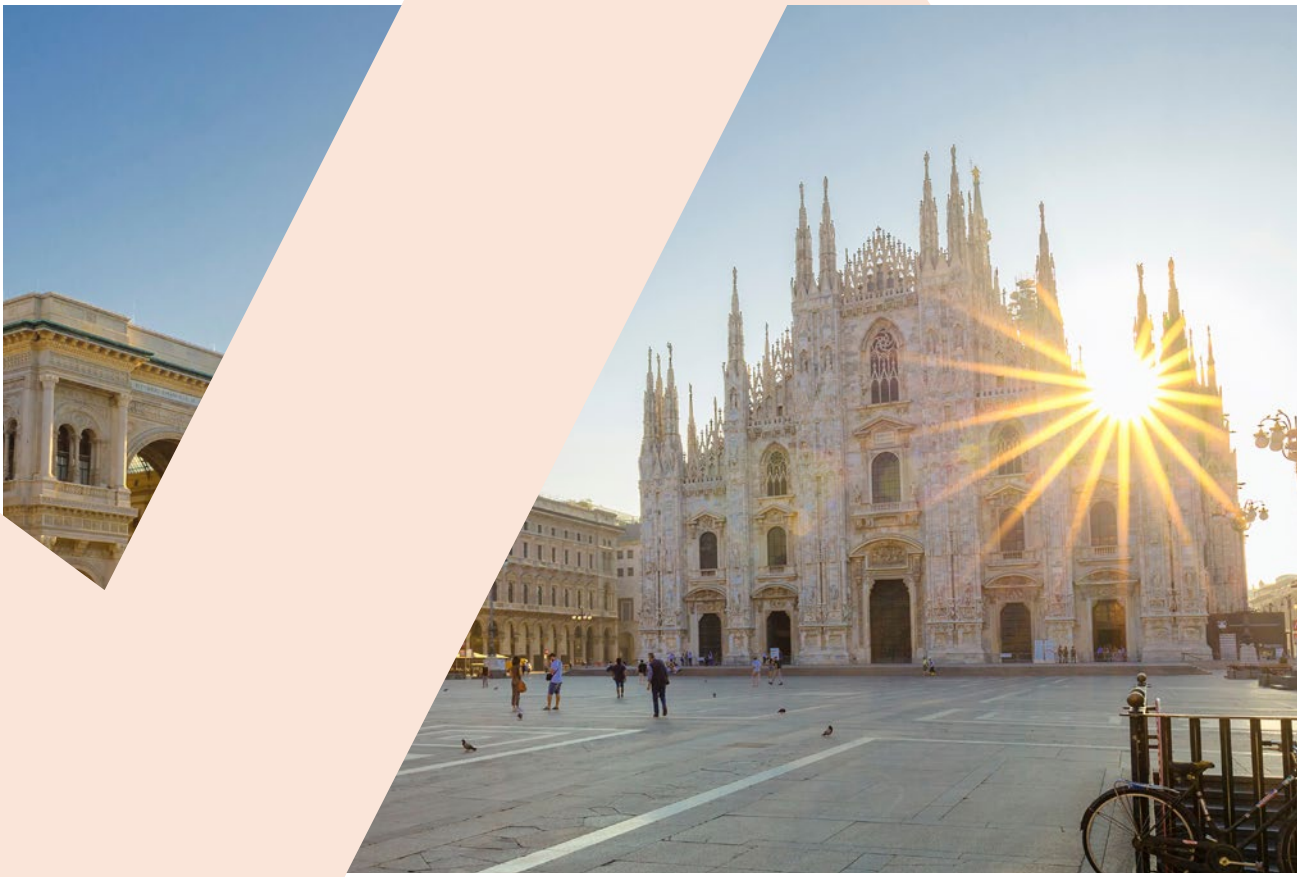
Review of the European Alliance of Associations for Rheumatology (EULAR) Congress 2023

Location:	Milan, Italy
Date:	31st May–3rd June 2023
Citation:	EMJ Rheumatol. 2023; DOI/10.33590/emjrheumatol/10300407. https://doi.org/10.33590/emjrheumatol/10300407.

