POS1419

PREDICTIVE FACTORS FOR PULMONARY PROGRESSION IN PATIENTS WITH CONNECTIVE TISSUE DISEASE AND INTERSTITIAL LUNG DISEASE

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Background: Interstitial lung disease (ILD) is associated with decreased quality of life and higher mortality risk in patients with connective tissue disease (CTD). Outcome and treatment response to immunosuppressive therapies is unpredictable, and therefore the management of CTD-ILD can be challenging.

Objectives: Our study aimed to identify clinical and imaging factors that are predictive for outcome in patients with CTD-ILD.

Methods: We performed a retrospective cohort study in patients with CTD-ILD who were treated in our centre between 2004 and 2018. Clinical, biochemical data as well as pulmonary function test (PFT) and high-resolution computed tomography (HRCT) results were recorded. Two experienced chest radiologists independently and blindly reviewed the HRCT's. When the two chest radiologists assessed the ILD pattern differently, a diagnosis was made by consultation of a third expert. The ILD patterns were classified as fibrotic or inflammatory. Overall survival and progressive fibrosing interstitial lung disease (PF-ILD, defined as a significant decline of PFT and HRCT) after two years of treatment were assessed using a Kaplan-Meier plot. Multivariable Cox regression was including for treatment, comorbidity, and age as variables. Factors with a p value < 0.2 in the univariate analysis were included in the multivariate analysis. The correlation between the variation of serum markers and PFT over-time was evaluated with Spearman's Rho.

Results: In total, 150 patients with CTD-ILD were included, of which 53 (35.3%) had systemic sclerosis, 19 (12.7%) Sjogren's syndrome, 29 (19.3%) inflammatory myopathy, 24 (16%) rheumatoid arthritis, 5 (3.3%) systemic lupus erythematosus, 4 (2.7%) mixed connective tissue disease, and 16 (10.7%) undifferentiated connective tissue disease patients. Median disease duration of CTD was 14 months (IQR 2–73) in patients with CTD diagnosis before ILD onset. The median follow-up duration was 40 months (IQR 27.3–60.8). Thirty (20%) deaths occurred, in which the cause of death was a pulmonary infection in 6 (4%) patients and a respiratory failure due to ILD in 10 (6.7%) patients. PF-ILD occurred in 82 (54.7%) patients, which was associated with poor overall survival (HR 3.03, 95%CI 1.15–7.98) (Figure 1). Age, smoking, and steroid usage were associated with increased mortality risk as well (Table 1). There was no dose-related effect of smoking on mortality.

Figure 1. The Kaplan-Meier plot for progressive fibrosing interstitial lung diseases (PF-ILD). PF-ILD was defined as pulmonary function decline or high-resolution computed tomography progression after two years of treatment.

Inflammatory patterns on baseline HRCT were correlated with a lower risk of FVC decline than fibrotic patterns (OR 0.24, 95%CI 0.09–0.64). The increase in CA15.3 level was associated with the decline in FVC (Rho -0.308, p=0.037). Besides, the elevation in CRP was associated with the reduction in FVC (Rho -0.302, p=0.006) and DLCO (Rho -0.268, p=0.019).

Conclusion: Our study identified several factors associated with outcomes. Age, smoking, and steroid treatment increased the risk of mortality in patient with CTD-ILD. Inflammatory HRCT pattern at baseline revealed a better pulmonary outcome than a fibrotic pattern. The patients having PF-ILD after two years of treatment showed a higher mortality risk.

Table 1. Multivariable Cox-regression for the clinical risk of mortality.

Clinical factor	Crude HR (95%CI)	P	Adjusted HR (95%CI)	p
Age	1.11 (1.06–1.15)	1.7*10 ⁻⁶	1.12 (1.07–1.17)	3.54*10 ⁻⁶
Smoking	1.64 (0.79–3.43)	0.187	2.53 (1.11–5.78)	0.028
Congestive heart failure	1.86 (0.75–4.58)	0.179	1.17 (0.47–2.91)	0.737
MMF	0.55 (0.23–1.35)	0.195	0.73 (0.29–1.85)	0.512
Steroid	4.37 (1.67–11.45)	0.003	4.96 (1.84–13.40)	0.002

MMF, mycophenolate mofetil; HR, hazard ratio.

