Correspondence on 'Impact of COVID-19 pandemic on patients with large-vessels vasculitis in Italy: a monocentric survey'

COVID-19, caused by the SARS-CoV-2, is an unprecedented global pandemic. Advanced age and cardiovascular diseases are recognised as major comorbidities associated with severe forms of COVID-19. Patients with large vessels vasculitis (LVV) could be considered at-risk for severe COVID-19 due to frequent age over 65 years in patients with giant cell arteritis (GCA), severe hypertension in patients with Takayasu arteritis (TAK) and current use of immunomodulating therapies in both LVV. Data on prevalence, clinical presentation and outcome of SARS-CoV-2 infection among patients with LVV are lacking.[1–3] Tomelleri *et al* reported their experience in a single tertiary centre in Lombardy, the Italian region with the highest proportion of infected subjects.[2] Their incidence rate of confirmed COVID-19 infection by nasopharyngeal PCR was 2.5% (4/162). Two patients required hospitalisation for COVID-19 interstitial pneumonia and no death was observed. We report our experience on clinical presentation and outcome of COVID-19 among patients with LVV in Paris-Ile de France, another region particularly affected during the same period.

A phone survey was conducted between 04 and 20 May 2020, 8 weeks after lockdown started in France, among patients with LVV followed in Pitié-Salpêtrière Hospital (Paris, France). Patients with positive nasopharyngeal PCR and/or thoracic CT scan suggestive of COVID-19 and/or serological tests detecting anti-SARS-CoV-2 antibodies were considered as confirmed diagnosis of COVID-19. We retrospectively collected severity of COVID-19 infection, therapeutic management and outcomes.

A total of 148 patients with LVV (84 GCA and 64 TAK) were included. Among them, eight patients (four GCA and four TAK) had a confirmed SARS-CoV-2 infection: two had both RT-PCR positive and suggestive thoracic CT scan, one had RT-PCR positive, one had suggestive thoracic CT scan and four had positive serology. Main data are summarised in table 1. The incidence rate was 5.4%. Interestingly, seven patients had quiescence LVV at the time of COVID-19 infection, seven patients were currently

Table 1 Baseline characteristics and treatments of LVV patients with confirmed or probable COVID-19

	Sex	Age	LVV type	LVV duration (months)	LVV activity	Current LVV therapies	Previous LVV therapies	Comorbidities	COVID-19 Infection	Contact with COVID-19 patient	Onset of COVID-19 symptom	Symptoms	Pneumonia / oxygen	Severity	Treatment changes	Therapies for COVID-19	Outcome
1	M	75	GCA	3	Remission (<3 months)	Prednisone MTX	No	Concomitant haemopathy (lymphoma)	Confirmed (nasal PCR+ and thoracic CT scan)	Yes (previous hospitalisation 2 weeks before)	1 March	Fever, fatigue, cough	Yes/no	Hospitalised (1 day)	Discontinuation of MTX and decrease glucocorticoids	Antibiotics	Recovery
2	F	87	GCA	22	Remission (≥3 months)	Prednisone MTX	Prednisone MTX	Hypertension, diabetes, cardiovascular disease	Confirmed (nasal PCR+ and thoracic CT scan)	Yes (husband)	25 March	Fever, fatigue, weight loss, myalgia, cough, diarrhoea, dyspnoea	Yes/yes	Hospitalised (12 days)	No	Antibiotics	Recovery
3	F	70	GCA	52	Remission (≥3 months)	Prednisone	Prednisone	Hypertension, asthma	Confirmed (serology)	No	28 March	Fatigue, myalgia, cough, rhinorrhoea, sore throat, diarrhoea, dyspnoea, pain chest, malaise	No/no	Ambulatory	No	Antibiotics	Recovery
4	M	69	GCA	46	Remission (≥3 months)	Prednisone	Prednisone	Hypertension, diabetes	Confirmed (serology)	Yes (wife)	15 March	Fever, weight loss, sore throat	No/no	Ambulatory	No	Antibiotics	Recovery
5	F	19	TAK	76	Remission (≥3 months)	MTX Tocilizumab	Prednisone MTX Tocilizumab	No	Confirmed (nasal PCR+)	Yes (professional)	15 March	Fever, fatigue, myalgia, sore throat, nausea, diarrhoea, dyspnoea, pain chest, headache	No/no	Ambulatory	Discontinuation of tocilizumab (1 week)	No	Recovery
6	M	57	TAK	94	Remission (≥3 months)	Prednisone	Prednisone MTX Tocilizumab Infliximab Everolimus	Hypertension, diabetes, cardiovascular disease, B lymphoma (>1 year)	Confirmed (thoracic CT scan)	Yes (multiple hospitalisation)	25 March	Fatigue, dyspnoea	Yes/yes (ICU and mechanical ventilation)	Hospita lised (5 days)	No	Antibiotics Hydroxychroquine ICU and mechanical ventilation	Death (1 April)
7	M	31	TAK	16	Remission (≥3 months)	Prednisone MTX Tocilizumab	Prednisone	No	Confirmed (serology)	No	18 March	Fever, fatigue, weight loss, myalgia, rhinorrhoea, anosmia, ageusia, sore throat, dyspnoea, pain chest, nausea, headache	No/no	Ambulatory	No	No	Recovery
8	F	44	TAK	316	Remission (≥3 months)	Prednisone	Prednisone AZA	Hypertension, interstitial lung disease	Confirmed (serology)	Yes (professional)	12 March	Fever, fatigue, myalgia, rhinorrhoea, anosmia and ageusia	No/no	Ambulatory	No	No	Recovery
All	**F 4 M 4**	**63 (41–71)**	**GCA: 4 TAK: 4**	**49 (21–81)**	**R>3 months: 7 R<3 months: 1**	**Prednisone: 7 MTX: 4 Tocilizumab: 2**	**Prednisone: 7 MTX: 3 Tocilizumab: 2**	**Hypertension: 5 Diabetes: 3 Cancer: 2**	**PCR+: 3 Thoracic CT scan: 3 Serology: 4**	**Contact with COVID-19 patient: 6**			**Pneumonia: 3 Oxygen: 2**	**Hospital: 3 Home: 5**	**Treatments changes: 2**	**Antibiotic: 5 Hydroxychloroquine: 1 ICU: 1**	**Recovery: 7 Death: 1**