There are over 200 different rheumatic and musculoskeletal conditions, affecting 20–30% of European adults' health, everyday activities, and quality of life. The European Alliance of Associations for Rheumatology (EULAR)'s vision is to create a world where these diseases are recognised, diagnosed, and prevented or cured. Through awareness, education, clinical care, prevention, research, and global solutions for managing these diseases, EULAR aims to minimise the impact of these diseases on individuals and societies. The yearly congress brings together rheumatology experts, health professionals, and people with rheumatic and musculoskeletal disease, offering a chance to share ideas, network, and learn.

Following EULAR's significant achievements in the last few years, the society is now the leading provider in education in rheumatic and musculoskeletal diseases, and has already established a novel infrastructure and governance workflow to continue delivering strategic objectives. This new strategy is built on the tradition and experience of the previous strategy, and the society has established a number of values to ensure the implementation of this, including innovation, patient centredness, responsibility, inclusivity, flexibility, and dedication. At the opening ceremony, EULAR President Annamaria Iagnocco introduced this novel strategy, driven by four directions of impact. Firstly, EULAR prioritises leadership, scientific guidance, and innovation, in an effort to push boundaries and make breakthroughs. As a leading organisation in the field, EULAR is a trusted source of information that can have a great impact on the lives of patients through evidence-based data and advocating for patient-centred care. Secondly, the society is committed to investing in personal and professional development, which will help individuals and teams to thrive. As the leading provider for career progression and professional and personal development in rheumatology, EULAR sets the standards, with a comprehensive view of education, as well as personal development in general. Thirdly, EULAR is building a sustainable and strong community, in which everyone can contribute and be heard. The human connections are integral to the society's culture, which combines people from many countries and backgrounds, and resonates with them not only professionally, but also emotionally. And finally, the society is creating a more equitable and prosperous environment, ensuring that all efforts lead to a viable income. This involves reducing financial risks through diversification of sources of income, ensuring the establishment of a strong source of income.

At the opening ceremony, several awards were presented to people who have been judged by



the EULAR executive committee to have served the rheumatology field in an outstanding way through research, clinical science, or other activities. The Meritorious Service award was presented to Bernard Combe, Centre Hospitalier Universitaire (CHU) Montpellier, France; and Angela Zink, former head of the Programme Area Epidemiology and Health Services Research, German Rheumatism Research Centre (DRFZ), Berlin, Germany. Honorary membership was awarded to individuals who have rendered outstanding service in accomplishing EULAR's objectives, including Thomas Dörner, Charité Universitätsmedizin Berlin, Germany; Jean Dudler, Hôpital Cantonal de Fribourg (HFR), Villars-sur-Glane, Switzerland; Ricardo Ferreira, Centro Hospitalar e Universitário de Coimbra, Portugal; Espen Haavardsholm, University of Oslo, Norway; Janet Pope, University of Western Ontario, London, Canada; Zoltan Szekanecz, University of Debrecen, Hungary; Yoshiya Tanaka, University of Occupational and Environmental Health, Fukuoka, Japan; and Mohammed Tikly, University of the Witwatersrand, Johannesburg, South Africa. The PARE Outstanding Award was presented to Dieter Wiek, Deutsche Rheuma-Liga, Bonn, Germany. The Stene Prize winner was Shauna O'Connor, Trinity College Dublin, Ireland. Finally, the FOREUM 2023 Platinum recognition was awarded to Isabelle Logeart, Pfizer, France.

