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Personalized Transplant Monitoring

Clinical Publication Summary

Donor-Derived Cell-Free DNA in Biopsy-Proven Antibody-Mediated Rejection Versus Recurrent IgA Nephropathy After Kidney Transplantation

Akifova A, Budde K, Choi M, et al. (2023) Kidney International Reports. Vol. 8, Issue 10, P2141-2145.

Practical Clinical Utility

In kidney transplant recipients, donor-derived cell-free DNA (dd-cfDNA) effectively distinguishes between antibody-mediated rejection (ABMR) and recurrent IgA nephropathy (IgAN), showing improved diagnostic capabilities than established biomarkers.

Endpoints and Goals

- Evaluate the effectiveness of dd-cfDNA as a biomarker to differentiate between ABMR and recurrent IgAN in kidney transplant recipients
- Assess dd-cfDNA's potential for accurate diagnosis in cases where ABMR and recurrent IgAN present similar clinical features
- Improve diagnostic precision in kidney transplantation, leading to better patient management and outcomes

Methods

The researchers explore IgAN and related diseases causing graft loss in kidney transplants, highlighting the limitations of existing biomarkers, and the potential for novel applications of dd-cfDNA.

This study evaluates whether dd-cfDNA, known for assessing graft damage and rejection risk in kidney transplants, may also help identify recurrent IgAN, potentially reducing reliance on diagnostic biopsies.

Results

Levels of dd-cfDNA (cp/mL and %) were significantly lower in patients with recurrent IgAN compared to those with ABMR (Figures a,b).

- In cases of severe histological recurrence and clinical deterioration, dd-cfDNA levels remained statistically significant between ABMR and recurrent IgAN

Both urine albumin-to-creatinine-ratio (uACR) and estimated glomerular filtration rate (eGFR) levels were not significantly different between ABMR and recurrent IgAN (Figures c,d).

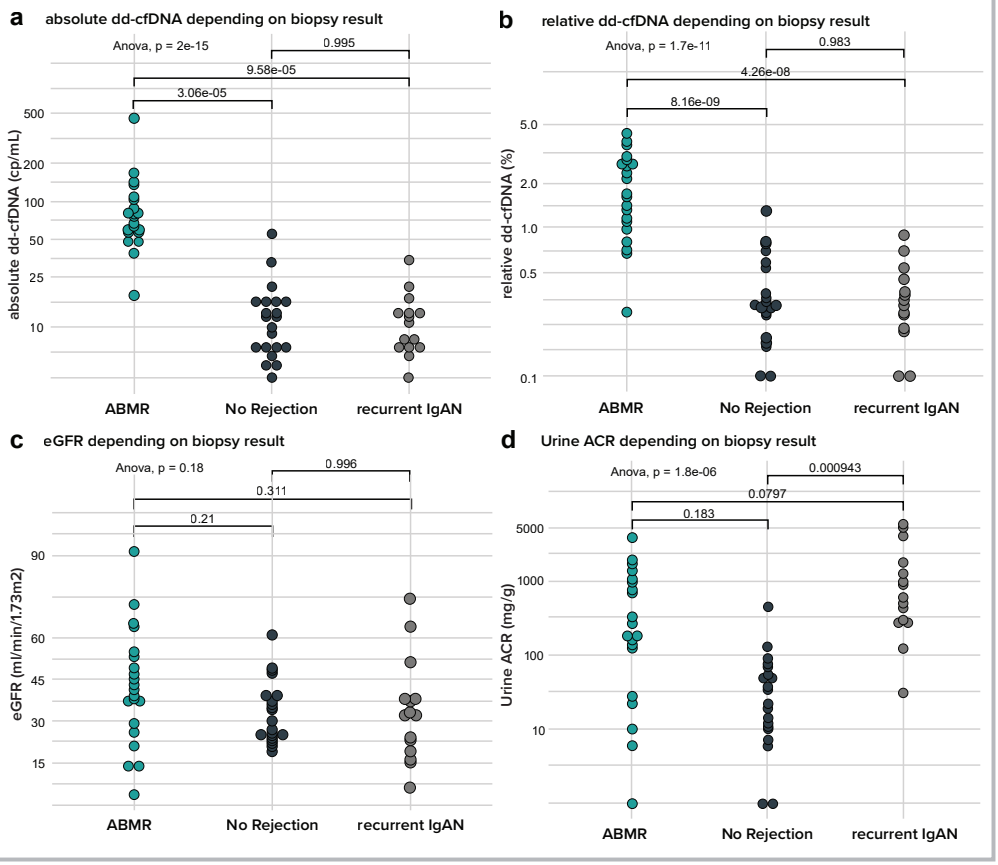

FIGURE 1. Dot plots showing biopsy-matched measurements of (a) absolute dd-cfDNA (copies/ml), (b) relative dd-cfDNA (%), (c) eGFR (ml/min per 1.73 m2), and (d) urine albumin-to-creatinine ratio (mg/g) in kidney transplant recipients with antibody-mediated rejection, no rejection, and recurrent IgA nephropathy. eGFR, estimated glomerular filtration rate.

Conclusion

dd-cfDNA may be used as a discriminatory tool in clinical practice to distinguish between recurrent IgAN and ABMR in patients with similar clinical presentation.

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