Secondary bloodstream infections associated with severe COVID-19

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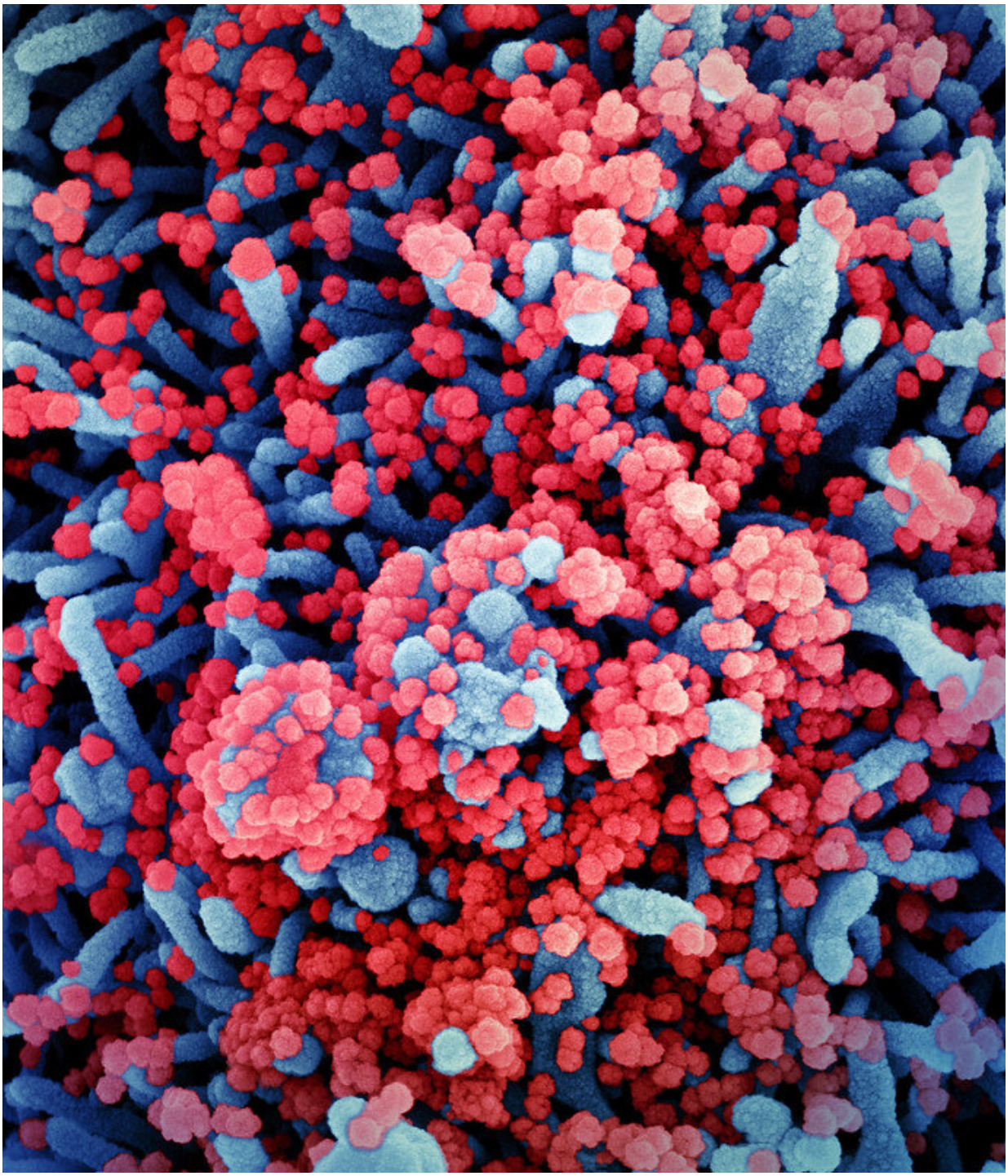

Colorized scanning electron micrograph of a cell (blue) heavily infected with SARS-CoV-2 virus particles (red), isolated from a patient sample. Image captured at the NIAID Integrated Research Facility (IRF) in Fort Detrick, Maryland. Credit: NIAID

People with severe COVID-19 and a secondary blood infection were significantly sicker upon hospital admission, had longer hospital stays and poorer outcomes, according to a Rutgers study.

The study, published in the journal *Clinical Infectious Diseases*, is the first to assess the microbiology, risk factors and outcomes in hospitalized patients with severe COVID-19 and secondary bloodstream infections.

The researchers looked at 375 patients diagnosed with severe COVID-19 from March to May 2020. Of that group, they sampled 128 cases who had secondary bloodstream infections, 92 percent of which were bacterial infections.

"These patients were more likely to have altered mental status, lower percent oxygen saturation, septic shock and to be admitted to the intensive care unit compared to those without bloodstream infections," said co-lead author Pinki Bhatt, an assistant professor at Rutgers Robert Wood Johnson Medical School's Division of Allergy, Immunology and Infectious Disease.

The researchers also found that patients who needed more advanced types of supplemental oxygen upon hospital admission had higher odds of secondary bloodstream infections.

The in-hospital mortality rate for these patients was more than 50 percent, but the study reported these deaths were associated with, not caused by, the condition.

According to the study, infections in COVID-19 patients may have contributed to the severity of illness or it may reflect other underlying physiological and immunological complications of COVID-19.

The study showed that the most common cause of secondary blood stream infections was unknown or not determined followed by central-line associated bloodstream infection as the most common presumed source.

The study found that 80 percent of all the patients in the study received antimicrobials at some point during hospitalization, including those who did not have bloodstream infections. "This likely reflects clinicians' inclination to administer antimicrobials given the limited information on the natural course of this novel disease," Bhatt said. She noted that further studies are needed to better understand when to suspect and treat empirically for secondary bloodstream infections in severe COVID-19.

"Antimicrobial stewardship remains crucial during this unprecedented time," said co-author Navaneeth Narayanan, a clinical associate professor at Rutgers Ernest Mario School of Pharmacy. "Given the scale of the pandemic, indiscriminate antimicrobial use will inevitably lead to widespread complications such as adverse drug reactions, antimicrobial resistance and Clostridium difficile infections."

More information: Pinki J Bhatt et al, Risk Factors and Outcomes of Hospitalized Patients With Severe Coronavirus Disease 2019 (COVID-19) and Secondary Bloodstream Infections: A Multicenter Case-Control Study, *Clinical Infectious Diseases* (2020). DOI: 10.1093/cid/ciaa1748

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