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Comparison of airborne SARS-CoV-2 Omicron and pre-Delta variants around infected patients

Objectives
Transmissibility has increased during the evolution of SARS-CoV-2, possibly by improved airborne transmission. An increased transmission was noted also in many hospitals. We analyzed SARS-CoV-2 in room air of hospitalized Omicron infected patients and compared results with previous findings with pre-Delta variants to study if SARS-CoV-2 was more prevalent in patient rooms after the introduction of Omicron.
Methods
Air samples were collected Mars 2020 to 9 April 2021, with pre-Delta virus variants, was compared with samples collected January 2022 to May 2022, when Omicron BA.2 was the dominating variant.
A liquid cyclone was used to samples 2 m3 of air collected 1-4 meters from COVID-19 patients, within patient rooms at five regular hospital wards. Standard ventilation was 3-4 air changes per hour (ACH), but some rooms had enhanced ventilation. Data on recent viral load in respiratory samples and patient characteristics was registered. Laboratory analysis with RT-PCR after Amicon centrifugal filter concentration and RNA extraction was performed.
Results
Only 4 of 75 (5 %) air samples, from 3 of 43 included patients, were positive during the early Omicron wave, compared to 14/120 (12 %), from 10 of 60 included patients during the initial wave. No certain statistical difference between virus variants could be established, but the tendency was a lower occurrence at Omicron infected patients, also when adjusting for relevant confounders.
Conclusion
These finding do not support the initial hypothesis that patients with diagnosed Omicron infection would pose a higher risk of hospital transmission compared to pre-Delta variants. The data suggest that any increased transmission within hospitals during the Omicron more likely emanated from other sources, and possibly supporting an altered shedding dynamic in Omicron infections compared to pre-Delta variants. But it is difficult to draw any firm conclusions since the patient population, including immunization status, differ significantly between the two studied periods.

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