Over 4,500 abstracts were submitted and reviewed by over 250 reviewers in order to select the best research to be presented at the congress. The congress further offered a multitude of opportunities that were designed to promote education, collaboration, innovation, and success. EMJ was delighted to attend this insightful congress, and cannot wait for the next one in Vienna, Austria, from the 12th–15th June 2024. Read on for scientific highlights from the congress, covering topics such as the role of artificial intelligence in early rheumatoid arthritis, and factors associated with delayed diagnosis of familial Mediterranean fever.

Systemic Lupus Erythematosus Associated Hypertension: New Insights

PULMONARY arterial hypertension (PAH) is a severe manifestation of both systemic sclerosis (SSc) and systemic lupus erythematosus (SLE). Previous research has described improved survival in SSc-associated PAH, while research into SLE-associated PAH is limited. A team from Peking Union Medical College Hospital, Beijing, China, therefore sought to explore the changes in characteristics, 5-year survival, and treatment for SLE-associated PAH over the last decade.

The multicentre, prospective cohort study included 610 patients with SLE-associated PAH. The cohort was divided into two test groups depending upon the date that the patient underwent right heart catheterisation. Cohort A covered 2011–2016, and B 2016–2021. In tandem, a single-centre cohort of 104 patients with idiopathic pulmonary arterial hypertension acted as the control group. Primary outcomes investigated were treatment regimen, disease characteristics, and all-cause mortality.

Analysis of demographic data revealed that SLE PAH patients were overall younger, predominantly female, had lower levels of an important cardiac biomarker (NTproBNP), better haemodynamics, and a higher 5-year survival rate than patients with PAH. When comparing the two patient cohorts, B showed lower mean pulmonary arterial pressure and pulmonary vascular resistance. Cohort B also demonstrated a higher 5-year survival rate (88%) than cohort A (72.9%), and was more likely to receive intensive immunosuppressants and PAH-targeted medication. Further analysis into the possible reasons for the differences in survival showed that treatment goal achievement in PAH and reaching lupus low disease activity state were both independently associated with lower mortality.

"The multicentre, prospective cohort study included 610 patients with SLE-associated PAH."

Overall, this study is the largest multicentre prospective study investigating an SLE-PAH cohort to date. Results suggest survival has improved significantly for SLE-associated PAH; however, the importance of early detection of PAH in patients with SLE, and the importance of achieving treatment goals for both patients with PAH and SLE remains. ●

Rheumatic and Musculoskeletal Diseases Frequently Advance Lethal Comorbidities

RHEUMATIC and Musculoskeletal Diseases (RMD) encompass over 200 diseases, which affect more than 120 million Europeans of all ages. RMDs have a significant direct impact on patients, but also most RMDs pose a further significant risk to the population by advancing many comorbidities, if the RMD is not correctly treated.

Cardiovascular disease, lung disease, cancers, gastrointestinal disease, and mental health disorders are examples of the most significant comorbidities of inflammatory RMDs. Most of these comorbidities are prioritised by the European Union (EU) as key non-communicable diseases, focused on by initiatives such as the Beating Cancer Plan and the Healthier Together – EU Non-Communicable Diseases (NCD) Initiative. However, RMDs are commonly ignored in healthcare policies, as it is incorrectly assumed that they have a low mortality rate. The discovery of novel medications and mechanisms of disease have advanced our understanding of the correlation between inflammatory RMDs and these comorbidities.

RMDs comprise much of the rapidly increasing emergence of multi-morbidity, because patients with RMDs commonly pass away from the associated comorbidities. Unfortunately, the treatment of RMD is often neglected when multiple diseases coexist in the same patient and, along with the complications of reduced physical activity due to pain and uncontrolled inflammation, this all amounts to an even worse quality of life. Consequently, it is important to educate both policymakers and other medical specialities about RMDs, as well as to improve collaboration for better chronic disease care.

If the underlying conditions are not addressed, then the comorbidities of RMDs can be triggered, often leading to uncontrolled inflammation affecting other organs. For instance, one in five cancers is caused or promoted by inflammation, and RMDs increase the risk of heart attacks by 63 (rising to 98% in patients with lupus).

