

CASE SERIES

Case series of JN-I variant infected patients in a Covid ICU

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ABSTRACT

Background: As on today, JN-1 is the most prevalent SARS COV- 2 variant globally. It is a descendant lineage of Omicron BA.2.86 subvariant and presents with symptoms of cough, fever and breathlessness, but within a time span of 2 months that is between December 2023 and 9th February 2024, 79,107 patients were diagnosed worldwide and about 35,000 deaths occurred. The first Indian case of JN-1 COVID was reported on 16th December 2023, in Kerala, but almost all states have reported cases to date. **Aim and objectives:** To study the Clinical Features and Radiological findings and Outcome in JN-1 variant infected patients in a COVID ICU and to document the various comorbidities and vaccination status of these patients which influence the outcome. **Methodology:** All patients who tested COVID-RTPCR positive at the Respiratory Medicine OP/ Emergency Department, at Government General Hospital Nellore, (AP) between December 23rd, 2023 and February 20th, 2024 and admitted in the COVID ICU with Respiratory Failure or having comorbidities were taken up for the Study. A good history was taken, all blood investigations, Chest x-ray, CT scan chest, ECG, 2-D Echo were done. Physicians and Neurologist were referred to when necessary. The Swabs were further sent to INSACOG, Vijayawada for genome analysis. **Results:** A total of 8 patients -7men and 1 woman tested positive for COVID by RTPCR test in the 2-month period, all of them later confirmed to be JN-1 variant positive. 2 patients were sent for Home Quarantine as their only symptom was a low grade fever. 6 other patients, most of them having multiple comorbidities were admitted in the COVID ICU, 4 of them were in Respiratory failure - 3 were started on oxygen and 1 on Mechanical Ventilator. The commonest co-morbidity was Destroyed or Damaged lung due to Old Pulmonary TB, or Severe COPD followed by Neurological disease CVA and Renal Failure. All patients had changes in CT-CHEST -ground glass shadows with Fibrobronchiectatic changes was the commonest finding. 2 patients were discharged with normoxemia, but 4 succumbed to the disease. **Conclusions:** As per our study, the JN-I variant of SARS-COV causes fatal disease in those with multiple co-morbidities, especially those with preexisting destroyed or damaged lungs and neurological disease. In those with healthy lungs, it passes off as a mild upper respiratory disease.

Keywords: JN-1 variant of SARS-COV-2, Co-morbidities, COVID Intensive care unit, Outcome

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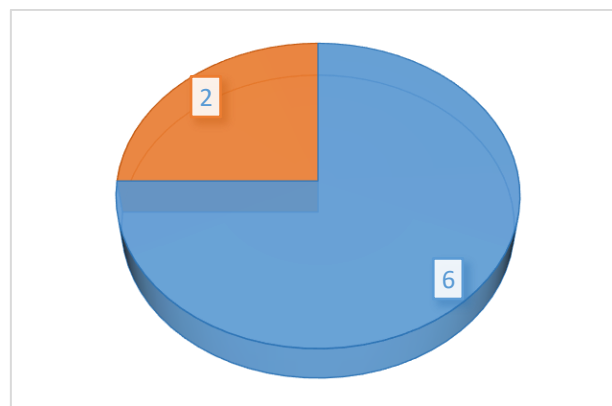
INTRODUCTION

Today JN-1 is the most prevalent SARS-COV-2 Variant globally¹. It is a descendant of BA.2.86 with an added mutation in its spike protein and thus has increased immune evasion² and was first diagnosed on 25th August 2023. As on February 9th 2024, 79,107 patients were diagnosed as JN-1 Variant positive world wide. About 10,000 deaths occurred between January 10th 2024 and February 9th 2024 globally³. The first Indian case of JN-1 was reported on December 16th, 2023 from Kerala, slowly spreading to other States and the Indian Casualties are expected to be rising. The virus is the most prevalent

SARS-COV-2 variant in all the 6 WHO Regions- South East Asia, Africa, Western Pacific region, Eastern Mediterranean, European region and the Americas. The symptoms of COVID-19 JN-1 are similar to other variants- Fever, Running nose, Sore throat, Headache and Mild Gastroenteritis have been reported⁴. Patients with preexisting lung disease and co-morbidities stand at a great risk of proceeding to Pneumonia, ARDS and Death. However, experts are of the view that the immunity generated by the XBB.1.5. Booster vaccine will protect against symptomatic and severe disease. A recent study in Switzerland, assessing the validity of the Rapid

