Conclusions: IT inflammation represents a peri-tendonitis and is present in anti-CCP +at risk individuals and RA patients where it is associated with MCPJ swelling and tenderness. IT inflammation can occur as the lone MRI abnormality in CCP +at risk individuals suggesting the interossei may be an early extra-capsular target in the development of RA.

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FRI0048

MORTALITY AND MORBIDITY OF RHEUMATOID ARTHRITIS-ASSOCIATED LUNG DISEASE DURING A 10-YEAR PERIOD: A LONGITUDINAL COHORT STUDY OF 103 JAPANESE PATIENTS

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Background: Subclinical and overt lung diseases associated with rheumatoid arthritis (RA-LD) are present in 30%–50% of the patients. Early and effective intervention improved joint prognosis in RA. By contrast, lung complications are still the primary contributors to premature deaths in patients with RA. Lung complication in RA can be due to a variety of conditions. However, the individual mortality and progression of pulmonary manifestations have not been established.

Objectives: To clarify the prognostic factors of patients with RA-LD.

Methods: This cohort study comprised RA patients examined with lung high resolution CT (HRCT) scan regardless of respiratory symptoms from 2005 to 2009. Respiratory diagnoses were certified by pulmonologists. The patients were reassessed by one follow-up CT scan after 10 years. All patients were evaluated for the events defined as death, serious infections and others (admission due to bone fracture, and ischaemic heart disease) from 2005 to 2017. Mortality risks were assessed using Kaplan-Meier method.

Results: Clinical features of 103 (82 females) patients are shown in table 1. Thirty-one (30%) had RA-LD including 18 interstitial pneumonia and 13 bronchiolitis at the start of observation. Mean observation period was 110 months. During observation, patients without RA-LD (non RA-LD) never developed new lung complications. The 10 year survival rate (SR) was 92% (mortality rate was 1.3 per 100 patient-years) and the 10 year event free survival rate (EFS) 69% (event rate was 4.8 per 100 patient-years). SR in RA-LD was significantly low compared with non RA-LD ($p=0.008$) (figure 1). EFS in RA-LD was significantly lower than in non RA-LD ($p=0.03$). Types of lung complication didn't correlate with high mortality. The causes of death comprised infection (55%), malignant tumour (27%), interstitial pneumonia (9%), and the others (9%). The adverse events included infection (41%), malignant tumour (21%), bone fracture (15%), cardiac disease (10%), and severe drug eruption including Steven-Johnson syndrome (13%). Univariate analysis showed that infection ($p<0.001$, HR 26.7) and acute exacerbation of RA-LD ($p<0.001$, HR 57.3, 95% CI 13–287) were strong risk factors for deaths.

Abstract FRI0048 – Table 1. Characteristics of RA patients with and without LD at the start of observation

	RA-LD(n=31)	non RA-LD(n=72)
Female (%)	80	80
age(y)	74±10	68±13
age at RA diagnosis(y)	54±14	48±13
RF positive (n,%)	20(65)	48(67)
ACPA positive (n,%)	19(61)	45(63)
DAS28	4.3±1.4	4.4±1.5
Stage (n,%)	6 (20)	15(21)
Stage (n,%)	10(32)	21(29)
Stage (n,%)	5 (16)	16(22)
Stage (n,%)	10(32)	20(28)

Conclusions: RA-LD is a serious complication in RA, and related with a high mortality.

Disclosure of Interest: None declared

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FRI0049

SIGNIFICANT IMPROVEMENT OF RHEUMATOID ARTHRITIS (RA) OUTCOME WITH REPEATED SELF-ASSESSMENT APPLYING SMART SYSTEM OF DISEASE MANAGEMENT (SSDM) MOBILE TOOLS: A COHORT STUDY OF RA PATIENTS EMPOWERING

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Background: Treat-to-Target (T2T) strategy are critical for the treatment of RA, but the Chinese rheumatologists can hardly provide patients with a complete assessment in the clinic due to limited time. The SSDM includes interfaces of both physicians' and patients' application. After inputting lab test records, treatment regimens, and executing DAS28 assessment by patients themselves, all data can be synchronised automatically to the authorised physicians' mobile tool. The rheumatologists can adjust treatment regimens base on patients' profile. Our previous study showed that patients in China can master the application of SSDM for accurately evaluating DAS28 and health assessment questionnaire (HAQ) after training.

Objectives: The objective of this study is to explore the effectiveness of applying SSDM in improvement of disease activity after repeated self-assessment in Chinese RA patients.

Methods: Patients were trained to do DAS28 evaluation with SSDM and asked to repeat the self-assessment once a month. Descriptive statistics were performed

for patient and disease characteristics. According to DAS28 scores, disease activity, the cohort was divided into four groups: remission (Rem), low disease activity (LDA), moderate disease activity (MDA) and high disease activity (HDA). T2T, achieving a DAS28 score lower than 2.6 (Rem) or below 3.2 (LDA), is the main management strategy recommended by ACR and EULAR.

Results: From Jun 2014 to Jan 2018 a total of 24,731 RA patients from 486 centres in China participated in the study. The mean age was 49.28 ± 16.08 (18 to 99) years and the median disease duration was 18.30 months. All patients performed self-assessment of DAS28, HAQ and morning stiffness time totally for 30 358 times. Proportion of patients in Rem, LDA, MDA and HDA was 18%, 13%, 45% and 24% respectively at baseline. Of which, 3492 patients performed repeated assessment for 11 251 times. Proportion of patients in Rem, LDA, MDA and HDA changed into 44%, 18%, 31% and 7% at the last assessment. The proportion of T2T at the last assessment was significantly higher than that of baseline significantly ($p < 0.001$). According to the assessments, the rate of T2T from baseline to 3 months, 6 months, 9 months, 12 months and over 12 months were 31%, 47%, 56%, 58%, 61% and 62% (see figure 1). With the increase of the times of self-assessment, the T2T rate was significantly improved ($p < 0.001$).