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POS1420

RISK OF SERIOUS INFECTIONS IN OFFSPRING EXPOSED IN UTERO TO USTEKINUMAB OR VEDOLIZUMAB

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Background: Ustekinumab, an IL-12/23 inhibitor, is indicated in adult patients with inflammatory bowel disease (IBD), psoriasis (PsO), and psoriatic arthritis (PsA) and vedolizumab, an $\alpha_4\beta_7$ receptor antagonist is indicated in IBD only. Both are monoclonal antibodies harbouring an Fc portion, which are actively transported across the placenta, often reaching higher fetal than maternal levels. As fetuses could be exposed to therapeutic or supra-therapeutic levels of these drugs, there are concerns that these agents could cause immunosuppression after birth. However, evidence is lacking.

Objectives: We compared the risk of serious infections in offspring exposed to ustekinumab, vedolizumab, tumour necrosis factor inhibitors (TNFi), and non-biologic immunosuppressives versus offspring unexposed during pregnancy among women with IBD, PsO and/or PsA.

Methods: We conducted a retrospective cohort study using the US MarketScan database, an employment insurance database. We included live births (01/2011–12/2018) among women with PsO, PsA, and/or IBD. Drug exposure was defined as ≥ 1 filled prescription or infusion procedure code during pregnancy. In offspring, we evaluated serious infections within the first year of life as any single inpatient infection code. We performed multivariate analyses using logistic regression, adjusting for maternal age, co-morbidities, corticosteroid use, concomitant drug use, and preterm birth.

Results: We included 16,115 offspring born to 7,612 women with PsO/PsA, 8,315 with IBD, and 188 with PsO/PsA and IBD. A total of 52 offspring were exposed to ustekinumab, 43 to vedolizumab (including 7 to both TNFi and vedolizumab), 1,578 to TNFi, 1,857 to non-biologic immunosuppressives alone, and 12,585 unexposed to any drug. The percentage of serious infections in offspring exposed to ustekinumab was 3.9% (95% CI 0.5–13.9), versus 2.7% (95% CI 1.9–3.6) for TNFi, 2.3% (95% CI 0.06–13.0) for vedolizumab and 2.6 (95% CI 2.3–2.8) for those unexposed to any drug, though all estimates had wide, overlapping confidence intervals. Compared to children unexposed to any drug, there was a potential trend for increased risk with ustekinumab (OR 1.54, 0.37–6.45), but CIs were wide and included the null. For those exposed to vedolizumab (OR 0.82, 0.15–5.91) or TNFi (OR 0.98, 0.68–1.40) there was no clear excess risk.

Conclusion: In a large cohort, we did not detect a clear excess risk for offspring exposed in-utero to vedolizumab or anti-TNF's, compared to unexposed patients; there was a signal for more events with ustekinumab, but confidence intervals were wide. Ongoing caution, as well as more research on short and long-term effects, is warranted for biologics actively transported across the placenta

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POS1421

HIGHER SERUM URIC ACID IS ASSOCIATED WITH INCREASED RISK OF OBESITY IN CHINESE ADULTS: A LONGITUDINAL DATA ANALYSIS

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Background: Hyperuricemia has been reported to be significantly associated with risk of obesity. However, previous studies on the association between serum uric acid (SUA) and body mass index (BMI) yielded conflicting results.

Objectives: The present study examined the relationship between SUA and obesity among Chinese adults.

Methods: Data were collected at Guangdong Second Provincial General Hospital in Guangzhou City, China between January 2010 and December 2018. Participants with ≥ 2 medical checkup times were included in our analyses. Logistic regression model (LRM) was performed for data at baseline. For all participants, generalized estimation equation (GEE) model was used to assess the association between SUA and obesity, where the data were repeatedly measured over the nine-year study period. We calculated the cut-off values for SUA of obesity using the receiver operating characteristic curves (ROC) technique.

Results: A total of 15,959 participants (10,023 males and 5,936 females) were included in this study, with an average age of 37.38 years (SD: 13.27) and average SUA of 367.05 $\mu\text{mol/L}$ (SD: 97.97) at baseline, respectively. Finally, 1078 participants developed obesity over the 9-year period. The prevalence of obesity was approximately 14.2% for high SUA level. In logistic regression analysis at baseline, we observed a positive association between SUA and risk of obesity: OR=1.84 (95% CI: 1.77,1.90) for per-SD increase in SUA. Considering repeated measures over 9-year for all participants in the GEE model, the per-SD OR was 1.85 (95% CI: 1.77,1.91) for SUA and the increased risk of obesity were greater for male (OR=1.45) and elderly participants (OR=1.01). The SUA cutoff points for risk of obesity using ROC curves were approximately consistent with the international standard.

Conclusion: Our study observed higher SUA level was associated with increased risk of obesity. More high-quality research is needed to further support these findings.

