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SAT0097

RISK OF PREVENTABLE HOSPITALISATION BEFORE AND AFTER DIAGNOSIS AMONG RHEUMATOID ARTHRITIS PATIENTS COMPARED TO CONTROLS

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Background: Rheumatoid arthritis (RA) generally requires intensive medical intervention, which along with the progression of the disease itself, may lead to the occurrence of comorbidities and hospitalisation that can be prevented with a quality primary care. We assessed the risk of preventable hospitalizations in RA patients, for whom preventable hospitalizations have not been well studied. We compare the incidence rate of preventable hospitalizations in newly-diagnosed RA patients and non-RA patients using data from the Taiwan National Health Insurance (NHI) Database.

Objectives: To investigate the risk of preventable hospitalisation before and after diagnosis between RA and non RA patients.

Methods: 11 852 incident RA patients and 59 260 age-, sex-, and index year-matched controls were identified from the Taiwan National Health Insurance Database. Index date was defined as the initial diagnosis date for RA patients and this date was assigned to their matched controls. The incidence and incidence rate ratios (IRRs) of preventable hospitalisation between RA patients and controls were estimated using conditional Poisson regression adjusted for age, sex, Elixhauser Comorbidity Index, number of outpatient visits and hospitalizations 1 year prior to index date, residence urbanisation, income levels, occupation and the number of physicians practicing near the patients' residence.

Results: The overall incidence of preventable hospitalisation in RA patients and controls was 1.71 vs 0.95 events per 1000 person-months, corresponding to adjusted incidence rate ratio (IRR) of 1.43 (95% CI, 1.35–1.51). The crude IRR for preventable hospitalisation was 1.84 (1.61–2.11) one year prior to RA diagnosis. Adjusted IRRs (95% CI) for preventable hospitalisation categories were 1.43 (1.22–1.67) for chronic obstructive pulmonary disease, 1.28 (1.02–1.62) for asthma, 1.76 (1.62–1.91) for bacterial pneumonia, 1.47 (1.35–1.61) for urinary tract infection.

Conclusions: This population-based study indicates that RA is independently associated with a higher risk of preventable hospitalisation, and the risk was already greater prior to formal diagnosis of RA. These results signal gaps in the care and management of RA patients in this population.

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SAT0098

PATIENT AND DISEASE CHARACTERISTICS THAT PREDICT SWITCHING FROM A TNF INHIBITOR TO ANOTHER BIOLOGIC OR TARGETED SYNTHETIC DMARD IN PATIENTS WITH RA IN CLINICAL PRACTICE

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Background: Specific patient demographics or disease characteristics may be associated with switching from one therapy to another for patients with RA. Identifying these predictive factors may help inform prospective treatment decisions.

Objectives: To examine factors predicting switching among patients with RA from a TNF inhibitor (TNFi) to a subsequent biologic (b)DMARD (TNFi or non-TNFi [abatacept, tocilizumab, rituximab]) or the targeted synthetic (ts)DMARD tofacitinib.

Methods: This analysis included patients aged ≥ 18 years, who were enrolled in a large sequential RA registry established in October 2001 and who initiated a TNFi on/after 1 January 2005 and had ≥ 24 months' follow-up. Switch was defined as discontinuation of a TNFi and initiation of another bDMARD or tofacitinib within 6 months. Of TNFi initiations, 67% were randomly selected as a prediction dataset and used to develop the final model; 33% were considered in the validation dataset. Logistic regression modelling was used to predict switching status; baseline demographics (age, sex, race), patient attributes (smoking status, BMI, work status) and clinical characteristics (RF and anti-cyclic citrullinated protein status, erosive disease, history of co-morbidities, prior and current treatment, disease activity, patient-reported pain, fatigue, morning stiffness) were considered. Goodness-of-fit statistics were used to assess model fit and receiver operating characteristic curves (area under the curve [AUC]) to validate the model.

Results: Among 6909 eligible TNFi initiations, there were 1343 switchers (prediction dataset: 4623 TNFi initiations, including 898 switchers). Compared with non-switchers, switchers were younger, had a shorter duration of RA and higher baseline mean CDAI score. Fewer switchers were positive for erosive disease or on combination therapy with MTX, but more were on monotherapy or combination therapy with a non-MTX DMARD. After investigation of several models, the best-fit model (Table) to predict switching from a TNFi yielded an AUC=0.705 (sensitivity=81%; false positive rate=49%).