Evidently, the relationship between RMDs, the immune system, inflammation, and comorbidities is complex and multifaceted, as represented by the abstracts presented at the European Alliance of Associations for Rheumatology (EULAR) Congress 2023. Resultingly, EULAR calls upon the EU to generate an approach to tackle RMDs and reduce their comorbidity risk, as well as repurpose RMD drugs to remedy other diseases. Hence, further research is required to elucidate the emergence in multi-morbidity. ●

"RMDs are commonly ignored in healthcare policies, as it is incorrectly assumed that they have a low mortality rate."

Healthy Lifestyle for Reduced Mortality in Osteoarthritis

LEADING a healthy lifestyle is a widely accepted mitigator for mortality. New data relating to osteoarthritis from a prospective cohort study was presented at the European Alliance of Associations for Rheumatology (EULAR) Congress 2023.

This research investigated the association of individual and combined healthy lifestyle factors with risk of all-cause and cause-specific mortality in 104,142 patients with osteoarthritis. Findings from this work inform the effect of several lifestyle factors on reducing mortality in osteoarthritic populations, where most previous study is broadly conducted on the general population.

Data was provided by the UK Biobank, and the cohort under scrutiny experienced 9,915 deaths in the first 2 years of follow-up. The researchers gave each participant a score for their lifestyle, based on BMI and self-reported diet, sleep duration, physical activity, sedentary time, social connection, smoking, and alcohol consumption. The statistical models produced showed variety in their associations between lifestyle and mortality: sleep duration had a U-shaped relationship; meanwhile, moderate physical activity was L-shaped, and both BMI and vigorous physical activity were J-shaped, starting with a sharp drop followed by dramatic rise. Looking at the results, the lowest risk of mortality was seen with 7 hours of sleep a night, and the turning points for moderate and vigorous physical activity were 550 minutes and 240 minutes per week, respectively. The turning point for BMI was recorded as 28 kg/m^2. Using multivariable models, each lifestyle factor was significantly associated with all-cause mortality, and mortality associated with cancer, cardiovascular, digestive, and respiratory diseases.

These findings are expected to guide lifestyle choices and further research, proving important by identifying the patterns to follow in order to reduce risk of mortality in osteoarthritic and other sub-populations. The underlying message in this study centres on the importance of a healthy lifestyle, how these modifications should be implemented, and the role this will have on patient health; optimistically, individuals will experience better disease outcomes alongside reduced risk of mortality.

"Data was provided by the UK Biobank, and the cohort under scrutiny experienced 9,915 deaths in the first 2 years of follow-up."

Understanding Diagnostic Delay in Familial Mediterranean Fever

FINDINGS from a study investigating the factors associated with delayed diagnosis in familial Mediterranean fever (FMF) were presented during a scientific session that took place at the European Alliance of Associations for Rheumatology (EULAR) Congress 2023, in Milan, Italy, on 31st May. This is the first large European cohort study investigating the factors associated with diagnostic delay in FMF, according to the authors.

The study enrolled 960 patients with FMF using data from the Juvenile Inflammatory Rheumatism cohort. FMF is the most common autoinflammatory condition globally, and is associated with mutations in *MEFV*. It involves recurrent, short-lived (<3 days) attacks of fever alongside chest or abdominal pain. Due to reports from several studies that diagnosis is often missed or delayed, even in countries of high prevalence, the study aimed to identify the frequency and factors associated with diagnostic delay.

Data analysis showed that one-fifth of patients experienced a diagnostic delay, defined as diagnosis >10 years after symptom onset. Rates of diagnostic delay were found to be higher in females than males, and patients who experienced delayed diagnosis were found to have an older median age compared to the remaining 80% of the cohort, at 46.4 years and 15.5 years, respectively.

