Correspondence/Letter to the Editor

Effectiveness of ChAdOx1 nCOV-19 Vaccine: Experience of a tertiary care institute

Dear Editor,

I am approaching you in respect of the recently published article titled, Effectiveness of ChAdOx1 nCOV-19 Vaccine: Experience of a tertiary care institute published by Bobdey et al. I congratulate the authors to have put forward such an exhaustive description of COVID-19 transmission among vaccinated and unvaccinated individuals. The article has tried to address the most relevant and critical issue of the effectiveness of the Covishield vaccine, especially in the current scenario of increasing cases of breakthrough infections across the globe. However, I would like to bring to notice that the surge of COVID-19 cases, that is, “the second wave” in India began at the end of March 2021 and continued till mid-June 2021. The published study has presented data of COVID-19 cases in vaccinated individuals only till April 25 2021; since the second wave continued to persist much beyond the follow-up period of the study, it would be interesting to know the incidence of breakthrough cases during the rest of the period of the second wave.

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Reply to ‘Effectiveness of ChAdOx1 nCOV-19 vaccine: An update’

Dear Editor,

In our study published in Jul 21 on the effectiveness of the COVISHIELD vaccine in a real-life scenario, vaccinated employees and students at our institute were followed up for occurrence of COVID-19 infection post-vaccination till 25 Apr 21. The results of our study revealed overall vaccine effectiveness of 88% for fully vaccinated and 44% for partially vaccinated individuals. To further evaluate the effectiveness of the vaccine, we followed up the Cohort till 31 Jul 21. With time, the vaccination status of the individuals changed from partially/unvaccinated to completely vaccinated. The definition of the fully vaccinated was kept the same (at least 14 days had passed since the second dose) and breakthrough infection rate which is defined as positive lab test (RT PCR) at least 14 days after a person received the second dose of vaccine. The incidence of breakthrough infection among fully vaccinated individuals during the previous study period (01 Feb to 25 Apr 21) was 67 out of 2863 (2.3%). In the last few months more individuals achieved the status of being fully vaccinated thus increasing the total to 3205. However, since 67 individuals had already turned positive between 01 Feb to 25 Apr 21, 3138 were considered susceptible. In the period from 26 Apr to 31 Jul 21, 35 individuals out of 3138 individuals became positive, thus the incidence of breakthrough was found to be 1.1%, and overall, from 01 Feb to 31 Jul 21 the incidence of breakthrough infection was 3.1% (Table 1).

Table 1 – Incidence of breakthrough cases among fully vaccinated.

| Previous study (1Feb21–25 Apr 21) | Present study (26Apr–31Jul 21) | Overall |
|-----------------------------------|---------------------------------|---------|
| 67/2863 (2.3%)                    | 35/3138 (1.1%)                  | 102/3205 (3.1%) |

In order to assess transmission of infection, 84 individuals were categorized as High risk and Low-risk and were tested for antibodies for COVID 19 using COVID KAVACH ELISA kits. High-risk (n = 24) individuals were defined as any individual staying in the same household/common barrack or having close contact at the workplace with a COVID positive case. Low-risk (n = 60) was defined as any individual not having any history of contact with a COVID-positive case. A total of 19 (79%) high-risk contacts and 45 (75%) low-risk contacts were found to have COVID-19 antibodies (Table 2).
Table 2 – Infection rate among HRCs and LRCs.

|                      | High risk infected n (%) | Low risk infected n (%) |
|----------------------|--------------------------|-------------------------|
| 19/24 (79%)          | 45/60 (75%)              |

Discussion

In our previous study, we had found 88% effectiveness of the COVISHIELD vaccine and the breakthrough rate of 2.3% among completely vaccinated individuals. But, in the last 3 months, our country has witnessed the worst ever phase of COVID-19 much of which has been attributed to the Delta variant of the virus; however, in our institute the incidence of breakthrough infection was found to be only 1.1% and overall, the breakthrough infection was 3.1%. A recent study conducted by the Washington state department of health revealed a total of 21,757 breakthrough infections, however breakthrough infection rate was not mentioned. A similar study done in Israel among health care workers revealed 39 breakthrough infections among 1497 fully vaccinated health care workers with a breakthrough infection rate of 2.6% which is comparable to our results.

The latest ICMR serosurvey of Maharashtra suggests a seroprevalence of about 58%. In our study, seroprevalence among high risks was 79%, among Low risks it was 75%, and overall 76.1%. The findings indicate that there is almost no difference in seropositivity among high and low-risk individuals. It is prudent to mention that the virus has been present in our environment for almost 18 months and our country has already experienced two waves, hence a substantial proportion of individuals are likely to have contracted infection, though it is possible that many would have remained asymptomatic. Even though the number of individuals tested for antibodies in our study is small, the seroprevalence findings indicate that irrespective of exposure status, individuals have got infected and reinforces the ICMR serosurvey results.

To conclude, the occurrences of COVID infection among the vaccinated individuals is a matter of concern but cannot be entirely attributed to vaccine effectiveness alone. The dynamics of vaccination and subsequent immunity against SARS-CoV-2 are complex and are often influenced by, varying prevalence of infection in the region, virus mutation, adherence to Nonpharmacological Interventions (NPIs), and change in perceptions about the risk of infection following vaccination. Even though the findings of our study are encouraging and indicate the high effectiveness of the COVISHIELD vaccine, the role of nonpharmacological interventions cannot be undermined and need to be followed scrupulously.

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