Table 1. Predictive Model for TNFi Switching in Patients with RA

Covariate	Value	Odds ratio (95% CI)	p value
Age (10 year effect)		0.85 (0.79–0.92)	<0.0001
Duration of RA, years	0–2	Reference:	
	3–5	0.85 (0.67–1.07)	0.17
	6–10	0.65 (0.51–0.85)	0.001
	>10	0.52 (0.41–0.66)	<0.0001
History of diabetes		1.26 (0.94–1.68)	0.12
History of malignancy		0.66 (0.47–0.94)	0.02
History of serious infection		1.16 (0.82–1.64)	0.41
Prior number of conventional DMARDs		1.17 (1.08–1.27)	0.0002
Number of prior non-TNFi	0	Reference:	
	1	1.17 (0.88–1.55)	0.29
	≥ 2	1.36 (0.90–2.05)	0.15
CDAI score	Remission (0–2.8)	Reference:	
	Low (>2.8–10)	1.72 (1.11–2.66)	0.01
	Moderate (>10–22)	2.75 (1.82–4.16)	<0.0001
	High (>22)	2.75 (1.82–4.14)	<0.0001
Year of initiation		1.33 (1.28–1.37)	<0.0001

Conclusions: The model identified in this analysis revealed that factors including age, duration of RA, CDAI, history of co-morbid conditions, prior treatment and year of TNFi initiation predicted switching from a TNFi to another bDMARD or tsDMARD.

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SAT0099

SARCOPENIA IS ASSOCIATED WITH JOINT DAMAGE IN RHEUMATOID ARTHRITIS: A CROSS-SECTIONAL STUDY

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Background: The association of metabolic status with disease characteristics of rheumatoid arthritis (RA) remain controversial. Body composition (BC) instead of body mass index (BMI) has been more and more recommended to assess metabolic status.

Objectives: To investigate the characteristics of BC in RA patients and their association with RA disease characteristics.

Methods: BC was assessed in RA patients and control subjects by bioelectric impedance analysis. Overfat was defined by body fat percentage (BF%) as $\geq 25\%$ for men and $\geq 35\%$ for women. Sarcopenia was defined by skeletal muscle mass

Characteristics	BF% Normal fat (n=309)	Overfat (n=148)	P	Non- sarcopenia (n=405)	SMMI Sarcopenia (n=52)	P
Female, n (%)	253 (81.9)	125 (84.5)	0.494	353 (87.2)	25 (48.1)	<0.001
Age, yrs, median (IQR)	49 (37~58)	54 (48~61)	<0.001	50 (41~58)	57 (27~63)	0.397
Disease duration, month, median (IQR)	48 (24~96)	64 (27~141)	0.005	52 (24~108)	66 (24~129)	0.382
Positive RF, n (%)	203 (65.7)	97 (65.5)	0.974	259 (64.0)	41 (78.8)	0.033
Positive ACPA, n (%)	212 (68.6)	105 (70.9)	0.612	283 (69.9)	34 (65.4)	0.508
Core disease activity indicators						
28TJC, median (IQR)	2 (0~5)	2 (0~8)	0.145	2 (0~5)	4 (0~9)	0.091
28SJC, median (IQR)	1 (0~4)	1 (0~4)	0.248	1 (0~4)	2 (0~8)	0.200
ESR, (mm/h), median (IQR)	26 (15~44)	32 (15~52)	0.133	26 (14~45)	42 (26~74)	<0.001
CRP, (mg/L), median (IQR)	3.8 (3.3~12.9)	5.4 (3.3~20.0)	0.008	3.8 (3.3~12.4)	15.5 (5.2~32.8)	<0.001
DAS28-CRP, median (IQR)	3.2 (2.0~4.1)	3.4 (2.3~4.8)	0.043	3.1 (2.0~4.2)	4.0 (2.6~5.5)	0.003
HAQ-DI, median (IQR)	0.13 (0~0.50)	0.38 (0~1.00)	<0.001	0.13 (0~0.63)	0.50 (0.03~1.25)	0.002
Functional limitation, n (%)	38 (12.3)	32 (21.6)	0.010	53 (13.1)	17 (32.7)	<0.001
Radiographic assessment						
mTSS, median (IQR)	11.0 (3.8~32.5)	16.5 (6.6~50.8)	0.005	12.0 (4.0~32.5)	24.0 (10.0~79.8)	0.001
JSN subscore, median (IQR)	3.0 (0~11.8)	3.0 (0~20.0)	0.158	2.5 (0~12.3)	9.0 (1.1~34.1)	0.001
Erosion subscore, median (IQR)	9.0 (2.5~21.0)	11.8 (6.0~29.8)	0.001	9.5 (3.0~21.0)	19.0 (6.1~47.6)	0.002
RJD, n (%)	168 (54.4)	95 (64.2)	0.047	225 (55.6)	38 (73.1)	0.016

Functional limitation, HAQ-DI score<1; RJD, radiographic joint damage (mTSS>10).

index (SMMI)≤8.87 kg/m² in men and ≤6.42 kg/m² in women. Clinical data including disease activity, function and radiographic assessment were collected.