Regarding clinical presentation during disease attacks, the authors found no difference in abdominal pain, chest pain, or musculoskeletal symptoms between those with a diagnostic delay and those without. However, those with delayed diagnosis did display higher rates of erysipelas-like erythema. This pathognomonic feature of FMF occurred in 33% patients with delayed diagnosis, compared to 22% in those diagnosed within 10 years of symptom onset. Additionally, amyloidosis was identified as being significantly higher amongst individuals with a delayed diagnosis compared to those without, and those with delayed diagnosis received significantly more biotherapy.

"One-fifth of patients experienced a diagnostic delay, defined as diagnosis >10 years after symptom onset."

The study also evaluated *MEFV* mutations between those with and without a delayed diagnosis, and found that there were no differences in the percentage of patients with either one or two pathogenic mutations in this gene.

The findings from this study highlight the need for improved education surrounding FMF, and improved communication to clinicians and patients to help reduce delays in diagnosis.

How Does COVID-19 Affect Patients with Rheumatic Diseases?

LONG-TERM consequences of COVID-19 in people with rheumatic and musculoskeletal diseases were discussed in multiple sessions at the European Alliance of Associations for Rheumatology (EULAR) Congress 2023. Currently, data on long COVID in patients affected by inflammatory diseases (iRD) are scarce, heterogeneous, and largely inconclusive. Furthermore, it is often hard to differentiate which symptoms are attributable to iRD, compared to long COVID.

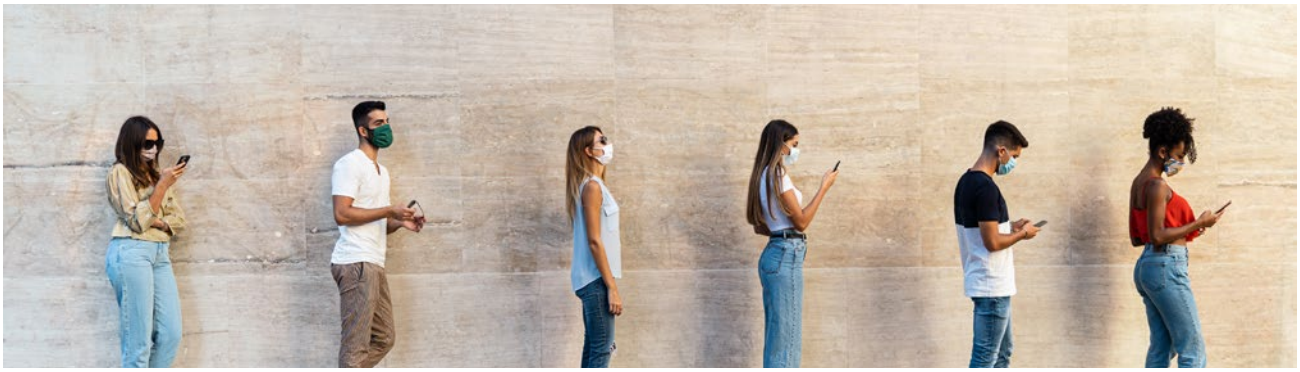
A Dutch study presented at the congress looked into the risk of developing long COVID after infection with the Omicron variant in patients with iRD, compared to healthy age- and sex-matched controls. In total, 1,974 patients with iRD participated in the study, as well as 733 healthy controls, 24% and 30% of whom were infected with the Omicron variant, respectively. There were more patients with iRD who fulfilled criteria for long COVID compared to healthy controls; however, these results were attenuated after adjusting for potential cofounders.

The team noted that more patients with iRD without a history of COVID-19 reported iRD, compared to healthy controls; however, this could be due to clinical manifestations of underlying rheumatic diseases. The team concluded that patients with iRD are not more likely to develop long COVID than the general population.

