

Omicron Variant of COVID-19: A New Concern in India

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Abstract: Background: The new SARS-CoV-2 variant Omicron, responsible for a cluster of cases in South Africa and now spreading around the world including India. It carries mutations associated with enhanced transmissibility and partial resistance to vaccine induced immunity.

Method: In this case series, we included 104 patients who tested positive for Omicron variant of COVID-19 and observe to collect data regarding demography, vaccine status, clinical manifestation, inflammatory markers, lung imaging and outcome.

Results: The mean age of omicron infected patients was 37.96 years (37.96 ± 19.57) with female preponderance (61.54%). 90.38% patients were found to be asymptomatic and 69.23% patients were fully vaccinated. 80% patients were remained unexposed to previous COVID-19 infection. COVID-19 related inflammatory markers not raised significantly. All patients are discharged safely at home after an average seroconversion period of 5.65 days without any adverse event.

Conclusion: Omicron is found to be less severe but highly transmissible variant of concern which might be escape from natural immunity or vaccine derived immunity.

Keywords: COVID-19; Omicron; Severity; Variant of Concern

Introduction:

The first sequenced omicron case was reported from Botswana on Nov 11, 2021, and a few days later another sequenced case was reported from Hong Kong in a traveler from South Africa⁽¹⁾. A new variant of SARS-CoV-2, B.1.1.529 (Omicron), was first reported to the World Health Organization (WHO) by South Africa on November 24, 2021. Omicron generated by numerous mutations existing variants of COVID-19 with potential to increase transmissibility, or partially escape infection- or vaccine-induced immunity⁽²⁾. On 26th November 2021, WHO designated Omicron as a variant of concern⁽³⁾. On December 1, the first case of COVID-19 attributed to the Omicron variant was reported in the United States. In India, the first Omicron case of COVID-19 was reported on 2nd December 2021. As of December 28, a total of 19 states of India had 578 cases of Omicron variant, including some that indicate community transmission.

The principal concerns about omicron include whether it is more infectious or severe than other Variants of concern and whether it can circumvent vaccine protection. Although immunological and clinical data are not yet available to provide definitive evidence, we can extrapolate from what is known about the mutations of omicron to provide preliminary indications on transmissibility, severity, and immune escape. Implementation of concurrent prevention strategies, including vaccination, masking, increasing ventilation, testing, quarantine, and isolation, are recommended to slow transmission of SARS-CoV-2, including variants such as Omicron, and to protect against severe illness and death from COVID-19.

Genomic surveillance is implemented in partnership with state and local public health laboratories, the Association of Public Health Laboratories, and other academic and government partners. To accelerate detection of COVID-19 cases attributed to the Omicron variant until they are common enough to be reliably measured by routine genomic surveillance, enhanced surveillance was initiated through National SARS-CoV-2 Strain Surveillance on November 28. The method is based on rapid screening for S-gene target failures (SGTFs) by polymerase chain reaction (PCR)-based diagnostic assays to flag potential cases of Omicron variant infection for confirmation by genomic sequencing⁽⁴⁾. Specimens that displays SGTFs have a higher likelihood to be Omicron (although SGTFs are not unique to Omicron) based on a mutation (69–70 deletion) that reduces S-gene target amplification in some PCR assays.

In this report, we try to summarize characteristics of new omicron variants including infectivity, clinical manifestations, disease severity, sero-conversion rate etc.

Results (Table 1 & Graph 1):

In this study, we included total 104 patients of COVID-19 attributed to the Omicron variant. Mean age of omicron infected patients was found to be 37.96 years (37.96 ± 19.57); among these patients, 80 patients (77%) were below the age of 50 year and 32 patients out of 104 were below 20 years of age. Prevalence of female population was 61.54% while for male it was 38.46%. Clinically most of patients were completely asymptomatic, only 10 patients out of 104 were found to be symptomatic with only mild disease. None of patients presented with or progress to severe or critical COVID-19 infection. Symptomatic patients had only mild fever, sore throat, runny nose and cough without any difficulty in breathing or fall in oxygen saturation. Nearly two third (69.23%) Omicron infected patients had taken full course of vaccination while large proportion of infected populations was not fully vaccinated. Among these patients, 80.77% patients were never experienced previous exposure of COVID-19 infection while only 19.23% patients had history of previous exposure to COVID-19 infection. In India, only 24 patients out of 104 (23.08%) had history of foreign travelling