AZA, azathioprine; F, female; GCA, giant cell arteritis; ICU, intensive care unit; LVV, large vessels vasculitis; M, male; MMF, mycophenolate mofetil; MTX, methotrexate; NA, not available; TAK, Takayasu arteritis.

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treated with prednisone and two with tocilizumab. Six patients have been in close contact with COVID-19-infected people. The most common symptom was fatigue (88%), followed by fever (75%) and dyspnoea (63%). Pneumonia occurred in three patients, all requiring hospitalisation with oxygen therapy for two patients. Most of the patients (75%) did not need LVV treatment changes or discontinuation. Only one patient with TAK needs mechanical ventilation and died few days after his admission in intensive care unit. The lethality rate was 12.5% (1/8). Interestingly, among patients with LVV, we observed two other deaths during same period, considered as COVID-19-related deaths (both with acute respiratory distress syndrome) but no confirmation of infection. Mortality rate reached 2% in our patients with LVV (3/148).

The incidence rate of COVID-19 in our LVV cohort (5.4%) was lower compared with the risk of infection observed in the general population in the same region (12.3% in Ile-de-France including Paris). However, COVID-19 appeared to be more severe in LVV, requiring hospitalisation in up to 37.5% of COVID-19-infected LVV patients. In comparison, modelling analyses of SARS-CoV-2 transmission in France estimated the risk of hospitalisation around 21% in individuals >80 years and 9.6% in the group 70–79 years.[4] We also observed a high lethality rate (12.5%) among LVV-COVID$^+$ compared with the lethality rate of 8% reported among infected individuals >80 years and 2.2% in group 70–79 years in the French general population.[4] Among 600 patients with rheumatic diseases from 40 countries, Gianfrancesco *et al*[5] found a rate of hospitalisation of 46%. This study included 44 patients (7%) with vasculitis and 12 polymyalgia rheumatica. Use of disease-modifying antirheumatic drug or biological therapies was not associated with an increased risk of hospitalisation.

The lethality rate of our cohort (12.5%) was higher compared with other studies (1.69%) on patients with inflammatory disease (psoriasis, inflammatory rheumatism or chronic inflammatory bowel disease, no vasculitis) receiving immunomodulator/immunosuppressive therapies.[6] However, our lethality rate was closer to the international study of Gianfrancesco *et al* (9%).[5] Tomelleri *et al*[2] reported a better prognosis of COVID-19 among patients with LVV with only two COVID-19-related hospitalisation and no death, including the two elderly patients with GCA requiring hospitalisation. Of note, among the 162 patients with LVV from Lombardy, 53 (33%) patients were treated with tocilizumab compared with 10% in our LVV cohort. Tocilizumab may have had a positive impact on COVID-19 outcome in the Italian cohort and appears as a potential therapeutic option.[7] Glucocorticoids (such as dexamethasone at a dose of 6 mg once per day during 10 days) could also modulate inflammation-mediated lung injury caused by Sars-Cov-2 and may reduce 28-day mortality among pneumonia requiring invasive mechanical ventilation or oxygen.[8] Future studies will need to clarify the impact of tocilizumab and glucocorticoids on COVID-19 outcome in patients with LVV.

Despite limited number of LVV-COVID$^+$ hospitalised in our cohort, this data suggests that COVID-19 seems to be more severe in patients with LVV with higher rates of hospitalisation and lethality.

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