Another session looked at whether anti-Spike antibody levels after vaccination could predict breakthrough infection and clinical outcome of COVID-19 in patients with immune-mediated inflammatory disease on immunosuppressive therapies. In total, 1,051 patients provided samples after receiving three vaccine doses, as well as responding to a follow-up questionnaire. Half of the patients reported COVID-19, but few had life-threatening illness. Those with the highest anti-Spike levels were at a lower risk of COVID-19 infection, which supports the use of vaccination in this patient group. The team concluded that low antibody levels did not increase the risk of severe COVID-19, as shown by the absence of severe infections and deaths.

Finally, a study on the safety of COVID-19 vaccines in pregnant and breastfeeding females with autoimmune diseases was presented. A total of 40 pregnant patients were included, with a vaccination rate of 100%, as well as 52 breastfeeding patients, with a vaccination rate of 96.2%. Of the pregnant participants, 71.5% reported post-vaccination disease flares, compared to 20% of those breastfeeding, and 18% of age- and disease-matched control patients. A change in immunosuppressive treatment was necessary in one in five patients. The authors concluded that while pregnant individuals reported adverse events more often than those who were breastfeeding, they were not higher than in healthy controls. ●

"1,974 patients with iRD participated in the study, as well as 733 healthy controls, 24% and 30% of whom were infected with the Omicron variant."



Novel Data Demonstrates Autoimmune Disorders Affect One in Ten

NEW data presented at the European Alliance of Associations for Rheumatology (EULAR) Congress 2023 in Milan, Italy, highlighted that autoimmune disease affects one in 10 people, an increase in incidence possibly linked to environmental factors. Experts stressed that there is a lack of currently available data, and that the level of understanding about disease trends between individuals is currently poor.

"Autoimmune disorders are commonly associated with each other, particularly Sjögren's [syndrome], systemic lupus erythematosus, and systemic sclerosis," stated Nathalie Conrad, Department of Public Health and Primary Care, Katholieke Universiteit Leuven (KUL), Belgium. "Patients with Type 1 diabetes also have significantly higher rates of Addison's, coeliac, and thyroid diseases, and multiple sclerosis stands out as having low rates of co-occurrence with other autoimmune diseases."

The novel data comes from a new population-based study including over 22 million people, which aimed to address the lack of reliable estimates for prevalence and incidence of autoimmune diseases. Conrad and their team investigated the 19 most common autoimmune diseases and examined trends over time, analysing sex, age, economic status, season, and geography against incidence. Analysis of the electronic health records of 22 million people in the UK found that between 2000–2009, a novel diagnosis of autoimmune disease was made in 968,872 people. When considered together, the 19 autoimmune disorders impacted 10.2% of the population, 13.1% of females and 7.4% of males.

"The novel data comes from a new population-based study including over 22 million people."

Additionally, the researchers analysed the age-standardised incidence rates of autoimmune disease throughout the study period, and found an increase of 4%. The largest increases were identified in Graves' disease, coeliac disease, and Sjögren's syndrome. They also identified a significant decrease in the incidence of both Hashimoto's thyroiditis and pernicious anaemia. Socioeconomic gradients were identified in several diseases, and seasonal variations were noted in Type 1 diabetes and vitiligo diagnosis. Several regional variations were also noted. ●

Can Artificial Intelligence Accurately Predict Rheumatoid Arthritis Development?

DEEP-LEARNING artificial intelligence (AI) can analyse MRI scans automatically to predict early-stage rheumatoid arthritis (RA), according to research presented at the European Alliance of Associations for Rheumatology (EULAR) Congress 2023.

While early inflammatory arthritis is often undifferentiated, it can develop into established RA or another arthropathy. Traditionally, rheumatologists and radiologists would manually identify key features of the condition from MRI scans of hands and feet.