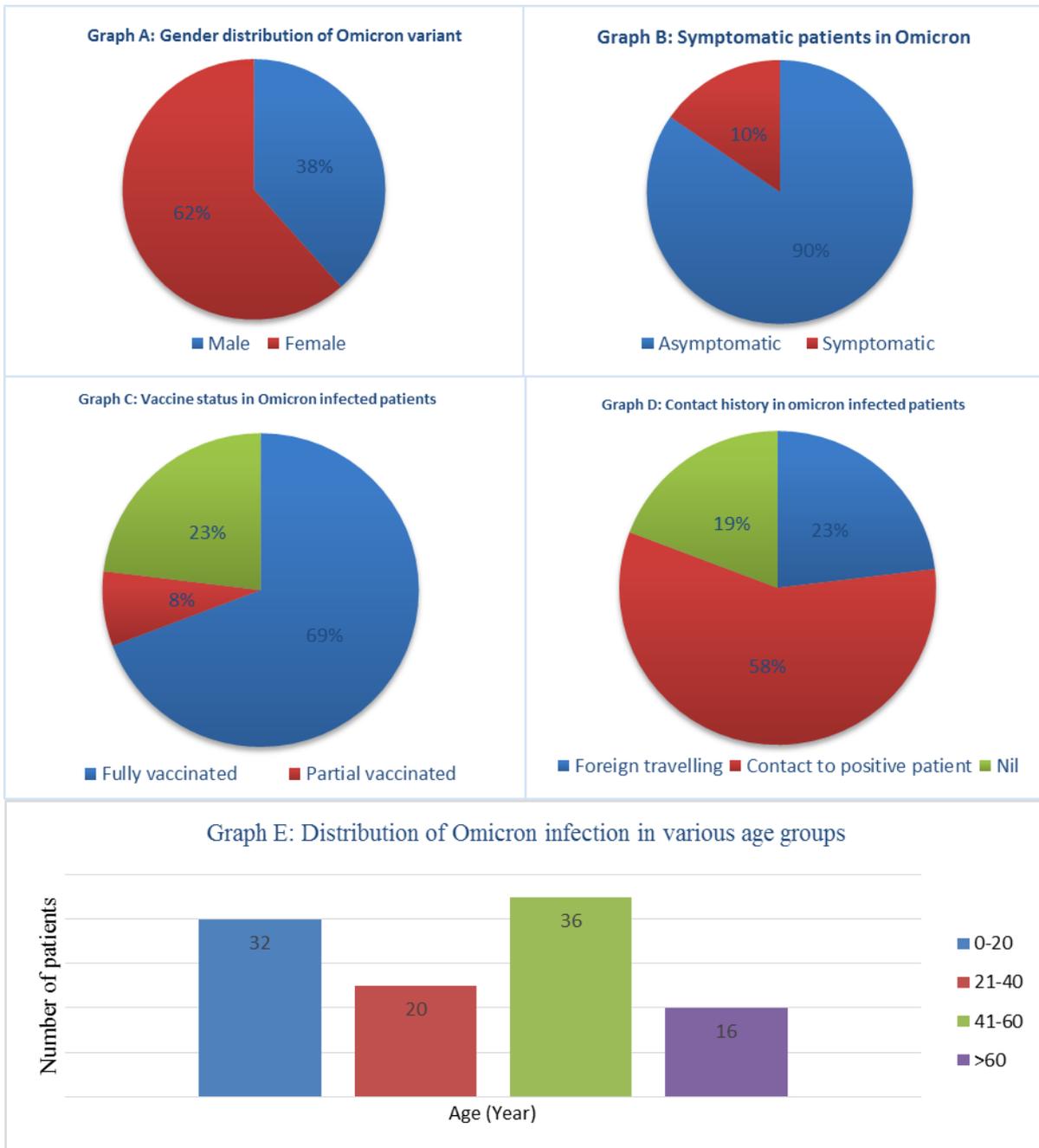
in Omicron prevalent area while 58% patients had no any travelling history to Omicron infected countries, they given the history of contact with foreign return Omicron positive patient.

