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Table 1. – NHL risk predictors for pSS patients without lymphoma at Visit 1

NHL Risk predictors	Likelihood ratio	ChiSquare Value	Prob>ChiSq
IgA	6.6459		0.0360*
IgM	12.065		0.0024*
Disease duration	5.4365		0.0660
Age	18.546		<.0001*
Log [White blood cell count]	6.1494		0.0462*
Log [CXCL13 c(pg/mL)]	8.3463		0.0154*

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FRI0653

IMPROVING AND VALIDATING THE PREDICTIVE ACCURACY OF MRI DETECTED SUBCLINICAL INFLAMMATION FOR RHEUMATOID ARTHRITIS DEVELOPMENT IN CLINICALLY SUSPECT ARTHRALGIA

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Background: Presence of MRI-detected subclinical joint inflammation in clinically suspect arthralgia (CSA) is predictive for progression to Rheumatoid Arthritis. Despite high negative predictive values (94%); its positive predictive value (PPV) is moderate (31%).

Objectives: We studied if, in addition to the presence of inflammation, incorporating information on severity, number and combinations of MRI-inflammatory locations improves the predictive accuracy.

Methods: In the discovery cohort, 225 CSA-patients were followed on clinical arthritis development. Contrast-enhanced 1.5T MRIs were made of unilateral MCP(2-5), wrist and MTP(1-5)-joints at baseline and scored for synovitis, tenosynovitis and bone marrow edema. Severity, number and combination of locations (joint/tendon/bone) with subclinical inflammation were determined, with symptom-free controls of similar age category as reference. Cox regression was used for predictor selection. Predictive values were determined at 1-year follow-up. Results were validated in 266 CSA-patients.

Results: In both cohorts 15% developed arthritis <1-year. The number of locations with subclinical inflammation (1-2 locations HR 2.54 (1.11-5.82); ≥3 locations HR 3.75 (1.49-9.48)) and presence of MCP-extensor peritendinitis (HR 4.38 (2.07-9.25)) were independently predictive. Severity and combinations of inflammatory lesions were not. Based on these variables, five risk categories were defined: no subclinical inflammation, 1-2/≥3 locations, with/without

MCP-extensor peritendinitis. PPVs ranged 5% (lowest category; NPV 95%) - 67% (highest category). Similar findings were obtained in the validation cohort; PPVs ranged 4% (lowest category; NPV 96%) - 63% (highest category).

Conclusion: Incorporation of the number of locations with subclinical inflammation and MCP-extensor peritendinitis in MRI-evaluation improved risk stratification, yielding PPVs up to 63-67%. This promotes optimal use of MRI-data in an evidence-based way.

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Observed. percentage of patients that developed clinical arthritis in the first year (PPVs in black) per risk category in the discovery and validation cohorts.

FRI0654

DECREASING INCIDENCE OF CARDIOVASCULAR DISEASE IN PATIENTS WITH INCIDENT RHEUMATOID ARTHRITIS IN RECENT YEARS

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Background: There is a recognized excess burden of cardiovascular disease (CVD) in patients with rheumatoid arthritis (RA) as compared to the general population. Several studies suggested reduced CVD mortality in RA in recent decades [1-3]. Longitudinal studies on trends in occurrence of CVD events in RA patients over time, and studies comparing trends in CVD events in RA vs general population are lacking.

Objectives: 1) To assess trends in incidence of CVD in patients with incident RA in 1980-2009; and 2) To compare incidence of CVD in RA patients vs non-RA subjects with RA incidence/index date in 2000-09.

Methods: The study population comprised Olmsted County, Minnesota residents with incident RA (age ≥18 years, 1987 ACR criteria met in 1980-2009) and non-RA subjects from the same underlying population with similar age, sex and calendar year of index. All subjects were followed until death, migration, or 12/31/2016. Follow-up was truncated for comparability. Incident CVD events included myocardial infarction (MI), stroke (ischemic or hemorrhagic), coronary heart disease (CHD) death and first occurrence of any of these. Patients with CVD events prior to RA incidence/index date were excluded. Cox proportional hazards models were used to compare incident CVD events by decade, adjusting for age and sex. Cumulative incidence of CVD events adjusted for death from other causes was also computed.

Results: The study included 906 patients with RA (mean age 55.9 years; 69% female). There were 201, 299 and 406 patients with incident RA in 1980-89, 1990-99 and 2000-09, respectively. During median follow-up of 10.6, 10.4 and 10.2 years per decade, CVD events occurred in 31, 38,

and 31 patients. Patients with incident RA in 2000–09 had markedly lower cumulative incidence of any CVD events than patients diagnosed in 1990s and 1980s (Figure). Hazard ratios (HR) for any CVD events demonstrated significant reduction in CVD events among patients with incident RA in 2000s compared with incident RA in 1980s (HR: 0.52; 95% confidence interval (CI): 0.32–0.86) and a reduction approaching significance compared with incident RA in 1990s (HR: 0.65; 95% CI: 0.40–1.05). Patients with incident RA in 2000s were compared with 405 patients without RA in 2000s who experienced 30 CVD events during follow-up. Patients with incident RA in 2000s had no excess in CVD events over subjects without RA (HR: 0.88, 95% CI: 0.53–1.46). Results were similar for MI, stroke and CHD deaths when examined separately.