Abstract FRI0049 – Figure 1. The times of repeated self-assessment and the proportion of DAS28 stratification

Conclusions: Under repeated self-assessment of DAS28 using SSDM, RA patients can achieve better T2T result. Though empowering patients, SSDM can assist rheumatologist to rationally adjust treatment for RA patients.

Disclosure of Interest: None declared

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FRI0050 **TOCILIZUMAB ACHIEVES BETTER REPAIR OF FOCAL BONE EROSIONS THAN TUMOUR NECROSIS FACTOR INHIBITION IN RA PATIENTS – DATA FROM THE PROSPECTIVE REBONE STUDY ON EROSION REPAIR**

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Background: Focal bone erosions are considered as markers for irreversible structural damage in patients with rheumatoid arthritis (RA). Several studies have suggested that limited repair of focal bone erosion can occur but no study has so far compared the effect of different biological disease modifying anti-rheumatic drugs (bDMARDs) on erosion repair.

Objectives: To compare focal bone erosion repair in RA patients treated with interleukin-6 receptor inhibitor (tocilizumab, TOC) with patients receiving tumour necrosis factor inhibitors (TNFi)

Methods: Prospective non-randomised observational study in 66 erosive RA patients with active disease (DAS28-ESR>3.2) and inadequate response to methotrexate receiving treatment with TOC monotherapy (n=33) or TNFi in combination with methotrexate (n=33) for 52 weeks. Patients received high-resolution peripheral quantitative computed tomography (HR-pQCT) of the MCP and wrist joints of the dominant hand at baseline and after 52 weeks. Volume (in mm³) of the largest ("sentinel") erosion in the MCP joints and in the wrist was assessed by two readers blinded for treatments and for the sequence of the images. Demographic (sex, age, body mass index, smoking, Charlson comorbidity index) and disease specific parameters (disease duration, ACPA and RF status) were assessed at baseline and activity scores (DAS28, SDAI, CDAI, HAQ) at baseline and every three months thereafter.

Results: Groups were balanced for age, sex, BMI and comorbidities as well as disease duration, disease activity, functional state, autoantibody status and bone damage at baseline. TOC (DAS28-ESR: baseline: 6.2 ± 0.5 ; 52wk: 2.3 ± 1.0) and TNFi (DAS28-ESR: baseline: 6.3 ± 0.6 ; 52wk: 2.8 ± 1.2) significantly reduced

disease activity to a similar extent, achieving DAS28 remission in 22/33 and 19/33 patients, respectively, after 52 weeks. Volumes of the sentinel erosions significantly decreased in the MCP joints of TOC patients (-1.0 ± 1.1 mm³), while remaining stable in TNFi treated patients (-0.05 ± 0.9 mm³) (TOC vs. TNFi: $p < 0.001$). Similar effects were observed in the wrist (TOC: -2.9 ± 5.6 mm³; -0.08 ± 4.1 mm³) with significant differences between the two groups ($p = 0.0017$). Erosion repair was particularly frequent in RA patients reaching fast remission within the first 3 months of treatment.

Erosion repair in the metacarpophalangeal joints of tocilizumab treated RA patients after 52 weeks

Y axis shows the volume of the sentinel erosion at baseline (black circles) and 52-weeks follow-up (red squares), x-axis the patient numbers (N=33)

Abstract FRI0050 – Figure 1. Erosion repair in the metacarpophalangeal joints of tocilizumab treated RA patients after 52 weeks

Y axis shows the volume of the sentinel erosion at baseline (black circles) and 52 weeks follow-up (red squares), x-axis the patient numbers (n=33)

Conclusions: The REBONE study shows that TOC has higher efficacy than TNFi to repair existing bone erosions in patients with RA. In contrast, the effects of TOC and TNFi on the inflammatory symptoms of RA are comparable. These data suggest that IL-6 is the central factor for the disturbed homeostasis between bone resorption and bone formation in the joints of RA patients.

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FRI0051 **THE RISK OF ASEPTIC ARTHROPLASTY LOOSENING IN PATIENTS WITH RHEUMATOID ARTHRITIS**

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Background: Total joint arthroplasty (TJA) of the hip (THA) and knee (TKA) are well-established operations for end stage degenerative or inflammatory joint disease, and has excellent outcomes. In rheumatoid arthritis (RA), it is performed in about 25% of the patients.¹ According to registry data septic complications after TJA are more frequent in RA than in osteoarthritis (OA), which is likely linked to the immunomodulatory therapy that RA patients receive.² However, aseptic prosthesis loosening (APL) is the most common complication and it remains unclear whether RA *per se* is also a risk factor for non-infectious complications, e.g. by the presence of higher levels of systemic inflammation.

Objectives: To compare the rates of APL between OA and RA patients, and to investigate the influence of disease activity levels on the risk for APL in RA patients.

Methods: We identified all patients who underwent THA and TKA between 2002 and 2015 at our academic centre, and linked them with an existing prospective RA database to identify documented RA patients. Age and sex-matched OA patients were used as controls. Our primary endpoint were radiographic signs of APL as previously established.^{3,4} Radiographs were evaluated by two independent observers blinded to the clinical diagnosis.

To explore the effects of systemic inflammation, we compared the time integrated level of disease activity by the Simplified Disease Activity Index (SDAI) during the year before an x-ray indicated loosening (for those with loosening) with the respective levels over one year before the last available x-ray (for those without loosening).

We used nonparametric tests and the chi-square test to compare rates of loosening between RA and OA patients and to compare AUC SDAI between patients with and without APL. Additionally, we calculated a Cox proportional hazard