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## PCOVID02 - INCIDENCE OF COVID-19 IN IMMUNOMEDIATED DISEASES TREATED WITH BIOLOGICS AND TARGETED SYNTHETIC DISEASE MODIFYING ANTIRHEUMATIC DRUGS

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## Resumen

**Objectives:** To analyze the incidence of COVID-19 among patients with immunomediated inflammatory diseases (IMID) treated with biologic or targeted synthetic disease modified antirheumatic drugs (bDMARD and tsDMARD) and to evaluate the influence of IMID or the therapies on the incidence, evolution of the infection and the need of intensive therapy.

**Methods:** This is an observational, transversal and ambispective study done from 31 January to 15 May 2020. Data were obtained from the clinical medical records from the hospital setting, primary care and community pharmacy. Inclusion criteria were adults with IMID treated with bDMARD or tsDMARD who started the therapy three months before 31 January 2020. Patients with poor adherence to treatments were excluded. COVID-19 was classified as “definitive” (SARS-CoV2 PCR-positive), “possible” (characteristic symptoms and negative PCR) and “suspected” (characteristic symptoms but PCR not done).

**Results:** COVID-19 was diagnosed in 70 (11 definitive, 19 possible and 40 suspected) of 902 patients. The cumulative incidence of definitive COVID-19 was 1.2%. When considering all cases, the incidence would have been of 7.8%. A significant relationship was found between COVID-19 and patients on biosimilars TNF-blockers (OR = 2.308,  $p < 0.001$ ). Patients on anti-B cell therapies had a lower incidence of infection ( $p = 0.046$ ). Patients recovered in 94.3%, with low hospitalization rates (14.3%), pneumonia (14.3%), death (2.9%), or thrombosis (2.9%).

Table 1. Frequency of cases in the two hospitals, type of IMID, type of treatment (bDMARD or tsDMARD) in the 902 patients with and without COVID-19

Total (902)	No COVID-19 (n = 832, 92.2%)	COVID-19 (n = 70, 7.8%)	Difference
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		30 (42.9%)	
		4 (5.7%) Definitive	
	HUIS (n = 536, 59.4%)	12 (17.1%) Possible	
Hospital		14 (20%) Suspected	p = 0.003
		40 (57.1%)	
	HUIL (n = 366, 40.6%)	7 (10%) Definitive	
		7 (10%) Possible	
		26 (37.1%) Suspected	
AGE	52 yr (SD 19)	50 (SD 19)	p = 0.85
Sex (female)	59.4%	61.4	p = 0.737
Diagnosis			
Rheumatoid arthritis (n = 296, 32.8%)	273 (32.8%)	23 (32.9%)	p = 0.994
Spondyloarthritis (1) (n = 360, 39.9%)	324 (38.9%)	36 (51.4%)	p = 0.04 (2)
CD or UC (n = 134, 14.9%)	126 (15.1%)	8 (11.4%)	p = 0.401
Other IMIDs (3) (n = 112, 12.4%)	109 (13.1%)	3 (4.3%)	p = 0.032
Year after diagnosis	8 (SD 8)	6 (SD 9.3)	p = 0.473
Treatment			
Innovator TNF-blockers (4) (n = 314, 34.8%)	287 (34.5%)	27 (38.57%)	p = 0.492
Biosimilar TNF-blockers (5) (n = 229, 25.4%)	199 (23.9%)	30 (42.9%)	P<0.0001
Anti-B cell (6) (n = 67, 7.4%)	66 (7.9%)	1 (1.4%)	p = 0.046
Anti-il 17/23 (7) (n = 97, 10.8%)	92 (11.1%)	5 (7.1%)	p = 0.310
Anti-il-6 (8) (n = 92, 10.2%)	88 (10.6%)	4 (5.7%)	p = 0.197
Vedolizumab (n = 30, 3.3%)	30 (3.6%)	0	p = 0.161
Abatacept (n = 19, 2.3%)	19 (2.3%)	0	p = 0.390
Jak inhibitors (9) (n = 42, 4.76)	40 (4.8%)	2 (2.9%)	p = 0.765
Anakinra (n = 4, 4.4%)	4 (0.5%)	0	
Apremilast (n = 8, 8.9%)	7 (0.8%)	1 (1.4%)	
Months with bDMARD OR tsDMARD	30 (SD 44)	25 (SD 51.5)	p = 0.271
csDMARs (n = 340, 37.7%)	318 (38.2%)	22 (31.4%)	p = 0.260
Methotrexate (n = 187, 20.7%)	173 (20.8%)	14 (20%)	p = 0.875
Leflunomide (n = 58, 6.4%)	55 (6.6%)	3 (4.3%)	p = 0.614
Azathioprine (n = 38, 4.2%)	36 (4.3%)	2 (2.9%)	p = 0.762
Sulfasalazine (n = 26, 2.9%)	25 (3%)	1 (1.4%)	p = 0.714
Hydroxychloroquine (n = 23, 2.6%)			
Mycophenolate (n = 14, 1.6%)	20 (2.4%)	3 (4.3%)	p = 0.414
Others (n = 8, 0.9%)	14 (1.7%)	0	p = 0.617
	8 (1%)	0	p = 1

