



Introduction

There are conflicting reports in literature about COVID-19 complications and mortality in solid organ transplant recipients as compared to general population but most recent data is suggestive of no difference between two groups.

Immunocompromised patients have lower protection after vaccination against COVID-19. Up to 61% of liver transplantation (LT) recipients may have poor antibody responses to COVID-19 vaccination. Therefore, the risk of breakthrough infection and hospitalization are also significantly higher in this patient population.

Studies on efficacy of COVID-19 vaccination in post LT patients are limited.

Aims

To investigate vaccination rate, breakthrough infection, mortality rate, and risk factors in COVID-19 infection post LT.

Methods

A retrospective case control study.

98 post LT patients were randomly selected since Dec. 2020 (when first COVID-19 vaccine was approved in the US for emergency use authorization).

Breakthrough infection (BTI) was defined as COVID-19 infection at least 14 days after being vaccinated with 2 doses of mRNA vaccines or 1 dose of viral vector.

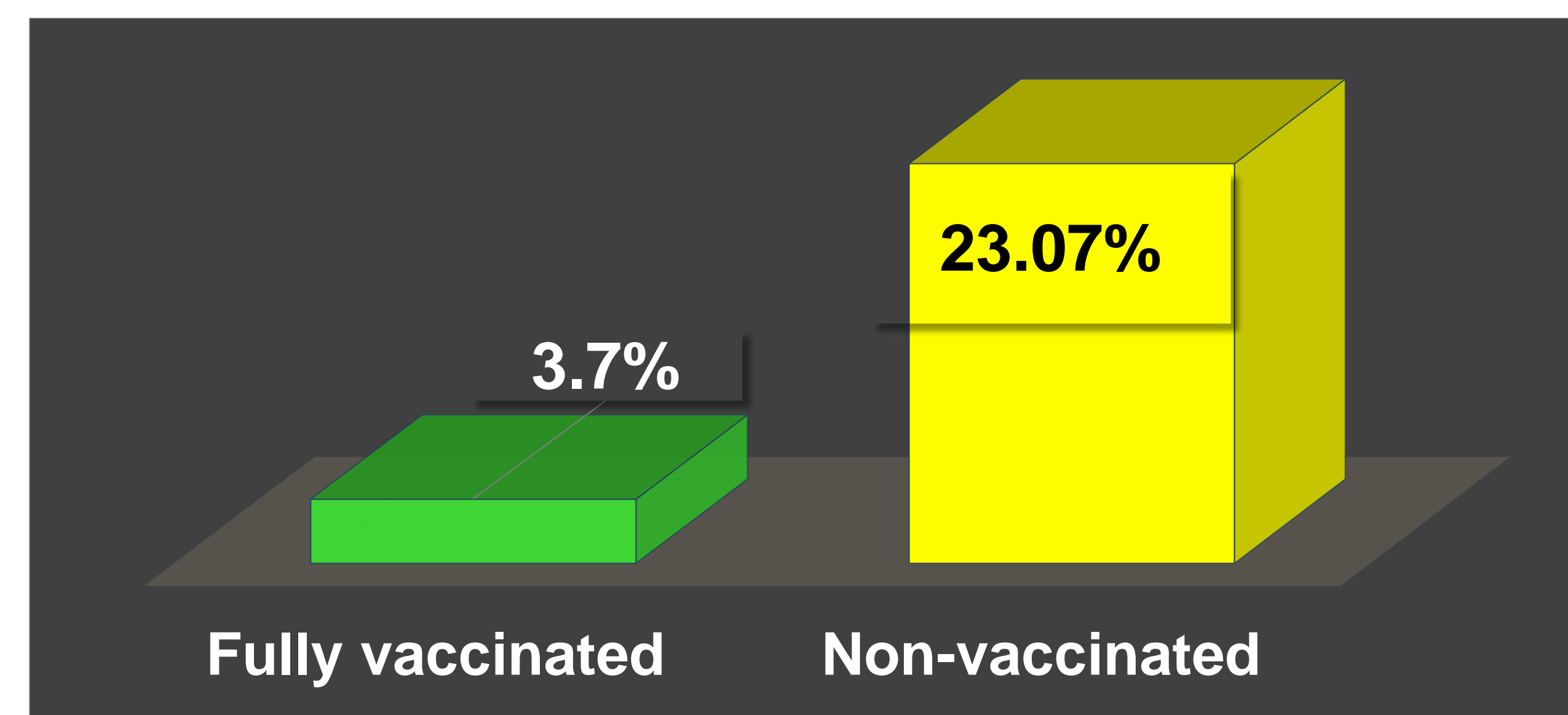
Data was analyzed using Prism (GraphPad Software, San Diego, CA) and reported as mean ± SEM. T-test and chi square tests were applied for analyzing the data.

