



SARS COV 2 Variant: An Outbreak in A Tertiary Care Hospital of Central India

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Abstract

The coronavirus disease 2019 (COVID-19) was first reported in Wuhan, China in December 2019 and since then it became a global pandemic that is threatening the health and wellbeing of people worldwide. Documentation of more than 274 million reported cases and 5.3 million deaths has been done till date. The Omicron variant first observed in Pt. Jawahar Lal Nehru memorial medical college, Raipur around December 2021. In this study, the clinical profile of patients

admitted during third wave is compared with previous Covid waves.

Methods

166 COVID-19 admissions since december 2021 were compared to 320 admissions since February - March 2020, prior to the Omicron outbreak. Subjects of interest were the indoor patients of Pt. Jawahar Lal Nehru Memorial Medical College and Dr Bhim Rao Ambedkar Hospital, Raipur. Ninety percent patient records at peak bed occupancy

during the outbreak were reviewed for primary indication for admission, clinical severity, oxygen supplementation level, vaccination and prior COVID-19 infection.

Observations

For the Omicron and previous waves, deaths and ICU admissions were 6.5% vs 20% ($p < 0.00001$), and 2% vs 4.3% ($p < 0.00001$) respectively; length of stay was 7 days vs 12 days; and mean age was 39 year vs 52 years. Admissions in the Omicron wave peaked and declined rapidly with peak bed occupancy at 51% of the highest previous peak during the Delta wave. Eighty two (82%) patients in COVID-19 wards had incidental COVID-19 following a positive SARS-CoV-2 PCR test. Only one third (36) had COVID -19 pneumonia, of which 83% had mild to moderate disease. The remaining 17% required high care or ICU admission. Fewer than half (36%) of patients in COVID-19 wards required oxygen supplementation compared to 99.5% in the first wave.

Conclusion

There was decreased severity of COVID-19 disease in the Omicron-driven fourth wave in Pt. Jawahar Lal Nehru Memorial Medical College & Dr. Bhim Rao Ambedkar Hospital, Raipur, Chhatisgarh.

Keywords

Covid19, Omicron, Delta wave

Introduction

The Corona virus disease 2019 (COVID-19) first reported in Wuhan China in December 2019 is a global pandemic that is threatening the health and wellbeing of people worldwide. To date

there have been more than 274 million reported cases and 5.3 million deaths (World Health Organisation 2021)¹. During the current wave of SARS-COV 19, a difference in the clinical picture of COVID-19 ward patients compared with prior COVID-19 waves was observed. In the current study, we compare the clinical profile of 166 COVID-19 patients admitted in the first 33 days since the commencement of the Omicron driven Third wave with that of 1320 patients admitted during the second pandemic wave over the previous 8-9 months since February- march 2020 and provide a description of the clinical profile of 98 patients in the hospital at the peak of the Omicron wave around December 2021.

Methods

This study was conducted in Pt. Jawahar Lal Nehru memorial medical college, Raipur, Chhatisgarh in 2021 November end to mid January of 2022. The subjects of interest were the patients admitted in our hospital with Covid 19 RTPCR positive status and based on this, primary indication for admission, clinical severity, oxygen supplementation level, vaccination and prior COVID-19 infection were compared to that of the patients admitted in previous Covid waves. Sections of the hospital, including ICU, high care and general wards were repurposed for the management of COVID-19 patients. Hospital COVID-19 bed occupancy was obtained from daily statistics and was analysed accordingly.

Inclusion Criteria

Indoor patients with RTPCR Positive Report with or without co-morbidities

Exclusion Criteria

1. Patients not willing for admission
2. Pregnant & Lactating Females.
3. Unvaccinated individuals/ whose vaccination status was not known.

Results

After following the inclusion & Exclusion criteria, 166 records were enrolled in the study during omicron wave and were compared to all 320 records of patients admitted during three previous waves over a period of 8-9 months. In addition, a snapshot analysis of 98 records of patients occupying COVID -19 beds in the hospital at peak bed occupancy were

reviewed for severity of illness, primary indication for admission, oxygen supplementation level, self-reported vaccination and prior COVID-19 infection status. These data were entered into the internal hospital information system. Oxygen supplementation levels for 166 patients admitted to the hospital during the first wave were reviewed Boswelletal., 09December2021⁶. The highest single day occupancy of COVID beds during the Omicron wave was 14 on 21 December 2021, much lower than the highest level of COVID bed occupancy over previous waves, which was 43 beds occupied on 11 April 2021 at the peak of the Delta wave.