## Corticosteroids

<7.5 mg/d of prednisone (n = 147, 16.3%)	138 (16.6%)	9 (12.9%)	p = 0.206
>7.5 mg/d of prednisone (n = 14, 1.6%)	11 (1.3%)	3 (4.3%)	

1. Spondyloarthritis 2. In the group of patients with spondyloarthritis the difference was not found significant when the patients with biosimilars TNF blockers were excluded (p = 0.486). 3. Includes diverse systemic autoimmune diseases: systemic lupus erythematosus (n = 15), uveítis (n = 14), polymialgia without arteritis (n = 13), chronic juvenile arthritis (n = 12), giant cell arteritis (n = 11), Sjögren syndrome (n = 10), myositis or dermatomyositis (n = 10), other vasculitis (n = 8), Behçet's disease (n = 6), scleroderma and related diseases (n = 5), Still's disease (n = 4), overlap síndromes (n = 3) and sarcoidosis (n = 1). The significance disappeared when patients on rituximab and belimumab were excluded. 4. The group with innovator TNF-blockers includes 24 with infliximab, 131 with adalimumab, 66 with etanercept, 54 with certolizumab and 39 with golimumab. 5. Group with biosimilar TNF-blockers includes 52 with infliximab, 95 with adalimumab and 82 with Etanercept. 6. Anti-B cell group includes 58 patients with rituximab and 9 with belimumab. 7. Anti il 17/23 includes 53 patients with secukinumab, 9 with ixekizumab and 35 with ustekinumab. All COVID-19 cases observed in this group were treated with secukinumab. 8. Anti-il 6 includes 62 patients with tocilizumab and 30 with sarilumab. All COVID-19 cases observed in this group were treated with tocilizumab. 9. Jak inhibitors includes 24 patients with tofacitinib and 18 with baricitinib. Jak inhibitors includes 24 patients with tofacitinib and 18 with baricitinib.

Table 2. Frequency of symptoms and treatments in 70 patients with COVID-19 and IMID treated with bDMARD or tsDMARD.

Symptoms	N (%)
General symptoms*	67 (95.7)
Pneumonia	10 (14.3)
Thrombosis	2 (2.9)
Others**	42 (60)
Therapies used to treat COVID-19	
Antibiotics	17 (24.3)
Hydroxychloroquine	15 (21.4)
Corticosteroids	7 (10)
Heparin	6 (8.6)***
Tocilizumab	4 (5.7)
Colchicine	1 (1.4)
Antivirals	1 (1.4)
Mechanic ventilation	1 (1.4)

Table 3. Frequency of comorbidities in 902 patients with IMIDs treated with bDMARD or tsDMARD

Comorbidities (n = 546, 60.5%)	No COVID-19 (n = 505, 60.7%)	COVID-19 (n = 41, 58.6%)	p = 0.727
Hypertension (n = 206, 22.8%)	190 (22.8)	16 (22.9)	p = 0.997
Dyslipemia (n = 156, 17.3%)	144 (17.3)	12 (17.1)	p = 0.972
Smoking (n = 140, 15.5%)	133 (16)	7 (10)	p = 0.1840
Obesity/overweight (n = 112, 12.4%)	105 (12.6)	7 (10)	p = 0.523
Thyroid disease (n = 79, 8.8%)	76 (9.1)	3 (4.3)	p = 0.168
Diabetes (n = 77, 8.5%)	73 (8.8)	4 (5.7)	p = 0.379

Chronic obstructive lung disease (n = 29, 3.2%)	24 (2.9)	5 (17.1)	p = 0.067
Asthma (n = 25, 2.8%)	22 (2.6)	3 (4.3)	p = 0.435
Sleep apnea-hypopnea syndrome (n = 35, 3.9%)	27 (3.2)	8 (11.4)	p = 0.004
Heart diseases (n = 55, 6.1%)	51 (6.1)	4 (5.7)	p = 1
Psychiatric diseases (n = 37, 4.1%)	32 (3.8)	5 (7.1)	p = 0.199
Cancer (n = 26, 2.9%)	25 (3)	1 (1.4)	p = 0.714
Others (n = 115, 12.8%)	107 (12.9)	8 (11.4)	

**Conclusions:** The cumulative incidence of definitive COVID-19 was similar to the general population, with low hospitalization, intensive care management and death rates and it was less frequent in the most immunosuppressed patients.