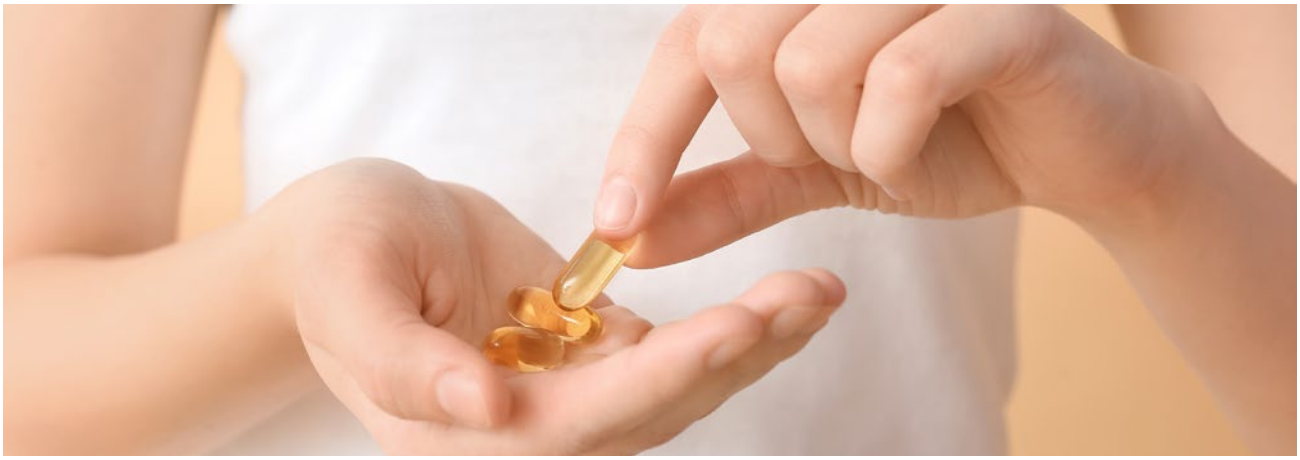
MRI is used to detect erosion in the joints, which is a key prognostic factor, and allows rheumatologists and radiologists to see and assess bone marrow oedema and (teno-) synovitis. Its use is essential in predicting early RA, allowing patients to access timely treatment, and potentially changing the course of their disease.

To determine whether deep-learning AI could predict early-stage RA, Y. Li, Division of Image Processing, Department of Radiology, Leiden University Medical Center (LUMC), the Netherlands, and colleagues trained an AI model to understand anatomy. Then, it was trained to distinguish healthy controls from patients with clinically suspect arthralgia, and to find features that predict rheumatoid arthritis development.

Once the AI had finished its training, it analysed scans of 1,974 patients with clinically suspect arthralgia or early-onset arthritis. Much like the traditional, manual method, the AI model looked at MRI scans of the hands and feet. Of the 1,974 patients, 651 developed RA, with the AI model predicting RA development with accuracies close to that achieved by the rheumatological and radiological experts.

> **"MRI is used to detect erosion in the joints, which is a key prognostic factor."**

While further training with healthy controls is needed to improve accuracy, Li and colleagues concluded that AI can accurately interpret MRI scans to provide RA prediction automatically. The AI model also confirms the significance of inflammatory features, such as synovial inflammation, in RA, and it is possible that it could identify new imaging biomarkers that further enhance understanding of the underlying disease process of early RA.



Rheumatoid Arthritis and Cardiovascular Disease

NEW data presented at the European Alliance of Associations for Rheumatology (EULAR) Congress 2023 looked at the risk of cardiovascular disease in patients with rheumatoid arthritis (RA). These patients have an increased risk for cardiovascular disease, including acute coronary syndromes (ACS), compared to the general population. Treatment with disease-modifying antirheumatic drugs may benefit them, as this risk is mediated by systemic inflammation; however, the extent of this benefit remains unknown.

Researchers followed patients with RA treated with either methotrexate or tumour necrosis factor inhibitors for 1 year between 2020–2021. In total, 40% of people treated with MTX, and 32% of those treated with TNFi, achieved remission. Both groups had a similar risk of ACS, and the incidence rate of ACS of patients in remission were similar to that in the general population.

