

Letter

Alemtuzumab in multiple sclerosis during the COVID-19 pandemic: A mild uncomplicated infection despite intense immunosuppression

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Italy has been one of the first European countries to face the spread of Coronavirus Disease-2019 (COVID-19). The affected patients have increased inexorably worldwide, reaching a pandemic dimension within a few weeks. The outbreak of COVID-19 represents a challenge for neurologists treating multiple sclerosis (MS). No data is available on whether patients with MS are at increased risk to develop severe forms of COVID-19. Since lymphopenia and immunosuppression are associated with worse outcomes,¹ it is reasonable to hypothesise that MS-immunosuppressive treatments may lead to more severe infections, but there is no evidence to support this.² We describe a case of mild uncomplicated COVID-19 occurring during intense immunosuppression a few days after alemtuzumab infusion.

On the same day that the first COVID-19 case was reported in Italy (21 February 2020), a 25-year-old girl with relapsing-remitting MS – working as a nurse in Milan – completed the second cycle of alemtuzumab treatment. She had started it 1 year before as first-line therapy due to highly active MS, and since then she had not experienced clinical relapses or new magnetic resonance imaging (MRI) activity. One week after the first Italian COVID-19 case, the patient was advised to stay home from work, due to the alarming spread of new affections. Nevertheless, 7 days later, she complained of dry cough, fatigue and fever up to 38.5°C. She was isolated at home and self-monitored blood oxygen saturation – which was always within normal range – and took acetaminophen. Symptoms gradually disappeared over 3 days, apart from cough that persisted for approximately 10 days. One week after symptom onset, she underwent nasopharyngeal swab for SARS-CoV2. On the same day, a blood test revealed a severe leukopenia with neutropenia and lymphopenia (leukocytes $1.19 \times 10^9/L$, granulocytes-neutrophils $0.75 \times 10^9/L$, lymphocytes $0.09 \times 10^9/L$), but no elevation of inflammatory markers. Two weeks after the first swab, the second one was negative and the patient was asymptomatic (Supplementary material).

Alemtuzumab causes the depletion of CD52-expressing cells, leading to a transient alteration in lymphocyte numbers, trafficking and function after each course, and thus to an increased risk of infection,^{2,3} including both upper (very common; $\geq 10\%$) and lower respiratory tract infections (common; 1%–10%).⁴ The risk of COVID-19 in alemtuzumab-treated MS patients is unknown, but a higher risk is conceivable. For these reasons, Brownlee et al.² recently recommended that alemtuzumab should not be initiated in MS patients who are about to start a treatment, and, for those already on treatment, to delay further courses, considering the risks and benefits. We described the case of a young woman who had COVID-19 few days after alemtuzumab infusion. Her blood counts were in line with the study by Li et al.,⁵ reflecting an intense immunosuppression. Nonetheless, the patient had a mild infection and recovered within 2 weeks. On one hand, it should be noted that being a young woman without other medical conditions probably decreases the risk that COVID-19 results in severe illness. On the other hand, our report highlights the possibility that mild courses of COVID-19 may exist despite immunosuppression and that the spectrum of illness severity does not necessarily follow patient's immune status. Further reports are needed to clarify the link between COVID-19 risk/severity/disease status and concomitant immunosuppressive medications.

Declaration of Conflicting Interests

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ORCID iDs

Tiziana Carandini  <https://orcid.org/0000-0002-0568-7580>

Anna Margherita Pietroboni  <https://orcid.org/0000-0003-1538-1830>

Filippo Martinelli Boneschi  <https://orcid.org/0000-0002-9955-1368>

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Supplemental material

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Tiziana Carandini¹ , **Anna Margherita Pietroboni**¹ , **Luca Sacchi**^{1,2}, **Milena Alessandra De Riz**¹, **Mattia Pozzato**^{1,2}, **Andrea Arighi**¹, **Giorgio Giulio Fumagalli**¹, **Filippo Martinelli Boneschi**^{1,2} , **Daniela Galimberti**^{1,2} and **Elio Scarpini**^{1,2}

¹Fondazione IRCCS Ca' Granda, Ospedale Maggiore Policlinico, Milan, Italy

²University of Milan, Milan, Italy

Correspondence to:

T Carandini

Fondazione IRCCS Ca' Granda, Ospedale Maggiore Policlinico, Via Francesco Sforza 35, Milan 20122, Italy.

tizianacarandini@gmail.com