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TTS 2024 ISTANBUL TURKEY
September 22-25
+ Virtual October 21-23
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Evaluation of Donor-Derived Cell-Free DNA (dd-cfDNA) levels in Primary Graft Dysfunction (PGD) After Lung Transplantation

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Introduction

- Primary Graft Dysfunction (PGD) is a common complication after lung transplantation that occurs within 72 hours of surgery and affects about 30% of the lung transplant population, being a major cause of death post-transplant.

- The pathophysiology of PGD is complex and believed to result from a combination of insults that occur during the lung procurement, storage, and implantation processes.

- dd-cfDNA levels in the months following transplantation serve as predictors of long-term outcomes, including chronic lung allograft dysfunction (CLAD).

- dd-cfDNA levels can provide insights into the degree of early allograft injury.

AIM – To evaluate the levels of dd-cfDNA according to the time post-transplant and PGD occurrence in a population under dd-cfDNA surveillance for allograft injury.

Methodology

This was a retrospective evaluation of all lung transplant recipients transplanted between Jan/2023 and Jan/2024 in surveillance with dd-cfDNA.

Multi-organ recipients were excluded.

Our surveillance protocol includes dd-cfDNA testing monthly post-discharge.

PGD status was evaluated at 72 hours post-transplant and graded based on ISHLT grading.

We compared the time to the first test evaluation between patients with PGD 3 and PGD 0-2.

Then, we compared the levels of dd-cfDNA in the first three months post-transplant between each group.

Population and dd-cfDNA after discharge from transplant

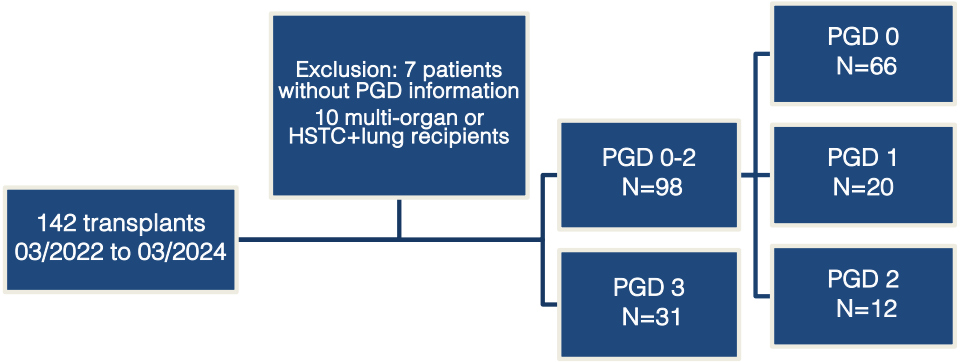


Figure 1. Time to 1st dd-cfDNA test according with PGD status at 72 hrs

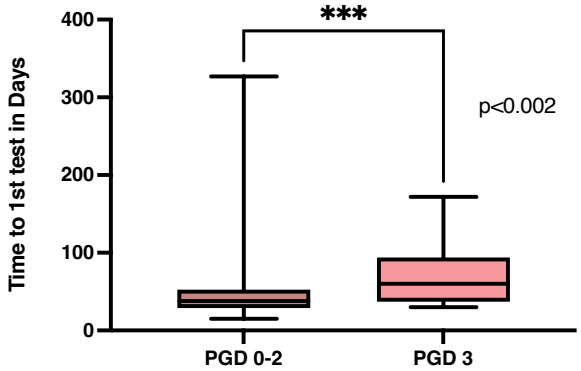
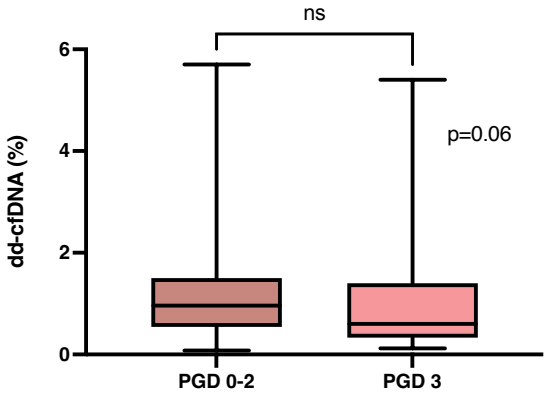