The team also analysed the impact of cardiovascular comorbidities on the efficacy of both treatments, using data from the ORAL Surveillance study. The 4,362 participants all had RA and at least one additional cardiovascular risk factor. They were categorised based on history of atherosclerotic cardiovascular disease (HxASCVD). Of these patients, 640 had a HxASCVD, and 3,722 did not. The efficacy of tofacitinib was at least as good as TNFi in those without HxASCVD, and risk of major adverse cardiovascular events (MACE) was similar. Patients who had an intermediate or high cardiovascular risk score, or low–borderline risk scores, were more likely to reach low disease activity with tofacitinib compared to TNFi.

Lead author Maya Buch, University of Manchester, UK, stated: “Overall, these findings further characterise the benefit–risk of tofacitinib by cardiovascular risk category, and provide a means to risk-stratify patients, such that tofacitinib can be considered an effective treatment option where appropriate.”

"There was no significantly higher risk of MACE in those treated with TNFi compared to JAKi."

An abstract presented by Romain Aymon, Geneva University Hospitals, Switzerland, considered the incidence of MACE in patients treated with bDMARDS compared to janus kinase inhibitors (JAKi). This study included patients starting TNFi, JAKi, or bDMARDs with other modes of action (50,325 treatment initiations in total). All participants had one or more cardiovascular risk factor. In total, 182 incident MACE were reported; however, there was no significantly higher risk of MACE in those treated with TNFi compared to JAKi. Furthermore, adjusted regression analysis did not show a significant difference in MACE incidence between other modes of action versus TNFi, and JAKi versus TNFi. The team is planning to include other registers in order to increase statistical power and evaluate other adverse events, including cancers, thromboembolic events, and serious infections. ●

Elevated Risk of Cardiovascular Disease in Patients with Psoriatic Arthritis

EVIDENCE from a new study, presented at the European Alliance of Associations for Rheumatology (EULAR) Congress 2023 in Milan, Italy, has demonstrated a link between patients with psoriatic arthritis (PsA) and an elevated risk of contracting cardiovascular disease. Researchers discovered that aortic vascular inflammation is more common in patients with active PsA when compared with a control group.

The retrospective study and meta-analyses, which was carried out at the University Medical Center (UMC) Utrecht, the Netherlands, aimed to investigate if patients with moderate to severe PsA have increased vascular inflammation when compared to the general population. The study included a group of 75 patients with PsA (median age: 53, and median swollen joint count: 3) who had active peripheral arthritis (≥2 swollen and tender joints), and compared them to 40 individuals with melanoma, none of whom were receiving immunotherapy, or had distant metastases, the chosen non-inflammatory controls. All patients and controls were aged between 18–75. Clinical disease activity used measures of assessment including body surface area, joint counts, and the Disease Activity Index for PsA.

Target-to-background ratio PET and CT scans, a reliable and reproducible measure of inflammation, demonstrated that vascular inflammation was elevated in those with PsA (mean target-to-background for entire aorta: 1.53±0.15 and 1.42±0.13, respectively; $P<0.001$). Data were found to be significant after adjustment to account for the impacts of body mass index, mean arterial pressure, age, and sex.

Researchers found that increased vascular inflammation remained consistent across different components that were measured in the study, including the infrarenal aorta, suprarenal aorta, ascending and descending aorta, and aortic arch ($P=0.002$). Spearman's correlation coefficient was utilised to assess vascular information and the disease activity's clinical parameters.

No significant differences were observed between patients with PsA and the control group with regard to age, mean arterial pressure, and history of cardiovascular disease. However, patients with PSA were found to have a higher BMI when compared to the control group.

Lead author Nienke Kleinrensink, Department of Internal Medicine and Dermatology, UMC Utrecht, commented: "This evidence suggests that inflammation in PsA is not limited to skin and joints, but also involves the cardiovascular system." ●

"Clinical disease activity used measures of assessment including body surface area, joint counts, and the Disease Activity Index for PsA."