Table 1: Description of covid-19 admissions at Pt. JNM Medical College in Third Wave compared to previous waves

| Parameters | 1/11/21 - 1/1/22 n(%) or mean (SD) | 4/3/2021-10/10/21 n(%) or mean (SD) | TESTPARAMETER | SIGNIFICANCELEVEL |
|---------------------------|---------------------------------------|--|---------------|-------------------|
| #Admissions | 166 | 1320 | | |
| Mean age | 39(22.4) | 52(21.8) | t=-10.2 | p<0.00001 |
| Proportions in age groups | | | | |
| 20-34 | 13(17.8) | 255(6.4) | z=8.8 | p<0.00001 |
| 35-49 | 49(10.5) | 182(14.7) | z=-1.9 | p=0.15 |
| >=50 | 15(32.2) | 169(54.7) | Z=-8.9 | p<0.00001 |
| 50-59 | 41(8.8) | 57(19.1) | z=-5.5 | p<0.00001 |
| 60-69 | 18(14.6) | 97(12.1) | z=-2.7 | P=0.0061 |
| 70+ | 20(8.8) | 12(5.5) | z=-5.1 | p<0.00001 |
| Unknown | 0(0) | 3(0.8) | | |
| Lengthofstay | 7.0(3.7) | 12(19) | t =-5.4 | p<0.00001 |
| ICU | 5(1%) | 17(4.3) | z=-3.4 | P0.0007 |
| Deaths | 15(4.5%) | 162(18.3) | z=-8.7 | P<0.00001 |

The above table compares 166 patients admitted during the Omicron wave and 1320 during previous waves, showing significant differences in the age distribution, outcomes, level of care required, and length of hospital

stay. Mean age was significantly lower in the third wave of SARS COV2 infections as compared to the earlier wave. The above table tabulates the differences between the current and the previous Covid wave.

Table 2: Distribution of Patients Based on Mode of Oxygen Supplementation for Covid Pneumonia Patients

| Oxygen Supplementation Modality | Room Air | Nasal Prongs Oxygen | Face Mask Oxygen | Prong Mask Oxygen | Face Double Nasal | High Flow Nasal Oxygen | Non Invasive Ventilation | Mechanical Ventilation | Total |
|---------------------------------|----------|---------------------|------------------|-------------------|-------------------|------------------------|--------------------------|------------------------|-------|
| Confirmed COVID Pneumonia | 57 | 13 | 23 | 1 | -- | 37 | 18 | 4 | 36 |

The above table shows the mode of oxygen support required by the admitted patients. To note is the point here that 57 patients out of 166 admitted did not require the oxygen support during their full course of stay at the hospital.

Furthermore, thirty three (33%) patients were incidental COVID admissions, having been admitted for another serious primary medical, surgical, obstetric or psychiatric diagnosis. These cases have been labeled ‘incidental COVID’ as they were diagnosed as the result of hospital admission for some general complaints.

Discussion

As it has been demonstrated elsewhere that the new variant rapidly displaced the older variants in the disease duration as well as disease severity in a study conducted by Viana et al., 2021, the clinical profile described in this paper represents disease caused by the new variant is reasonable. Hospital admissions increased a hurriedly began to decline within a period of 60 days. This demonstrates a significantly different transmission trajectory and epidemiological profile from that of previous variants of concern and can be expected to be replicated in other parts of the world. Peak bed occupancy was about one-third

which suggests a lower rate of hospital admissions in the current wave compared to the previous waves. The mean age of hospitalized patients in the current wave was lesser than previous waves and may be attributed to the higher rate of vaccination in the elderly population. Fewer ICU admissions and deaths and a shorter length of hospital stay indicate decreased severity of disease caused by the new variant. Lesser number of deaths resulted from a cause other than COVID-19. The results of the present study are comparable to the different studies done worldwide by Mendelsohn³ et al., 2021 and Maslo et al² in 2021.

Conclusion

This study concludes that the current wave or the new variant was of lesser severity in terms of morbidity and mortality as compared to other previous COVID waves with fewer deaths, ICU admissions and a shorter length of hospital stay and most important noticeable change as compared to the previous Covid waves is the younger age profile of patients. Furthermore studies should be conducted on a large number of patients and should be compared with each wave separately to know

the exact comparison in between different waves.

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