Twenty patients out of 104 had neither any foreign travelling history nor any contact history with Omicron infected patients. All patients tested for COVID related inflammatory markers and we found that mean value of Neutrophil-Lymphocyte ratio 3.1 ± 0.097 , C-Reactive protein was 8.67 ± 6.02 mg/dL, D-dimer was 414.85 ± 138.2 ng/mL, Ferritin was 184.11 ± 92.4 μ g/L, and IL-6 was 10.12 ± 9.13 pg/mL. 96.15% patients had normal High-Resolution Computed Tomography images of chest while only Four patients had mild COVID-19 pneumonia. Average sero-conversion duration (Time of first positive RT-PCR to First Negative RT-PCR) was found to be 5.65 ± 2.18 days.

Table 1: Demographic and Clinical data of Omicron positive patients (N=104)	
Characteristics	Number (%) / Mean \pm SD
Age (Year)	37.96 \pm 19.57
Gender	
Male	40 (38.46)
Female	64 (61.54)
Clinical Profile	
Asymptomatic	94 (90.38)
Symptomatic	10 (9.61)
Vaccine Status	
Fully vaccinated	72 (69.23)
Partial vaccinated	8 (7.69)
Unvaccinated	24 (23.08)
Past history of COVID infection	
Infected	20 (19.23)
Not infected	84 (80.77)
Contact history	
Foreign travelling	24 (23.08)
Contact to positive patient	60 (57.69)
Nil	20 (19.23)
Inflammatory markers	
NLR	3.1 \pm 0.97
CRP (mg/dL)	8.67 \pm 6.02
D-dimer (ng/mL)	414.85 \pm 138.2
Ferritin (μ g/L)	184.11 \pm 92.4
IL-6 (pg/mL)	10.12 \pm 9.13
HRCT chest	
Normal	100 (96.15)
COVID pneumonia	4 (3.84)
Duration of seropositivity (Days)	5.65 \pm 2.18

Discussion:

Omicron emerged in a COVID-19-weary world in which anger and frustration with the pandemic are rife amid widespread negative impacts on social, mental, and economic wellbeing. Although previous Variant of concerns emerged in a world in which natural immunity from COVID-19 infections was common, this fifth Variants of concerns has emerged at a time when vaccine immunity is increasing in the world.



Graph 1: A: Gender distribution of omicron variants; B: Symptomatic prevalence in Omicron infected patients; C: Vaccine status in Omicron infected patients; D: Contact history of Omicron infected patients; E: Distribution of omicron infection in various age groups.

Although omicron is likely to be highly transmissible, it is not yet clear whether it has greater transmissibility than delta, although preliminary indications suggest that it is spreading rapidly against a backdrop of ongoing delta-variant transmission and high levels of natural immunity to the delta variant. If this trend continues, omicron is anticipated to displace delta as the dominant variant in South Africa. In India, the delta-variant accounted for >99.9% of circulating SARS-CoV-2 variants but cases of new omicron variants have been in increasing trend in last 2-3 weeks. Scientists around the world are working to rapidly learn more about the Omicron variant to better understand how easily it might be transmitted and the effectiveness of current diagnostic tests, vaccines, and therapeutics against this variant. As per our observation younger population are more infected with omicron variants as compared to old population. Prevalence of Omicron infection also higher in children as compared to previous delta variant. In Our observation proportion of female patients were found to be higher as compared to male patients while in delta variant male population were infected more commonly. Most of Omicron infected patients were asymptomatic while remaining symptomatic patients had only mild COVID-19 infection. In other study, many of the first reported cases of Omicron variant infection appear to be mild ⁽⁵⁾, although as with all variants, a lag exists between infection and more severe outcomes. Even if most infections are mild, a highly transmissible variant could result in enough cases to overwhelm health systems. The clinical severity of infection with the Omicron variant will become better understood as additional cases are identified and investigated.

