Journal of Neuroimmunology 359 (2021) 577686

Contents lists available at ScienceDirect

Journal of Neuroimmunology

journal homepage: www.elsevier.com/locate/jneuroim

Short Communication

Acute myelitis and ChAdOx1 nCoV-19 vaccine: Casual or causal association?

Elisa Vegezzi [a,b,*], Sabrina Ravaglia [c], Gabriele Buongarzone [b], Paola Bini [a], Luca Diamanti [a], Matteo Gastaldi [a,d], Paolo Prunetti [e], Elisa Rognone [f], Enrico Marchioni [a]

[a] Neuroncology and Neuroinflammation Unit, IRCCS Mondino Foundation, Pavia, Italy
[b] Department of Brain and Behavioral Sciences, University of Pavia, Pavia, Italy
[c] Emergency Neurology Unit, IRCCS Mondino Foundation, Pavia, Italy
[d] Neuroimmunology Research Unit, IRCCS Mondino Foundation, Pavia, Italy
[e] Clinical Neurophysiology Unit, IRCCS Mondino Foundation, Pavia, Italy
[f] Neuroradiology Unit, IRCCS Mondino Foundation, Pavia, Italy

ARTICLE INFO

Keywords:
COVID-19
Myelopathy
Vaccine

ABSTRACT

A 44-year-old previously healthy woman developed acute myelitis in close temporal relationship with ChAdOx1 nCoV-19 vaccine first-dose administration. The neurological involvement was mainly sensory with neuroimaging showing two mono-metameric lesions involving the posterior and lateral cord at dorsal level. Significant improvement was promptly recorded with high-dose intravenous steroids, with complete recovery within one month.

The strict temporal relationship between vaccination and myelitis, together with the absence of clues pointing to alternative diagnoses, might suggest a conceivable role for anti-SARS-CoV-2 vaccine as immunological trigger, although a causal relationship has yet to be established and our preliminary observation suggests caution.

1. Introduction

The medical scientific literature is full of claims and counterclaims on vaccine-related autoimmune diseases. Various and heterogeneous clinical syndromes have been reported as a consequence of different viral vaccinations (e.g., swine flu, influenza, hepatitis B, measles, mumps, rubella, etc.), being neurological pictures the most common (Schattner, 2005). The term post-infectious neurological syndromes (PINSs) stands for a heterogeneous group of neurological disorders affecting the central nervous system (CNS), with or without peripheral nervous system (PNS) involvement, lacking specific biological markers and typically following either infection or vaccination (Brinar and Poser, 2006; Marchioni et al., 2013). Vaccinations may trigger autoimmunity by either a specific mechanism of molecular mimicry (Salemi and D'Amelio, 2010), possibly enhanced by an immunological adjuvant(Ruiz et al., 2017), or a non-specific mechanism of bystander activation (Salemi and D'Amelio, 2010).

Since late 2019, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has emerged as the zoonotic viral causative agent of COVID-19, being declared a global pandemic on March 11, 2020, by the World Health Organization (WHO). In 2020, a surprisingly high number of candidate vaccines has been developed, including ChAdOx1 nCoV-19 vaccine (AZD1222), consisting of replication-deficient chimpanzee adenoviral vector ChAdOx1, containing the SARS-CoV-2 structural surface glycoprotein antigen (spike protein; nCoV-19) gene. On January 29, 2021, ChAdOx1 nCoV-19 vaccine received marketing authorization by the European Medical Agency (EMA) due to its safety and efficacy at preventing COVID-19 in people from 18 years of age (Folegatti et al., 2020). As for April 22, 2021, more than 115 million vaccine doses had been administered in the European Union (European Centre for Disease Prevention and Control COVID-19 Vaccine Tracker, 2021 https://qap.ecdc.europa.eu/public/extensions/COVID-19/vaccine-tracker.html#uptake-tab).

Here we report a case of an acute-onset neurological syndrome

* Corresponding author at: Neuroncology and Neuroinflammation Unit, IRCCS Mondino Foundation, Via Mondino 2, 27100 Pavia (PV), Italy; Department of Brain and Behavioral Sciences, University of Pavia, Pavia, Italy.
E-mail addresses: elisa.vegezzi@mondino.it (E. Vegezzi), sabrina.ravaglia@mondino.it (S. Ravaglia), gabriele.buongarzone01@universitadipavia.it (G. Buongarzone), paola.bini@mondino.it (P. Bini), luca.diamanti@mondino.it (L. Diamanti), matteo.gastaldi@mondino.it (M. Gastaldi), paolo.prunetti@mondino.it (P. Prunetti), elisa.rognone@mondino.it (E. Rognone), enrico.marchion@mondino.it (E. Marchioni).

https://doi.org/10.1016/j.jneuroim.2021.577686
Received 22 April 2021; Received in revised form 18 July 2021; Accepted 29 July 2021
Available online 31 July 2021