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## **Association of COVID-19 Vaccination and COVID-19 infection risk in Heart Transplantation Recipients**

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**Introduction:** Orthotopic heart transplant (OHT) recipients are vulnerable to SARS-CoV-2 (COVID-19) infection. However, there are few studies studying the clinical impact of COVID-19 vaccination in OHT patients. We aimed to evaluate the COVID-19 infection and related clinical outcomes following vaccination in OHT recipients.

**Methods:** We retrospectively investigated 180 patients alive who underwent OHT from November 1994 to June 2022 at a single tertiary center. We compared the COVID-19 infection rate and related clinical outcomes between vaccinated and non-vaccinated OHT patients.

**Results:** Of the 180 patients (mean age 49 years, male 62.7%), 111 (61.7%) were vaccinated and 69 (38.3%) were not vaccinated. Among them, a total of 60 (33%) patients were infected by COVID-19. The infection rate of COVID-19 in vaccinated patients was tended to be low compared to non-vaccinated patients (28.8% vs 40.9%,  $p=0.143$ ). Then, among patients who received OHT within 1 year, the rate of COVID-19 infection was significantly lower in patients with vaccination than those without vaccination (3.1% vs 25.0%,  $p=0.035$ ). A total 21 patients were hospitalized due to pneumonia with COVID-19 infection and 1 patients died from COVID-19 infection. In hospitalized patients, vaccination was tended to be related to lower risk for pneumonia (38.1% vs 61.9%,  $p=0.143$ ).

**Conclusion:** The COVID-19 vaccination seemed to reduce the COVID-19 infection and related pneumonia risk in OHT patients. Especially, in patients who had OHT within 1 year, vaccination could significantly reduce the COVID-19 infection risk.