Among these 104 patients, more than two third of patients were fully vaccinated for COVID-19, which predicted lesser severity of COVID-19 infection in these patients. However, a large quantity of unvaccinated community leads to a rapid infection. Although there are conflicting reports on whether COVID-19 vaccines have consistently retained high efficacy for omicron. Given that omicron has a larger number of mutations than previous variant of concern, the potential impact of omicron on the clinical efficacy of COVID-19 vaccines for mild infections is not clear. Thus far, most COVID-19 vaccines have remained effective in preventing severe COVID-19, hospitalization, and death from all previous variants, because this efficacy might be more dependent on T-cell immune responses than antibodies. Similarly previous natural exposure to COVID-19 infection gives long lasting immunity for re-infection from existing variants as well as new omicron variant of concern. This evidenced by observation that more than 80% omicron infected patients did not have history of previous COVID-19 infection. Foreign travelling to omicron prevalent area and contact to omicron infected patients was found to be major source for spreading infection by omicron variant of COVID-19. Government amended its existing Order requiring predeparture testing for all air passengers to the India from any other country. A negative test result closer to the time of travel enhances reduction in transmission risk during travel ⁽⁶⁾. Prioritization should be balanced with maintaining case investigation and contact tracing for outbreaks of confirmed cases of Omicron variant of SARS-CoV-2 infection especially for persons at increased risk for severe COVID-19-related health outcomes.

In these Omicron positive patients, COVID related inflammatory markers like NLR, CRP, D-dimer, Ferritin, and IL-6 was found to be within normal range or near to normal range. Experiences from Delta variant of COVID-19 show that these inflammatory markers significantly raised in delta variant of COVID-19 infection and indicate severity of disease. Similarly, lung involvement in COVID-19 was lesser for omicron variant.

CDC is also supporting efforts to prevent, detect, and respond to COVID-19 internationally, including through support for laboratory and sequencing capacity and strengthening global vaccine programs. Implementation of concurrent prevention strategies, including vaccination, masking, improving ventilation, testing, quarantine, and isolation, are recommended to slow transmission of SARS-CoV-2 and to protect against severe illness, hospitalization, and death from COVID-19. All persons aged ≥ 5 years should be vaccinated against COVID-19. Persons aged ≥ 18 years who completed a primary mRNA COVID-19 vaccination series ≥ 6 months previously should receive a booster dose. Booster doses are especially urgent for those at higher risk of severe disease, such as persons residing in nursing homes and long-term care facilities. In addition, everyone aged ≥ 2 years wear masks in public indoor places in areas of substantial or high transmission.

Conclusion:

On conclusion, Omicron is found to be less severe but highly transmissible variant of concern which might be escape from natural immunity or vaccine derived immunity. Patients with Omicron infection rapidly transmit infection but patients remain asymptomatic which act as a carrier and can suddenly burst in community. Early identification, isolation, contact tracing with implementation of concurrent prevention strategies, including vaccination, masking, social distancing, increasing ventilation, and testing are recommended to slow transmission of SARS-CoV-2, including variants such as Omicron, and to protect against severe illness and death from COVID-19.

Limitation: There are several limitations in this study. The number of patients was limited and needs to have been studied on a larger patient cohort. It is an observation study and case findings might be associated with individual characteristics like international travelers are most likely younger people and vaccinated.

Ethical approval: This study approved by ethical and research committee of SMS medical college and Hospital, Jaipur, India.

Author contributions: S. Bhandari and G. Rankawat formulated the research questions, designed the study, developed the preliminary search strategy, and drafted the manuscript; G. Rankawat and A. Singh collected and analyzed data for study. G. Rankawat writes the manuscript. S. Bhandari and conducted the quality assessment. All authors critically reviewed the manuscript for relevant intellectual content. All authors have read and approved the final version of the manuscript.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not for profit sectors.

Availability of data and materials: Available from corresponding author upon reasonable request.

Declaration of competing interest: All authors report no potential conflicts. All authors have submitted the ICMJE Form for Disclosure of Potential.

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