RESEARCH LETTERS

SARS-CoV-2 Omicron BA.5 Infections in Vaccinated Persons, Rural Uganda

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The SARS-CoV-2 Omicron variant BA.5 was initially reported in South Africa in late February 2022 (1). The BA.5 variant, and especially the subvariant BA.5.2.1, has now spread to at least 104 countries globally; 197,425 genomes had been reported in GISAID (http://www.gisaid.org) as of September 16, 2022. The BA.5 spike protein shares substitutions with earlier Omicron variants but includes some of the Delta variant immune evasion changes. The BA.4/BA.5 viruses are reported to escape earlier Omicron immune responses, and vaccination does not fully block infection but may limit severity of disease (2–5). Infection of vaccinated persons (breakthrough infections) with SARS-CoV-2 strains is known, and such infections were reported recently among a highly vaccinated community within the US Embassy in Uganda (6). The frequency and outcomes of BA.5 vaccine breakthrough infections, both in Uganda and globally, are yet to be determined.

The Medical Research Council Unit in Uganda maintains a rural population cohort in Kyamulibwa, Kalungu District, southwestern Uganda (7). Unit staff were vaccinated as soon as vaccines were available in the country (March 2021), and most received at least 2 doses of COVID-19 vaccine by June 2021, with ongoing efforts for booster vaccination rolling out in the country. Staff members who had any symptoms indicating respiratory infections, including COVID-19, were routinely tested using Abbott’s Panbio COVID-19 antigen rapid tests (Abbott, https://www.abbott.com). If cases of COVID-19 were detected, all staff were tested to detect asymptomatic cases. During such routine testing of staff members, a cluster of SARS-CoV-2 infections among vaccinated staff was detected. Test positivity during this period of infection was 18.5% (12 positive from 65 staff members tested), which was in the range of previous infection waves (January 3–10, 2022: 11.7%; June 6–14, 2021: 32.5%; November 30–December 1, 2020: 19.3%). Most infected staff members had mild symptoms, and all cases were quickly resolved (Appendix Table, https://wwwnc.cdc.gov/EID/article/29/1/22-0981-App1.pdf).

We performed sequencing by methods previously described (8). Nine cases yielded full genome SARS-CoV-2 sequences that we lineage-typed using Nextclade (9) and Pangolin (10) software; 8 of the 9 genomes were from the BA.5 lineage and 1 was BA.2.31, all variants within the Omicron variant-of-concern lineage. Although all 9 genomes belonged to the Omicron lineage, we detected 6 distinct subvariants (Figure). Genomes from cases 1, 2, 7, and 10 (all BA.5.2.1) were identical, suggesting a common infection source for these 4 cases. However, genomes for cases 4, 6, 11, and 12 genomes (also BA.5.2.1) were distinct from cases 1, 2, 7, and 10 and from each other, differing by 2–5 nt changes. The case 5 genome (BA.2.31) represents a 6th virus source for the cluster of breakthrough infections.

The detection of 5 distinct BA.5.2.1 sublineages found in Kalungu District in a short time period indicates multiple BA.5 sublineages were already circulating in other parts of Uganda and demonstrates the speed of movement of SARS-CoV-2. Uganda reported an increase in COVID-19 cases during this period, and both BA.5.2.1 and BA.2.31 virus strains potentially contributed to this increase in infections. Of note, 9 of the 12 COVID-19–positive staff members in this report routinely traveled on shared unit vehicles to and from Masaka or Kampala, which might account for the virus spread. In addition, the unit travel records show shared vehicle usage, suggesting a likely but not confirmed source of infection for cases 2, 7, and 10. The 3 infected staff members whose testing results did not yield sufficient PCR products for sequencing were asymptomatic, suggesting low viral loads (Appendix Table).

Many countries have reported increasing COVID-19 cases with BA.4 or BA.5 and derivatives as a major identified lineage. The global trend toward relaxed travel and quarantine restrictions and the mild
infections in vaccinated and previously infected individuals might help enable global movement of these variants. This probably is evidenced by the timing of BA.5 appearance in rural Uganda within weeks of the variant being initially reported in other parts of the world (South Africa in late February 2022, Germany in mid-March 2022, the United States in late March 2022, Portugal in early April 2022, and Uganda in early June 2022).

In conclusion, the detection of 6 distinct sublineages of SARS-CoV-2 (5 of BA.5.2.1 and 1 of BA.2.31) in Kyamulibwa, Kalungu District, Uganda, within a short period indicates substantial diversity of and rapid movement of these viruses into and within Uganda. Combined with recent increases in reported SARS-CoV-2 infections throughout the country, our findings emphasize the need for vigilance, surveillance, and continued testing in this rural community and throughout the country. The mild nature of symptoms in these 12 cases, and in many vaccinated persons, reinforces the importance of community vaccination efforts.

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This study was approved by the Uganda Virus Research Institute-Research and Ethics Committee (UVRI-REC Federalwide Assurance [FWA] FWA No. 00001354, study reference GC/127/20/04/771). Sequences described here are available from GISAID under accession numbers EPI_ISL_13332769–75, 15005215 and 15005216.
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Dr Mugisha is a medical scientist working at the Uganda Research Unit of the Medical Research Council/Uganda Virus Research Institute and London School of Hygiene & Tropical Medicine. During COVID-19, he has led surveillance activity in the unit’s General Population Cohort in southwestern Uganda. His research interests are primarily on the health and social issues affecting older people in low- and middle-income countries.

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Rapid SARS-CoV-2 Seroprevalence Survey in Central and Western Divisions of Fiji, 2021

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During November–December 2021, we performed a SARS-CoV-2 seroprevalence survey in Central and Western Divisions of Fiji. A total of 539 participants 8–70 years of age were 95.5% (95% CI 93.4%–97.1%) seropositive, indicating high community levels of immunity. Seroprevalence studies can inform public health responses to emerging SARS-CoV-2 variants.

In Fiji, the SARS-CoV-2 Delta variant wave occurred in a largely unvaccinated and nonimmune population during April–November 2021 (1). A risk-based COVID-19 vaccine rollout strategy commenced in March 2021, and, by late November 2021, a total of 90.6% of persons ≥18 years of age had received 2 vaccine doses and 97.3% had received 1 dose (1). Because of the high vaccination coverage, the government of Fiji had planned to reopen international borders by early December 2021.

Seroprevalence is a fundamental component of public health response to disease. Estimating disease epidemiology, including population immunity, by using serosurveillance can inform government policy. In November 2021, no serosurveillance data were available from any Pacific Island country or territory, and data from this region remain sparse (2). To inform public health decisions on the safe opening

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