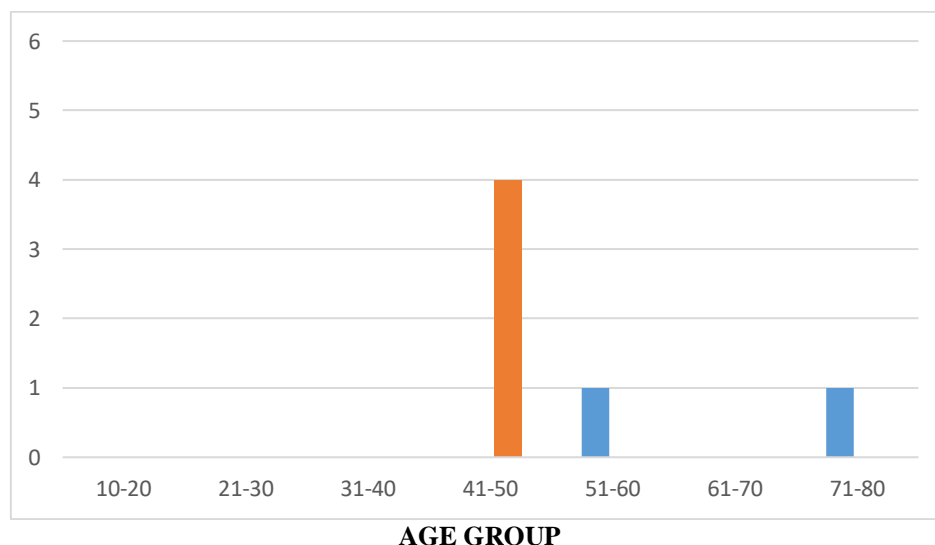
Antigen Test for SARS -COV-2 for its ability to detect JN-1, and other circulating BA 2.86 variants says it is still useful in detecting infections caused by these variants
METHODOLOGY - All patients who presented to the Respiratory Medicine -OP or Emergency Department of Government General Hospital /ACSR GMC NELLORE (AP), between December 23rd, 2023 and February 20th, 2024, who tested COVID RT-PCR positive were taken up for the study. Their samples were further sent by the DEPT Of Micro-biology to INSACOG, VIJAYAWADA (AP)for genome analysis.Those with minimal symptoms and no co-morbidities were sent for Home Quarantine. Those with Respiratory failure or having multiple comorbidities were admitted in the COVID ICU. Oxygen and assisted ventilation, where necessary,were started.The suggested regimen of Injection Remdesivir, InjDecardon, Inj Enoxaparin

along with Antibiotics and Antacids was started. A good history was taken, all the necessary investigations – Complete blood picture, Renal Function tests, Fasting and Post Prandial blood sugars, Liver Function tests , C-reactive protein, D-DIMER, Chest X-RAY, CT scan chest, ECG & 2D-ECHO were done and results noted. The Duty Physician and Duty Neurologist attended to the cases with comorbidities at the earliest, and their advice was strictly followed. **RESULTS :-**A total number of 8 patients tested COVID- RTPCR Positive between December 23RD 2023 and February , 20TH 2024 at our center. The results of the Genome Analysis which came a few days later, showed that all of them were JN-1 variant COVID positive. Out of these 8, 2 were sent for Home Quarantine and 6 were admitted in COVID ICU. N=8



6 ICU Admissions 2 Home Quarantine

All 6 patients admitted in COVID ICU were males. Out of the 2 patients sent for Home Quarantine one was male and other was female. The 2 patients sent for Home Quarantine had no comorbidities and very few symptoms. Of e 6 patients admitted to the COVID ICU most belonged to the 41-50 years age group n=6

