

EDITORIAL

To everything there is a season: COVID-19 vaccination and thrombosis

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Vaxzevria, also known as the Oxford–AstraZeneca COVID-19 vaccine, is approved in the European Union for active immunisation to prevent COVID-19 caused by SARS-CoV-2. Based on an interim analysis of pooled data from four clinical trials, including more than 12,000 participants receiving the vaccine, the most frequently reported adverse reactions were injection site tenderness (63.7%), injection site pain (54.2%), headache (52.6%), fatigue (53.1%), myalgia (44.0%), malaise (44.2%), pyrexia (includes feverishness (33.6%) and fever >38 °C (7.9%)), chills (31.9%), arthralgia (26.4%) and nausea (21.9%) [1]. Since the beginning of March 2021, several countries limited or suspended the use of Vaxzevria due to few suspected cases of clotting-related complications. Taking into account all available evidence, the European Medicines Agency concluded that a causal relationship between Vaxzevria and thrombosis with thrombocytopenia is plausible, although not confirmed. By the end of March, 62 cases of cerebral venous sinus thrombosis and 24 cases of splanchnic vein thrombosis, were reported from around 25 million people vaccinated with Vaxzevria in Europe [2]. The majority of these cases occurred within 14 days after vaccination and mostly in women under 60 years of age. Although such side effects are very rare, the reported case numbers exceeded what is seen in the general population.

While a relation between Vaxzevria administration and thrombosis is yet to be proven, it is meaningful to consider the seasonal variation in the occurrence of thrombosis in general, and specifically of cerebral vein thrombosis. In fact, although this pathology is rare, a higher incidence of sinus vein thrombosis during the winter periods has been previously documented in Europe [3, 4].

As incidences are generally calculated over year-long periods, the discrepancy between expected and observed rates may be explained by seasonal fluctuations, especially when it comes to rare disease with few cases. Moreover, public and physicians' awareness about vaccine-related thrombosis has never been higher, possibly leading to a prompter diagnosis of the disease, which was previously underreported. Finally, it is worth noting that COVID-19 lockdowns might have increased the rate of thrombosis among the general population [5]. In fact, while unable to perform their usual activities, people

might have spent more time at rest than usual—suffering the so-called “e-thrombosis” [6]. Also, the levels of stress and anxiety among the general population were also exacerbated by the pandemic and the lockdown. As stress causes increased production of inflammatory mediators [7], it was previously linked to increased thrombosis [8]. These two factors might have led to the underestimation of the real-time incidence of thrombosis in Europe, and possibly explain the raise we are observing, which might be related to a variation in the characteristics of the population rather than to the vaccine.

While COVID-19 is still killing thousands every day, as a medical community spreading the vaccine should be our first priority. The mentioned data must be assessed and carefully considered by the involved authorities, so that the administration of all existing vaccine can rapidly be available to all the general population.

AUTHOR CONTRIBUTIONS

GL, PN and AZ designed the study and collected the data. PN drafted the manuscript. GL and AZ revised it critically for important intellectual contents. All authors approved the final version to be published.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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