

Supplementary file

Supplementary file of manuscript entitled "Demographic and disease related predictors of abnormal lung function in patients with established inflammatory polyarthritis and a comparison with the general population".

Suzanne MM Verstappen, Mark Lunt, Robert N Luben, Jackie Chipping, Tarnya Marshall, K-T Khaw, N Wareham, WG Dixon, IN Bruce and DPM Symmons

Overview medication for respiratory symptoms:

Ventolin, aerolin, ventodisks, terbutataline, bricanyl, eformoterol, foradil, ipratropium, atrovent, combivent, duovent, salmeterol, serevent, oxis, formoterol, beclomethasone, dipropionate, becotide, becloforte, aerobec, beclazone, becodisk, qvar, budesonide, pulmicort, fluticasone propionate, flixotide, seretide.

Underlying causes of death

Overview of underlying causes of death (ICD10 code; n=number of patients) in patients who died because of respiratory diseases before the 15 year follow-up visit: pneumonia (J18.0, n=11); lobar pneumonia, unspecified (J18.1, n=1); pneumonia, unspecified (J18.9, n=4); emphysema (J43, n=1); emphysema, unspecified (J44.9, n=11); asthma (J45, n=1); pneumonitis due to food and vomit (J69.0, n=1); adult respiratory distress syndrome (J80, n=1); pulmonary oedema (J81, n=1); other interstitial pulmonary diseases with fibrosis (J84.1); and respiratory disorder, unspecified (J98.9, n=1).

Table S1. Baseline predictors of obstructive and restrictive lung disease in patients cumulatively fulfilling the 1987 ACR criteria for RA..

	N	Obstructive lung disease			Restrictive lung disease			
		Normal N=236	N	Obstructive N=24	OR (95%CI)	N	Restrictive N=37	OR (95%CI)
<i>Demographic characteristics</i>								
Age, years	236	45 (13)	24	52 (10)	1.05 (1.01 to 1.08)	37	51 (13)	1.04 (1.01 to 1.06)
Gender, female	236	183 (78%)	24	12 (50%)	0.29 (0.12 to 0.68)	37	16 (43%)	0.22 (0.11 to 0.45)
Smoking status	236		24			37		
Never		89 (37%)		1 (4%)	1		13 (35%)	1
Past		95 (40%)		12 (50%)	7.93 (0.98 to 63.97)		14 (38%)	0.57 (0.23 to 1.39)
Current		52 (22%)		11 (46%)	26.24 (3.08 to 223.71)		10 (27%)	1.38 (0.53 to 3.60)
<i>Clinical characteristics</i>								
Swollen joint count, 28 joints	236	6 [2 – 11]	24	7 [2.5 – 11.5]	1.02 (0.96 to 1.09)	37	7 [3 – 14]	1.04 (0.98 to 1.10)
Tender joint count, 28 joints	236	5 [2 – 11]	24	4 [1 – 19]	1.04 (0.98 to 1.10)	37	9 [4 – 13]	1.06 (1.01 to 1.11)
DAS28 _{CRP(3)}	194	4.00 [3.13 – 4.85]	17	4.54 [3.70 – 5.79]	1.32 (0.89 to 1.97)	29	4.40 [3.59 – 5.90]	1.45 (1.06 to 1.99)
HAQ	230	0.625 [0.25 – 1.25]	24	0.75 [0.38 – 1.2]	0.99 (0.51 to 1.92)	37	1.25 [0.38 – 1.63]	2.15 (1.24 to 3.70)
CRP, mg/L	194	4.5 [0.2 – 12]	17	8 [5 – 11]	0.99 (0.97 to 1.02)	29	10 [2 – 18]	1.00 (0.99 to 1.02)
RF, positive	214	59 (28%)	19	8 (42%)	2.27 (0.82 to 6.26)	32	12 (38%)	1.63 (0.72 to 3.69)
ACPA, positive	189	52 (28%)	13	3 (23%)	0.75 (0.19 to 2.93)	21	10 (48%)	2.29 (0.87 to 6.05)
Shared epitope:	221		23			32		
0 allele		89 (40%)		7 (30%)	1		13 (41%)	1
1 allele		95 (43%)		10 (43%)	1.33 (0.47 to 3.77)		14 (44%)	0.89 (0.38 to 2.11)
2 alleles		37 (17%)		6 (26%)	2.01 (0.60 to 6.75)		5 (16%)	0.79 (0.24 to 2.55)
Nodules	236	13 (6%)	24	3 (13%)	2.68 (0.65 to 11.00)	37	5 (14%)	4.17 (1.27 to 13.72)

N = number of patients with available data. Values are mean (SD), median [IQR] for continuous variables or numbers (%) for categorical variables. DAS28 = 28 joint Disease Activity Score; HAQ = Health assessment Questionnaire; CRP = C-reactive protein; ACPA = anti-citrullinated protein antibody ; RF = Rheumatoid Factor; RA = Rheumatoid Arthritis. See patients and methods for description of obstructive, restrictive and normal spirometry lung function test. OR (95%CI) = odds ratio and 95% confidence interval. Bold numbers = statistically significant (p<0.05).

Table S2. Associations of obstructive and restrictive lung disease: Cross-sectional analysis at 15 year in patients cumulatively fulfilling the 1987 ACR criteria for RA.