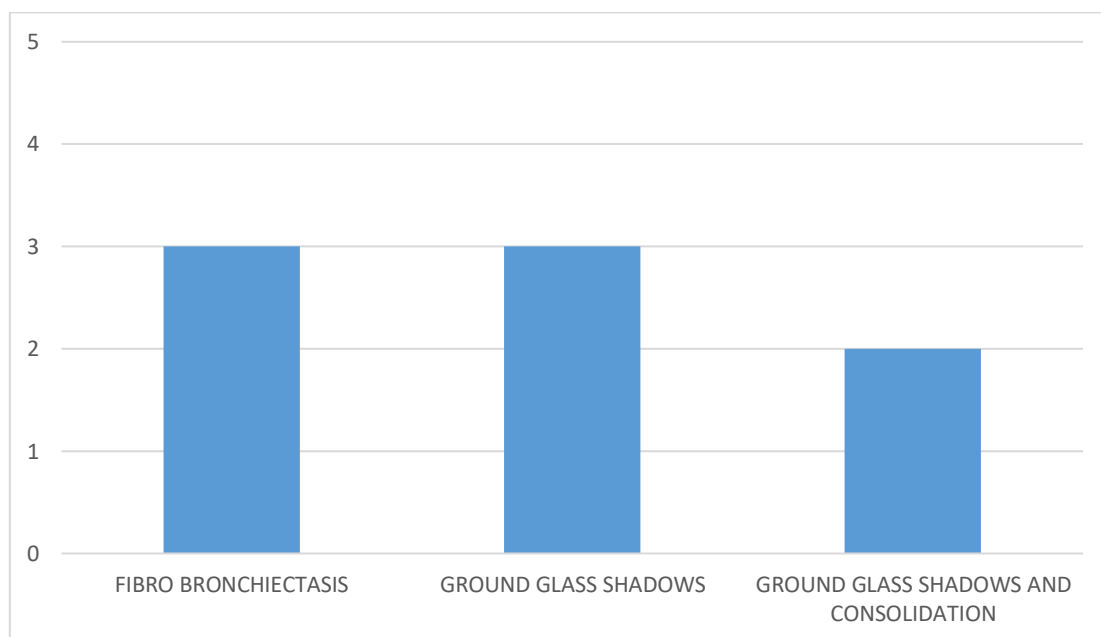


All 6 patients had cough and breathlessness. Fever about 101°- 102° F was present in all patients except one. 4 of the 6 patients admitted in COVID ICU had Respiratory failure, 3 were kept on NRBM mask and one kept on Mechanical Ventilator. 2 patients were normoxemic

SYMPTOMS AND SIGNS

	FEVER	COUGH	BREATHLESSNESS	RESPIRATORY FAILURE
PATIENT 1	+	+	+	+
PATIENT 2	-	+	+	-
PATIENT 3	+	+	+	+
PATIENT 4	+	+	+	+
PATIENT 5	+	+	+	-
PATIENT6	+	+	+	+

All 6 patients showed changes in their CT-Chest, the commonest CT findings were Ground Glass Shadows In 3 patients and Fibrobronchiectasis in 3 patients. 2 patients showed both Ground Glass Shadows and Consolidation.



The commonest comorbidity was diseased/destroyed lungs with Fibrobronchiectasis, and history of old Pulmonary TB (3 patients) followed by COPD (3 patients). 3 of the above patients had history of CVA,1 patient developed Stroke after admission. Chronic Renal disease was present in 2 patients. Diabetes, Hypertensionand Coronary artery disease were also present in 2 patients each and HIV in one patient

COMORBIDITIES						
	DESTROYED LUNG/ FIBROBRONCHIECTASIS/COPD	HIV	CAD/CVA	CKD	DM	HTN
PATIENT1	-	+	-	-	+	+
PATIENT2	+	-	+	+	-	-
PATIENT3	+	-	+	-	-	+
PATIENT4	+	-	-	+	-	-
PATIENT5	+	-	-	-	-	-
PATIENT6	+	-	-	-	+	-

2 Patients had taken Anti COVID vaccination, 4 were unvaccinated. Out of the 6 patients , 4 patients succumbed to the disease and 2 were sent home with normoxemia.

DISCUSSION

As per the WHO update of 9thFebruary, 2024 during the 28 day period from 8th January, 2024 to 4th

February, 2024, 75 countries reported COVID-19 cases and 43 countries reported COVID-19 deaths. Our Department reported the first JN-1 COVID Case on December 26rd,2023 and the last case on 5th January 2024, all cases clustered in the given 15 day period. After January 5th , though COVID-RTPCR is being done for all inpatients and outpatients, as

advised by Health authorities, not a single patient has tested positive till today.

Across the 6 WHO regions, in the past 2 months (January – February 2024) rate of ICU admission of JN-1 patients was between 17-25%⁶. In our Hospital out of the 8 patients who tested positive 6 had to be sent to COVID ICU (75%) because of Respiratory Failure and pre-existing comorbidities. In a study conducted by Priya Singh et al at AIIMS, New Delhi & Amity University, Delhi and published in January, 2023⁷, the major risk factors for COVID-19 deaths were Diabetes and Hypertension (48%) Heart disease (14.4%) Chronic lung disease (7.6%). Our patients showed similar comorbidities, though Cerebrovascular accidents CVA (in 3 patients) seem to be an equally worse comorbidity to have. Sally Magdy et al in Egypt in 2023, studied among other things the need for effective COVID vaccines in patients with comorbidities who may succumb to the disease. 2 of our patients were vaccinated and 4 were not. The WHO COVID-19 Epidemiological update of 16th February, 2024, states that there were 10,000 new deaths in the 28 day period from January 8th to February 8th, though it has come down by 31% from the previous month. Out of our 6 patients, 4 patients succumbed to the disease⁸, all had multiple comorbidities, only one of these 4 had taken vaccination.

STRENGTHS AND LIMITATIONS

Our COVID ICU was never really closed from 2020 onwards, as cases occurred on and off in the last 3 years. The nursing staff and paramedics are well trained and can handle any exigency. This is very favourable to patients. The 15 day period in which these cases presented, is really a very short time to come to any reasonable conclusion.

CONCLUSION

The JN-1 variant of SARS-COV-2 is fatal in patients with comorbidities like Chronic lung disease and Neurological disease, especially those who did not take the suggested COVID vaccination. In those with healthy lungs and with history of vaccination it passes off as a mild upper respiratory infection.

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