Clinical Characteristics and Outcomes of Breakthrough COVID 19 Infection among Vaccinated patients admitted in a Tertiary Hospital

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Abstract

Background: Vaccination across countries against COVID-19 have shown to be effective against infection and mortality in different settings. However, recent data describe breakthrough COVID-19 infection among vaccinated individuals. Risk factors and clinical characteristics have been reported in several international settings, but local data are needed to characterize these infections and define correlates of breakthrough and infectivity.

Objectives: To establish the clinical profiles and outcomes of vaccinated patients with breakthrough COVID-19 infection requiring hospitalization in a tertiary hospital.

Methodology: A retrospective cross-sectional study was conducted in a tertiary hospital with 123 patients' record reviewed between December 2021 to December 2023.

Results: Majority of patients were elderly, female sex, married, and with comorbidities. Of the comorbidities, Hypertension, Diabetes Mellitus type II and Chronic Kidney Disease were predominant. Fever was the most prominent symptom but significantly reduced on patients with booster dose. Majority of patients had no infiltrates on chest Xray and no evidence of hypoxemia, with higher probability of these findings among those with booster dose. qSOFA scores of <2 was seen in both study groups. Low to moderate viral load were seen among patients who received booster dose compared to those with primary series alone, regardless of the disease severity. Disease severity on admission were mostly mild to moderate cases. Inflammatory markers such as CRP, ferritin, procalcitonin, ESR, and LDH were shown to be of normal value among vaccinated patients. Low procalcitonin (PCT) level showed a significant association in patients who received booster dose. Most common complications noted were bacterial pneumonia, acute kidney injury and sepsis but the probability of getting these complications is lesser in patients receiving at least one booster dose compared to those with primary series. Majority of patients had less than 21 days hospitalization with improved disposition upon discharge. Hospital-acquired pneumonia in five patients and myocardial infarction in one patient were the causes of death.

Conclusion: Majority of breakthrough infections were seen among patients withincreasing age, female sex, and presence of comorbidities. Disease severity on admission were mild to moderate, with very few presenting severe or critical disease. Risk factors noted with high disease severity and with poor outcomes were increasing age and presence of comorbidities, elevated inflammatory markers on admission, and high qSOFA scores, regardless of whether booster doses were received or not. There was no significant correlation noted on vaccination status and the clinical profiles of breakthrough COVID-19 infection.

Keywords: COVID-19 breakthrough infection, clinical presentation and demographics, outcomes

Biography of Presenting Author:

Dr. Nadine D. Bacalangco-Suerte completed her bachelor's degree in Biological Sciences at West Visayas State University-Magna Cum Laude in 2014 and finished her post graduate degree in Doctor of Medicine on the same institution in 2018. She completed her residency training inInternal Medicine in December 2023. During her residency training, she was able to receive awards related to research and was a co-author in a study published in European Society of Cardiology and Interventional Cardiology: reviews, research, resources.

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