Results: There were 457 RA patients and 1,860 control subjects recruited. In RA patients, there were 17.7%, 58.0%, 20.1% and 4.2% with underweight, normal weight, overweight, or obesity respectively, and 32.4% were overfat, 11.4% with sarcopenia. Comparisons to control subjects in age and gender stratification showed that male RA patients had significantly lower BMI and SMMI with higher percentage of underweight and sarcopenia in almost all age subgroups; female patients had lower SMMI in all age subgroups and lower BMI with higher prevalence of sarcopenia but higher BF% at age ≤30 and 51–60 years (all *P*<0.05, figure 1). RA patients with sarcopenia had higher rate of functional limitation, higher disease activity indicators and radiographic scores (all *P*<0.05, table 1). Multivariate logistic regression analyses showed SMMI (*OR*=0.633, 95%*CI*: 0.507~0.790, *P*<0.001) and sarcopenia (*OR*=2.154, 95%*CI*: 1.032~4.497, *P*=0.041) were associated with radiographic joint damage.

Abstract SAT0100 – Table 1. Patient characteristics at first clinical visit.

Features	reRA (n=70)	Other (n=240)	Populations taRA (n=102)	reRA matched** (n=50)	taRA matched** (n=50)	Differences (p-value*)	reRA vs taRA (unmatched)	reRA vs taRA (matched**)
Characteristics						Across all three unmatched groups		
First Visit (month/year)	12/2005 (03/2002; 03/ 2009) [#]	06/2006 (08/ 2001; 08/2010)	12/2009 (10/ 2005; 11/2012)	06/2007 (12/ 2003; 07/2010)	07/2007 (09/ 2004; 08/2010)	<0.001	<0.001	0.786
Time to First Treatment (years from onset of symptoms)	3.17 (4.10)	1.38 (2.61)	1.45 (2.80)	2.61 (3.76)	0.88 (0.97)	<0.001	0.001	0.003
Female (%)	92.9	75.4	70.6	94	70	0.002	<0.001	0.002
Age at Symptom Onset (years)	44.37 (14.44) [†]	46.88 (14.53)	51.14 (14.08)	46.73 (14.02)	53.42 (12.11)	0.006	0.002	0.012
CDAI (0–76)	26.06 (12.22)	17.94 (12.49)	15.39 (9.81)	25.36 (11.98)	16.93 (9.42)	<0.001	<0.001	<0.001

* ANOVA, t-test, or Chi², as appropriate; ** matched for date of first clinical visit;

† mean (SD)/% as applicable; # date: median (quartiles)

Figure 1. Comparison of BMI and BC between RA patients and control subjects in age and gender stratification. Underweight, BMI<18.5 kg/m²; Normal weight, 18.5 kg/m²<BMI<24 kg/m²; Overweight, 24 kg/m²≤BMI<28 kg/m²; Obesity, BMI≥28 kg/m²; Overfat, BF%≥25% for men and ≥35% for women; Sarcopenia, SMMI≤8.87 kg/m² in men and ≤6.42 kg/m² in women; * *P*<0.05, ** *P*<0.01, *** *P*<0.001.

Conclusions: This study showed lower SMMI and higher prevalence of sarcopenia in RA patients which were positively associated with joint damage.

Disclosure of Interest: None declared

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SAT0100 THE DETERMINANTS OF REFRACTORY RHEUMATOID ARTHRITIS

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Background: It is an ongoing matter of research, whether the course of rheumatoid arthritis (RA) can be altered by an early intervention, a concept historically referred to as the “window of opportunity”.¹ With the inherent challenge of underlying self-limiting disease in early patients, it remains unclear, whether the ultimate disease course of definite RA is really affected by the timing of initial treatment.

Objectives: To explore whether the long-term course of RA is different according to the delay of initial treatment.

Methods: Patients were identified from a longitudinal clinical database, and patients with refractory RA (“reRA”) were compared with patients with treatment amenable RA (“taRA”). reRA was defined as ≥3 treatment courses (≥1 biological) over ≥18 months since diagnosis without reaching low disease activity (LDA) or remission (REM) defined by a Clinical Disease Activity Index (CDAI, ≥10); taRA patients reached at least LDA within their first 2 treatment courses. We performed both matched and adjusted logistic regression analysis to compare differences in timing of first treatment between these two groups.