Table 1. Patient Demographics	PGD 0-2	PGD 3	TOTAL
Number (%)	98 (75.9)	31 (24.1)	129
Gender			
Male N(%)	61 (62.2)	11 (35.4)	72 (55.8)
DCD N(%)	4 (4.1)	1 (3.2)	5 (3.6)
Single Lung Tx N(%)	18 (18.4)	4 (12.9)	24 (17.4)
Sensitized PRA>10% N(%)	12 (13.4)	6 (19.4)	18 (13.9)
Time to 1st dd-cfDNA days median (min-max)	38 (15-327)	60 (30-142)	41 (15-327)
dd-cfDNA (%) median (min-max)	0.96 (0.08-5.7)	0.6 (0.12-5.4)	0.95 (0.12-5.7)

Figure 2. 1st dd-cfDNA % according with PGD status at 72 hrs



dd-cfDNA levels longitudinally in PGD versus no PGD

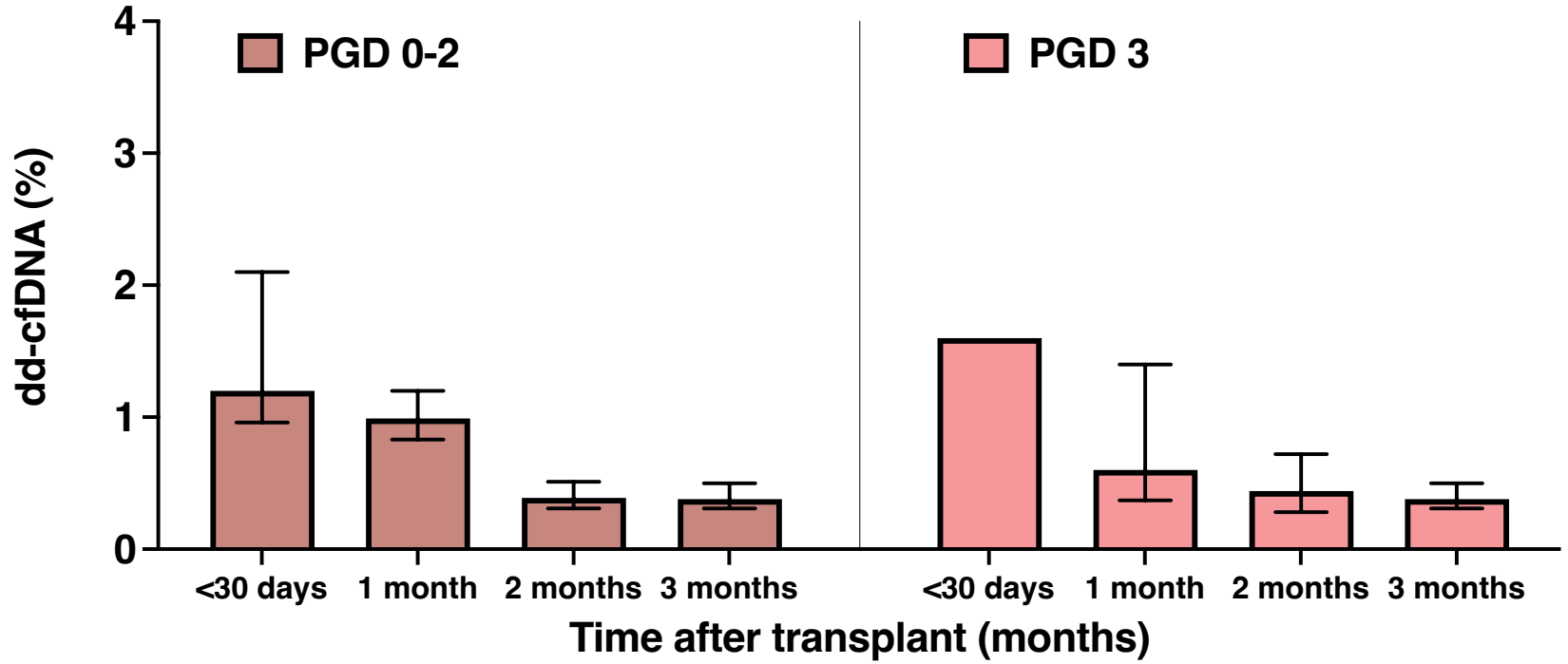


Figure 3. dd-cfDNA levels per month post-transplant according to PGD status

CONCLUSIONS

- Patients without PGD had earlier tests with less than 30 days post-transplant, contributing to elevated levels of dd-cfDNA.
- dd-cfDNA trajectories are similar between PGD and non-PGD populations.
- More studies are needed to evaluate the correlations between immune events and these specific elevations.