Results

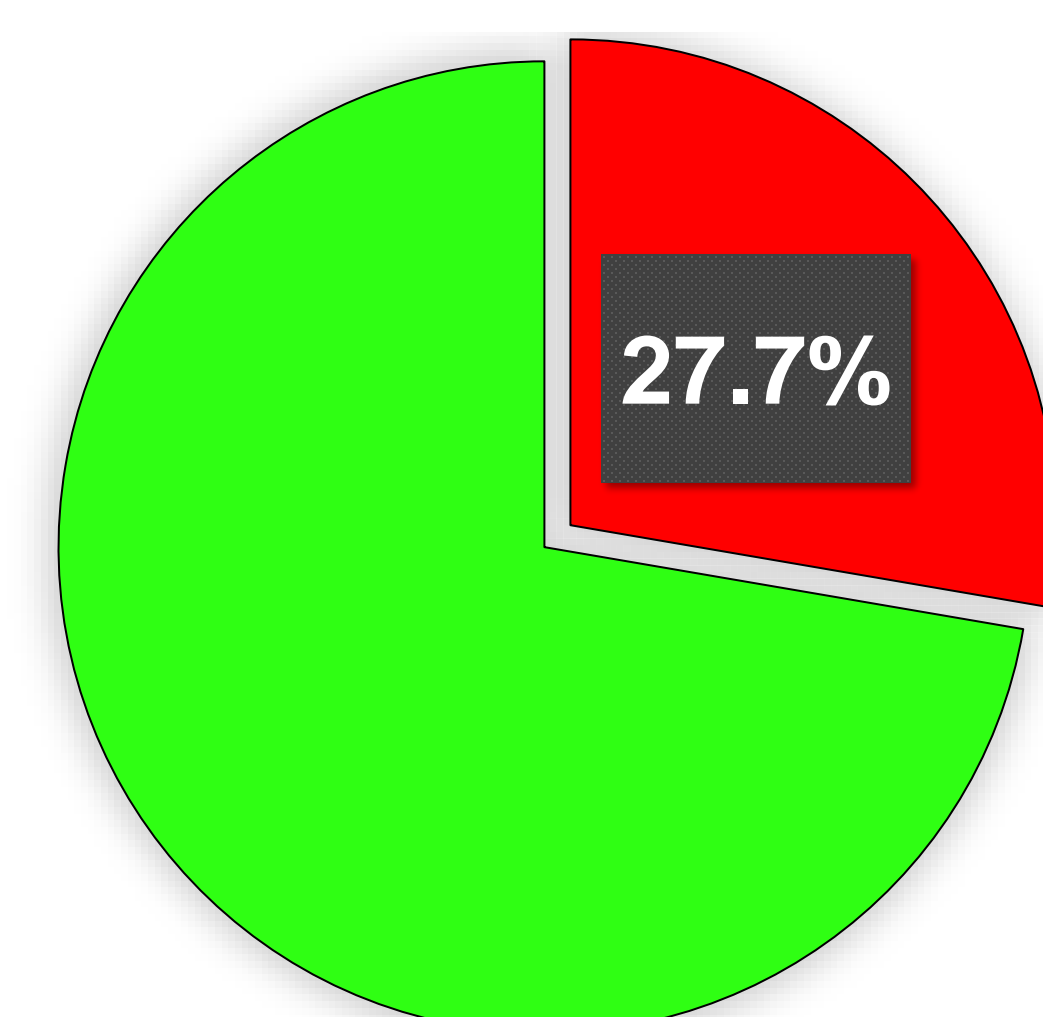
Demographics and mortality in COVID+ vs. COVID- patients post LT

	COVID-19 + (N=48)	COVID-19 - (N=50)	P
Age	60.5±1.4	58.9±1.1	0.7
Gender (male)	77%	66%	0.5
CKD	64.5%	56%	0.3
HTN	54.1%	56%	0.8
Obesity	50%	44%	0.5
Diabetes	35.4%	34%	0.8
COVID Vaccination	31.2%	81.2%	<0.0001
Booster recipients	10.6%	50%	<0.0001
Death	29.7%	6.3%	0.01

Mortality rate in vaccinated and non-vaccinated patients



Breakthrough infection and risk factors



- >50% received BNT162b2 mRNA vaccine and type of vaccine was not correlated with BTI
- 80% had CKD as compared to 48.7% of those without BTI (0.03)
- Received less booster doses (16.6% vs. 41.6%; p=0.04)
- Less patients had tacrolimus monotherapy (13.3% vs. 43.5%; p=0.03)

Take Home Message

- Our study highlights the efficacy of COVID-19 vaccination and boosters in reducing rate of COVID-19 infection and breakthrough infection post LT
- Mortality rate in non-vaccinated post LT recipients is significantly higher than fully vaccinated patients
- Type of vaccine did not have any effect on infection rate or BTI rate
- CKD was the most important risk factor in developing breakthrough infection
- Our data suggests that tacrolimus monotherapy was protective against BTI in vaccinated patient

References

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