	Obstructive lung disease			Restrictive lung disease				
	N	Normal N=236	N	Obstructive N=24	OR (95%CI)	N	Restrictive N=37	OR (95%CI)
<i>Demographic characteristics</i>								
Age, years	236	61 (13)	24	68 (10)	1.04 (1.00 to 1.08)	37	67 (13)	1.04 (1.01 to 1.07)
Gender, female	236	183 (76%)	24	12 (50%)	0.29 (0.12 to 0.68)	37	16 (43%)	0.22 (0.11 to 0.45)
BMI	236	27.5 (5.0)	24	27.7 (4.7)	1.02 (0.93 to 1.12)	37	29 (5.3)	1.07 (1.00 to 1.16)
Smoking status	236		24			37		
Never		89 (38%)		1 (4%)	1		13 (35%)	1
Past		120 (51%)		17 (71%)	10.26 (1.31 to 80.15)		16 (43%)	0.57 (0.24 to 1.34)
Current		27 (11%)		6 (25%)	26.48 (2.85 to 246.19)		8 (23%)	2.21 (0.75 to 6.45)
<i>Clinical characteristics</i>								
Swollen joint count, 28 joints	236	1 [0 – 3]	24	1 [0 – 4]	1.05 (0.94 to 1.17)	37	0 [0 to 3]	0.99 (0.88 to 1.10)
Tender joint count, 28 joints	236	2 [0 – 6]	24	2 [0 – 11]	1.04 (0.98 to 1.10)	37	1 [0 to 7]	1.02 (0.97 to 1.08)
DAS28 _{CRP(3)}	195	3.04 [2.22 – 4.07]	22	3.46 [2.10 – 4.43]	1.35 (0.92 to 1.98)	24	3.15 [2.44 to 3.73]	1.16 (0.76 to 1.77)
HAQ	235	0.88 [0.25 – 1.63]	24	1.06 [0.56 – 1.81]	1.56 (0.89 to 2.72)	37	1.625 [1.0 to 2.0]	2.66 (1.59 to 4.42)
CRP, mg/L	195	8.8 [3.5 – 16.4]	22	9.3 [5.9 – 23.1]	1.01 (0.99 to 1.03)	24	18.3 [6.5 to 25.2]	1.01 (1.00 to 1.03)
Nodules	236	30 (12.7%)	24	1 (4.2%)	0.32 (0.04 to 2.49)	37	8 (22%)	1.96 (0.77 to 4.95)
Current Methotrexate use	236	80 (34%)	24	5 (21%)	0.45 (0.16 to 1.29)	37	5 (14%)	0.28 (0.10 to 0.78)
Current oral steroids use	236	23 (10%)	24	5 (21%)	1.94 (0.63 to 6.03)	37	10 (27%)	2.86 (1.15 to 7.12)
<i>Respiratory symptoms</i>								
Medication for respiratory symptoms	236	26 (11%)	24	8 (33%)	4.98 (1.81 to 7.77)	37	5 (14%)	1.55 (0.52 to 4.61)
Breathlessness	234	31 (13%)	24	7 (29%)	2.81 (1.02 to 7.77)	37	7 (19%)	1.71 (0.64 to 4.53)

N = number of patients with available data. Values are mean (SD), median [IQR] for continuous variables or numbers (%) for categorical variables. DAS28 = 28 joint Disease Activity Score;

HAQ = Health assessment Questionnaire; CRP = C-reactive protein; ACPA = anti-citrullinated protein antibody ; RF = Rheumatoid Factor; RA = Rheumatoid Arthritis. See patients and methods for description of obstructive, restrictive and normal spirometry lung function test. OR (95%CI) = odds ratio and 95% confidence interval. Bold numbers = statistically significant (p<0.05).

Table S3. Comparison spirometry data in patients cumulatively fulfilling the 1987 ACR criteria for RA and the general population.

Variable	N/n	Mean (SD) or n (%) General population N=1176	Mean (SD) or n (%) IP patients N=294	Difference: β (95%CI) or OR (95%CI) Adjusted for smoking	Difference: β (95%CI) or OR (95%CI) Adjusted for smoking and BMI
<i>Demographic characteristics</i>					
Age, years	1176/294	63 (11)	63 (11)		
Gender, female	1176/294	804 (68%)	201 (68%)		
Smoking status					
Never		609 (51.8%)	102 (34.7%)		
Past		477 (40.6%)	155 (52.7%)		
Current		90 (7.6%)	37 (112.6%)		
BMI, kg/m ²	1174/294	26.6 (4.0)	28.0 (5.1)		
<i>Abnormal lung function test</i>					
Medication for respiratory symptoms	1492/373	32 (2.7%)	35 (11.9%)		
FEV1*	1176/294	2.33 (0.70)	2.25 (0.67)	-0.08 (-0.14 to -0.01)	-0.06 (-0.12 to -0.003)
FVC*	1176/294	2.78 (0.85)	2.84 (0.83)	0.05 (-0.03 to 0.13)	0.07 (-0.04 to 0.15)
Obstructive lung disease*	871/217	45 (5.2%)	25 (11.5%)	1.89 (1.12 to 3.20)	1.91 (1.12 to 3.26)
Restrictive lung disease*	1010/229	184 (18.2%)	37 (16.2%)	0.84 (0.56 to 1.26)	0.78 (0.52 to 1.18)

N = general population / n = IP patients with available data. * adjusted for smoking status.