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Figure 1. Location of Guangdong Second Provincial General Hospital (Guangzhou, Guangdong, China) and the prevalence of obesity by different years stratified by baseline SUA.

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POS1422

CORRELATES OF TESTING POSITIVE FOR SARS-COV-2 IN PATIENTS WITH RHEUMATIC AND MUSCULOSKELETAL DISEASES

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Background: Many studies on COVID-19 outcomes in patients with RMD have either restricted to COVID positive RMD patients or compared them to the general clinic population as a comparator. Given heterogeneity in behaviors and risks, clinical characteristics associated with a positive diagnosis among patients with RMD seeking testing for Sars-CoV-2 remain less well studied.

Objectives: Among patients with RMD receiving a Sars-CoV-2 PCR test, we aimed to identify RMD-related factors associated with a positive test result.

Methods: Among patients seen at least once in the University of Washington (UW) rheumatology clinics between March 2018 to March 2020, we reviewed electronic medical records to identify patients undergoing Sars-CoV-2 PCR testing from March 1 through October 31, 2020. Patients with RMD were categorized into two groups: those who tested positive for Sars-CoV-2 and those who tested negative. We randomly selected patients from the negative group in a 2:1 ratio for further data abstraction. Student's *t*-test and Chi-squared tests were used to compare continuous and categorical variables, respectively, between the groups. To determine the correlates of testing positive for Sars-CoV-2, specifically RMD medication use and disease activity, we constructed different multivariable logistic regression models adjusted for age, sex, race/ethnicity, presence of comorbidities, body mass index, and smoking.

Results: A total of 2768 RMD patients underwent SARS-CoV-2 PCR testing within the UW system, of whom 43 (1.5%) were positive at least once. Three patients with incomplete information were excluded. Patients who tested positive had higher prevalence of end stage renal disease (ESRD)/chronic kidney disease (CKD) (24% versus 11%), had higher rates of active disease (24% versus 20%), were older (>55 years) (mean age 57.3 versus 54.8 years), male (63% versus 55%), non-white race/ethnicity (32% versus 26%), and higher prevalence of multiple comorbidities (42% versus 31%) (Table 1). In the multivariable models, neither RMD medication use (versus no use, Table 1) nor high disease activity (vs low disease activity/remission) were statistically significantly associated with COVID-19 positivity. Among the 41 COVID-19 positive patients, a majority recovered without specific treatments, although approximately one third of the positive patients were hospitalized and three deaths were observed.

Conclusion: In this study, patients who tested positive did not differ in many ways from those who tested negative.

Table 1. Baseline characteristics of the patients prior to COVID testing

Variables	All (N=126)	COVID Positive (N=41)	COVID Negative (N=85)	P value
Age in years – mean (SD)	55.6 (15.3)	57.3 (16.3)	54.8 (14.9)	0.40
Sex				0.39
Male	73 (57.9)	26 (63.4)	47 (55.3)	
Female	53 (42.1)	15 (36.6)	38 (44.7)	
Race				0.39
White	89 (71.2)	26 (63.4)	63 (74.1)	
Other race	35 (28.2)	13 (31.7)	22 (25.9)	
Missing	2 (1.6)	2 (4.9)	0 (0.0)	
Rheumatic disease				0.64
OA/Crystal/Fibromyalgia	37 (29.4)	11 (26.8)	26 (30.6)	
RA/SpA	32 (25.4)	9 (22.0)	23 (27.1)	
All others	57 (45.2)	21 (51.2)	36 (42.3)	
Rheumatic disease activity				0.57
Active	27 (21.4)	10 (24.4)	17 (20.0)	
Not active	99 (78.6)	31 (75.6)	68 (80.0)	
Co-morbidities				
Diabetes mellitus (%)	25 (19.8)	9 (22.0)	16 (18.8)	0.68
Hypertension	48 (38.1)	20 (48.8)	28 (32.9)	0.09
Cardiovascular disease	23 (18.3)	9 (22.0)	14 (16.5)	0.46
Lung disease	25 (19.8)	10 (24.4)	15 (17.7)	0.37
Cancer	10 (7.9)	3 (7.3)	7 (8.2)	0.86
ESRD/CKD	19 (15.1)	10 (24.4)	9 (10.6)	0.04*

BMI: Body mass index; SD: Standard deviation; OA: Osteoarthritis; Crystal: Crystalline diseases; RA: Rheumatoid arthritis; SpA: Spondyloarthritis

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POS1423

LIFESTYLE HABITS IN PATIENTS WITH RHEUMATOID ARTHRITIS – A CROSS SECTIONAL STUDY ON TWO SCANDINAVIAN COHORTS

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