Banning Monoclonal Antibody Therapies for COVID-19 Using In Vitro Data

To the Editor: On January 24, 2022 the US Food and Drug Administration (FDA) revoked the emergency use authorization for REGEN-COV (casirivimab/imdevimab) for coronavirus disease 2019 (COVID-19). The FDA's press release stated that this treatment is "highly unlikely to be active against the Omicron variants" and expressed concerns about its adverse effects.[1] In addition, on April 5, 2022, the FDA banned the use of sotrovimab, stating that it is "unlikely to be effective" against the Omicron BA.2 variant.[2] There were no citations included in either press release, but one in vitro study supported the FDA's decision regarding casirivimab/imdevimab because it showed this medication to be ineffective against the Omicron variant.[3] At the time of this writing, there are no published data assessing the efficacy of casirivimab/imdevimab or sotrovimab in live patients with the Omicron variants.

In December 2021, our hospital system experienced a surge in patients with COVID-19, most of whom likely had an Omicron variant.[4] During that month, our facilities (one tertiary care hospital and two freestanding emergency departments) administered more than 1000 doses of REGEN-COV. For quality assurance purposes, our hospital system prospectively tracks all of the patients who receive monoclonal antibody therapies for COVID-19. All of the patients receiving monoclonal antibodies fill out a form about their symptoms and vaccination history. Physicians document the patient's criteria for receiving treatment. Nurses administering monoclonal antibodies specifically assess for and document adverse effects for each patient. Next, 28 days after treatment, we determine whether and why each patient returned to the hospital through medical record review and directly calling patients.

In total, 1008 COVID-19 patients received REGEN-COV in the emergency department and were then discharged. This group had a mean age of 56 years, and 42.0% were fully vaccinated against COVID-19 (we defined "fully vaccinated" as having had at least two doses of the Pfizer or Moderna vaccine or at least one dose of the Johnson & Johnson vaccine). Of the 1008 patients who received REGEN-COV, just one (0.1%) had an immediate adverse reaction (urticaria). We definitively confirmed whether the patient made a return visit to the hospital in 81.9% of patients. In this group, the rate of return visit within 28 days was 5.9% (95% confidence interval [CI] 4.4%–7.8%), and 2.4% (95% CI 1.4%–3.6%) returned because of symptoms of COVID-19. The rate of hospitalization (for any reason) within 28 days of treatment was 1.9% (95% CI 1.1%–3.1%), and only three patients (0.4%) were admitted for hypoxia from COVID-19. Two patients died. As such, the composite rate of COVID-19-related hospitalization or death from any cause in our sample of patients was 0.6% (95% CI 0.2%–1.4%).

Until recently, there were no published data of patients who received REGEN-COV during the Omicron surge. These data are our quality improvement data, and thus there was no control group, but the rate of COVID-19-related hospitalization or death from any cause in our sample (0.6%) was actually lower than the 1.3% reported in a randomized clinical trial of REGEN-COV.[5] Although this difference may reflect the benefits of vaccination, less severe disease from Omicron compared with previous variants, or differences in study populations, our data refute the idea that REGEN-COV is harmful for patients with the Omicron variant.

In summary, we are concerned that the FDA has banned medications based only on in vitro data without evidence of clinical harm. Although there are now other effective options for treating COVID-19, such as nirmatrelvir and ritonavir, it seems unwise to eliminate the availability of tools that physicians could use in battling the next surge in cases of COVID-19.

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