Commentary

Immunological Escape and Other Lessons from the First Omicron Cluster in India

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Omicron variant of concern (o-VOC) of *SARS-CoV-2* is rapidly spreading across the globe. It has been posited that it leads to mild disease and there is high incidence of disease in previously vaccinated or infected individuals (immunological escape).[1,2] This has led to unchanged policy regarding booster injections in a number of countries,[2] including India.[3] We report clinical features of the first cluster of o-VOC in India that show moderate disease in multimorbid elderly with significant immunological escape even in the young.

A family of four (parents and 2 children) left Johannesburg, South Africa on way to India in the third week of November-21. They were tested using reverse transcriptase polymerase chain reaction (RT-PCR) 2 days before they left and also enroute at Dubai. Both the reports did not show presence of *SARS-CoV-2* in any of the passengers. After landing at Jaipur (India), the family stayed at their apartment. The lady visited her sister's family in Jaipur where two days later one of the hosts developed pain in throat and tested positive for infection with RT-PCR test. All adults and children in the family were screened and five more were found to have the virus, all were asymptomatic (Table). Detailed inquiry revealed the South African connection. All the visitors were retested by RT-PCR that showed virus RNA. All the samples were genetically analyzed and presence of omicron variant of concern (o-VOC) was confirmed. Serial contact tracing has been initiated. Salient clinical features in the whole cohort are

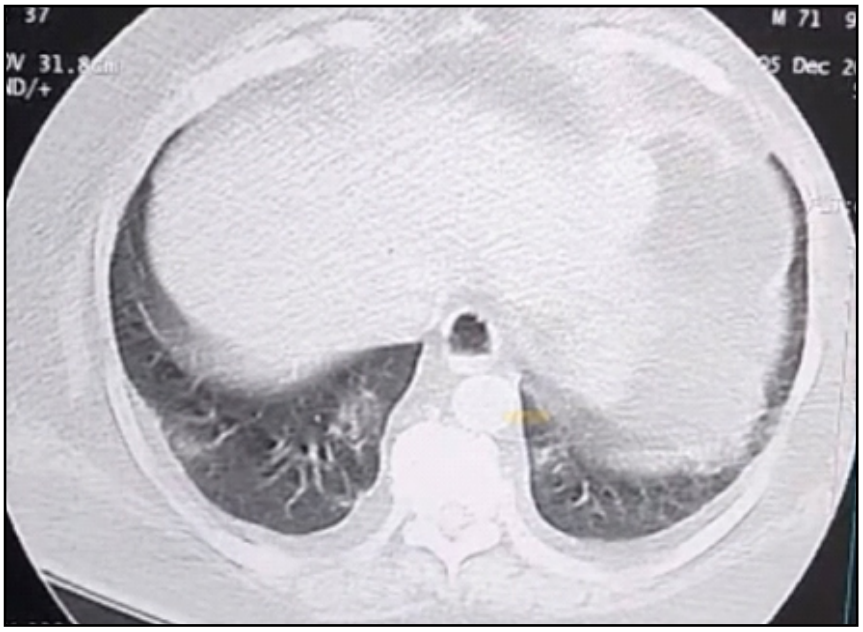

Figure: High resolution CT scan image with moderate pulmonary disease.

Table: Salient clinical features of the cluster

Age, sex	Comorbidities	Symptoms	Past Covid-19	Vaccine type	Days from second dose	Investigation abnormalities (lymphopenia, raised, CRP, d-dimer, ferritin, interleukin-6	Computerised tomographic scan thorax	Management
Indian family								
72, M	Diabetes, hypertension, coronary angioplasty, chronic kidney disease	Coryza, cough	Nov-20	ChAdOx1	189	Interleukin-7 x2 Upper limit	Moderate pulmonary disease	Remdesivir, anticoagulant
47, M	Hypertension	Throat pain, cough, fever	--	ChAdOx1	162	Normal limits	Normal	Supportive
39, F	Bronchial asthma	--	Nov-20	ChAdOx1	154	Normal limits	Normal	--
44, M	Diabetes, hypertension	Throat pain, cough	Nov-20	ChAdOx1	154	Normal limits	Normal	Supportive
39, F	--	--	Nov-20	ChAdOx1	101	Normal limits	Normal	--
16, F	Bronchial asthma	--	Nov-20	Nil	--	Normal limits	--	--
South Africa based								
47, M	--	--	--	BNT162b2	143	Normal limits	Normal	--
38, F	--	--	--	BNT162b2	99	Normal limits	Normal	--
12, F	--	--	--	BNT162b2	102	Normal limits	--	--
7, M	--	--	--	Nil	--	Normal limits	--	--

shown in the table. Most persons were asymptomatic. Investigations did not reveal lymphopenia and C-reactive proteins, d-dimer, ferritin, and interleukin-6 levels were normal on admission to hospital. Computerized tomographic scan of the eldest family member with multimorbidities (Figure) revealed moderate disease. Serial RT-PCR testing has revealed disappearance of virus RNA at 7-10 days in all the patients. All the adults who contracted the virus had been vaccinated and five had history of COVID-19 in November 2020. The Indian family were vaccinated with ChAdOx1 and South African with BNT162b2, 100-190 days prior to illness (Table).

This cluster confirms the presence of asymptomatic spread of o-VOC with low pathogenicity in young individuals and moderate disease in a multimorbid individual. This is similar to reports from South Africa and UK.[4,5] The most important lesson of this case-cluster is evidence of double-dose of ChAdOx1 vaccine (<6 months) along with past infection (>12 months) to prevent o-VOC infection. Epidemiological data from South Africa (where the o-VOC was initially reported) and other countries with widespread δ-VOC have reported waning immunity at 6 months of vaccination using either mRNA or adenovirus based vaccines, especially in the elderly and the immuno-compromised.[1,5] Our report confirms this finding and suggests that third dose of vaccine should be provided to all high risk individuals. More than 100 countries have approved third dose of COVID-19 vaccine[2], mainly in North America, Europe, Australia and South-East Asia. On the other hand, many countries in the Middle-East and Central Asia, South Asia and Africa where o-VOC and δ-VOC are rapidly spreading remain vulnerable. Our findings are especially relevant for India where the δ-VOC led to unprecedented health disaster earlier this year.[6]

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