Figure. Cumulative incidence of any CVD event in RA and non-RA patients by decade of RA incidence/index.

Conclusion: Our findings show a dramatic reduction in incidence of major CVD events in RA in recent decades. The gap in CVD occurrence between RA patients and the general population may be closing. These findings may reflect increased awareness, improved primary CVD prevention and more optimal RA disease management in recent years. More studies are needed to understand the reasons and implications of these trends.

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FRI0655

THE IMPACT OF PREGNANCY ON STRUCTURAL PROGRESSION IN PREMENOPAUSAL WOMEN WITH RHEUMATOID ARTHRITIS

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Background: Disease activity often improves during pregnancy and worsens at the postpartum period [1]. The long-term effect of pregnancy on radiographic joint damage progression among premenopausal women with RA has been barely studied.

Objectives: The aim of this study was to analyse the impact of pregnancy on radiographic progression in premenopausal women with RA.

Methods: This is an observational cohort study of RA patients included in the Swiss Clinical Quality Management in Rheumatoid Arthritis (SCQM-RA). Patients enrolled are followed-up yearly and have radiographic assessments at regular intervals. Information about female reproductive factors, such as pregnancies, breastfeeding and hormonal treatment were retrospectively retrieved using a questionnaire. For this analysis we included premenopausal women with at least two radiographic assessment and full information on reproductive factors. The primary outcome was the rate of radiographic progression (Ratigen erosion score). We analysed the radiographic progression between premenopausal women with at least one pregnancy and those with no pregnancies. Baseline time was the first radiographic assessment. We used a multilevel regression model for longitudinal data, adjusted for potential confounders, such as baseline age, disease duration, DAS-28 and treatment.

Results: Among 1966 women who were interviewed, 430 premenopausal women with sequential radiographic assessments during follow-up were

analysed. Half of premenopausal women had at least one pregnancy. Women with at least one pregnancy were older than nulliparous (median of 41 vs 36 years, $p < 0.001$) and had longer disease duration (median of 3.4 vs 2.6 years, $p = 0.04$) (Table 1). During follow-up, the rate of radiographic progression was lower in women with pregnancies than in nulliparous women [(0.9% (95% CI: 0.0 to 1.9) vs 2.1% (95% CI: 0.9 to 3.1) over 10 years, respectively, $p = 0.04$, Figure 1). In a sub-analysis, the rate of radiographic progression appeared to be lower during the 13-year period after first pregnancy than after this period [(0.2% (95% CI: -0.8 to 1.3) vs 2.6% (95% CI: 1.3 to 3.9) over 13 years, respectively, $p = 0.003$]. We found no difference in the rate of radiographic progression between women with a single pregnancy and multiparous women.

Conclusion: In premenopausal women with RA, joint damage progressed more rapidly in nulliparous women than in women with at least one pregnancy. However, we cannot make any definite causal inference, since it is well possible that women renouncing getting pregnant might be patients with more severe disease. Radiographic progression appeared to increase the longer the time since pregnancy.

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Table 1. Baseline characteristics of premenopausal women of SCQM cohort

General and disease characteristics	Women with pregnancies n=213	Nulliparous women n=217
Age, years, median(IQR)	41 (36-45) *	36 (29-43)
Ever smoking, n (%)	56 (26)	66 (30)
Alcohol consumption, n (%)	129 (61)	112 (52)
Disease duration, years, median (IQR)	3.4 (0.6-8.0) *	2.6 (0.4-7.4)
Seropositive (ACPA or RF positive), n (%)	175 (82)	180 (83)
DAS 28, median(IQR)	3.6 (2.6-4.9)	3.6 (2.4-4.8)
HAQ-DI, median (IQR)	0.6 (0.3-1.3)	0.6 (0.3-1.3)
Erosion score, %, median (IQR)	1.0 (0.3-4.9)	1.4 (0.1-5.0) *
DMARD treatment, n (%)	181 (85)	186 (86)
Biologic treatment, n (%)	70 (33)	72 (33)

*p-value <0.05. DAS28: 28-joint Disease Activity Score ESR; HAQ-DI: Health Assessment Questionnaire –Disability Index; DMARD: disease-modifying antirheumatic drugs.

Figure 1. Change in RA Disease Progression and pregnancies

Ratingen score is expressed in percentage [%], 95% CI are displayed as vertical lines.

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FRI0656

ENVIRONMENTAL AND ATMOSPHERIC FACTORS IN SYSTEMIC LUPUS ERYTHEMATOSUS: A REGRESSION ANALYSIS

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Background: Understanding the role of environmental exposures in the development of SLE and their association with SLE activity may help identify modifiable risk factors and potential etiological mechanisms

Objectives: We hypothesized that changes in fine particulate matter (PM_{2.5}) concentration, ozone concentration, temperature, resultant wind, relative humidity, and barometric pressure are predictive of organ specific flares in lupus.

Methods: 1628 patients who fulfill 4 of the 11 ACR or SLICC classification criteria for SLE were included in the analysis. The data ranged from 1999 to 2017. Maximum distance between visits was 110 days with 1-month time aggregation units. Disease activity was expressed as Physician Global Estimate (PGA), taken at