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LETTER TO THE EDITOR

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Monoclonal antibodies as a trick or treat for COVID-19? The example of abciximab

Dear Editor,

We have perused the recently published article entitled "Covid-19: UK approves first monoclonal antibody treatment" by Mahase E. with great pleasure and felt partially relieved to spectate the propagation of the monoclonal antibody-based treatment concept on a more global scale.[1] Monoclonal antibodies are antibodies highly monospecific for a particular antigen or an epitope, with a broad spectrum of clinical and experimental uses including autoimmune disease, cancer, bacterial and viral infection, asthma, atopic dermatitis, and osteoporosis treatment.[2] So far, five monoclonal antibodies with neutralizing action against epitopes of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) spike protein have been approved for the treatment of COVID-19, namely bamlanivimab, casirivimab, etesevimab, imdevimab, and sotrovimab.[3] Nevertheless, COVID-19 detection and treatment have also been reported to overlap with the administration of other monoclonal antibodies aimed towards the management of thrombotic events. As a matter of fact, we deploy the example of abciximab to highlight the importance of retaining pragmatism apropos of ground-breaking treatment options.[4]

Abciximab is the 7E3 human-murine monoclonal antibody's Fab fragment that binds to the GPIIb/IIIa integrin complex on the platelet surface, downregulating tissue factor expression[5] and acting as an inhibitor of their aggregation through the impediment of fibrinogen binding to the aforementioned receptor[6] (Figure 1). This inhibition induces antithrombotic effects but synchronously augments the risk of hemorrhage.[7]

In 2020, Turan et al.[4] described the case of a 61-year-old man with myocardial infarction who developed respiratory disease symptoms following IV abciximab administration. A chest computed tomogarphy scan revealed typical COVID-associated pneumonia findings and the man was therefore empirically declared positive for COVID-19, however, two consecutive polymerase chain reaction tests performed excluded the diagnosis. Interpreting the overall information resulted in the consideration of abciximab-induced diffuse alveolar hemorrhage as the most probable diagnosis.[4] In this case, prioritizing the COVID-19 diagnosis over the known adverse events of abciximab could have had detrimental consequences for the patient.

Capitalizing on this case, it appears that during the use of monoclonal antibodies in and around the context of COVID-19 vigilance for antibodies' side effects misinterpreted as COVID-19 manifestations is pivotal; the popular contemporary demand for monoclonal antibodies as preventive and therapeutic alternatives, fueled by the eruptive aggrandizement of vaccine-hesitant views espoused by more and more people every day, might recoil like a boomerang and provoke obliterative results. Although this case involved a monoclonal antibody that is not prescribed for the treatment of COVID-19 per se, a recent phase II/III randomized, blinded, controlled adaptive platform trial involving bamlanivimab stressed that administering monoclonal antibodies against emerging mutated SARS-CoV-2 strains can be associated with prolonged viral loads, clinical deterioration and immune escape.[8]

Overall, awareness about both the advantages and the risks of monoclonal antibodies can be beneficial for patients and healthcare practitioners, but also for the general public, whose decision to receive a COVID-19 vaccine and adhere to hygienic instructions can depend on their faulty perception of monoclonal antibodies. A number of steps can be taken towards this end; healthcare bodies could outline clear recommendations and practice guidelines for the use of monoclonal antibodies and authorities should monitor their rollout process and ensure that they will become available to those who need them in a timely manner, without life-threatening bureaucracy, but with proper rigor; a surveillance network monitoring the efficacy and safety of monoclonal antibodies, including their side effects, should be accessible to all those who dispense these medications, while the cost-effectiveness of monoclonal antibodies is necessary to be investigated in a real-world context, given their high cost in comparison to vaccines or antiviral and anti-inflammatory agents; lastly, considering the perpetual nature of medical knowledge advancement, all experience from the use of monoclonal antibodies must be documented and published in scientific journals.

The medical community should always "do good or do no harm" and owes to spread awareness that everything comes with a price when imprudently used. Ultimately, a crucial question arises as food-for-thought and mental stimulation; will monoclonal antibodies solely avail in treating COVID-19 and preventing serious disease, or simultaneously trick us into considering monoclonal antibody-induced pathologies as viral infection manifestations?

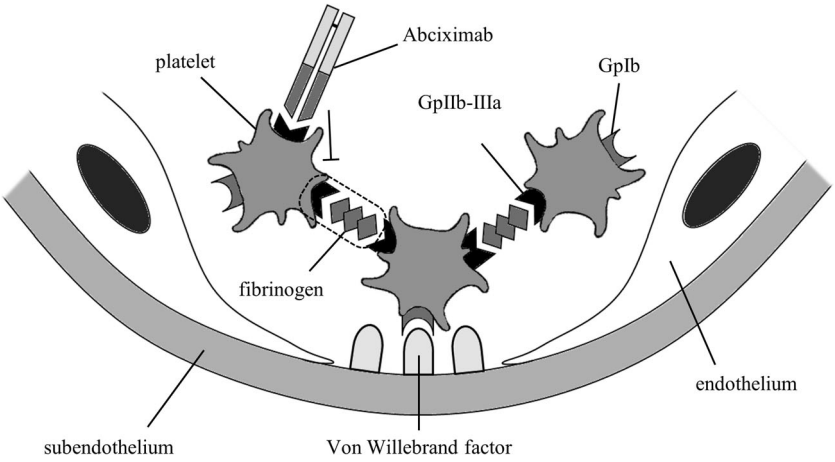

FIGURE 1 Abciximab's mechanism of action. Abciximab, a monoclonal antibody's Fab fragment that binds to the GPIIb/IIIa platelet receptor, suppresses tissue factor expression and platelet aggregation. This inhibition induces antithrombotic effects but increases the risk of hemorrhage at the same time

CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

DATA AVAILABILITY STATEMENT

Data sharing not applicable as no new data generated and the article describes entirely theoretical research.

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