

Pilot Study of Clinical Use of Peripheral Blood Gene Expression Profile in the Care of Kidney Transplant Recipients Between 2- and 5-Years Post-Transplant

Kurian SM, Fleming JN, Barrick B, Martin A, Marsh C

Disclosures:

I had a consulting agreement with Eurofins TGI which ended in July
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I receive royalties from a Eurofins, Scripps Research and
Northwestern University agreement

Background

- Observational studies have shown an association between multiple positive TruGraf tests and long-term clinical outcomes, including graft survival and eGFR decline
- The purpose of this pilot study was to establish baseline formative data of TruGraf GEP used in the determination of patient treatment plans, including medication changes

Methods

- This was a single-center prospective pilot study to validate the clinical utility of serial GEP testing as an alternative to surveillance biopsies and to optimize patient treatment plans
- Patient enrollment goal: 30 subjects
- Inclusion
 - Recipients of solitary kidney transplants between 24- and 60-months post-transplant with stable serum creatinine (<2.3mg/dL, <20% increase compared to previous 3 values)
- Testing
 - TruGraf tests were drawn at months 3, 6, 9, 12, 15, 18, 21, and 24 after enrollment

Results

- 30 subjects enrolled between 4-12/2020
- Two subjects had only one test drawn (both negative results) and were excluded from analysis
- Subjects divided into cohorts:

TX	All GEP assay results were negative
1 Not-TX	One positive assay result, but all other negative
> 1 Not-TX	More than 1 positive assay result during follow-up

Table 1. Patient Demographics and Clinical Outcomes				
	Overall (n=27)	All TX (n=13)	1 Not-TX (n=10)	>1 Not-TX (n=4)
Age	64 [48,69]	64 [55,69]	59.5 [48,68]	69.5 [51.5,70.5]
Male	14 (52%)	7 (54%)	4 (40%)	3 (75%)
Deceased Donor	23 (85%)	12 (92%)	7 (70%)	4 (100%)
White	16 (59%)	8 (62%)	5 (50%)	3 (75%)
Black	3 (11%)	1 (8%)	1 (10%)	1 (25%)
Asian	5 (19%)	1 (8%)	4 (40%)	0 (0%)
Other	3 (11%)	3 (23%)	0 (0%)	0 (0%)
Hispanic	7 (26%)	4 (69%)	1 (10%)	2 (50%)
PRA	0% [0,19]	3% [0,41]	0% [0,0]	0% [0,0]
DSA	11 (42%)	6 (46%)	4 (40%)	1 (25%)
Starting eGFR	60 [58,60]	60 [53,60]	60 [58,60]	60 [45.5,60]
Starting SrCr	1.1 [0.9,1.3]	1.1 [0.9,1.2]	1.0 [0.8,1.3]	1.2 [1.1,1.7]

Results

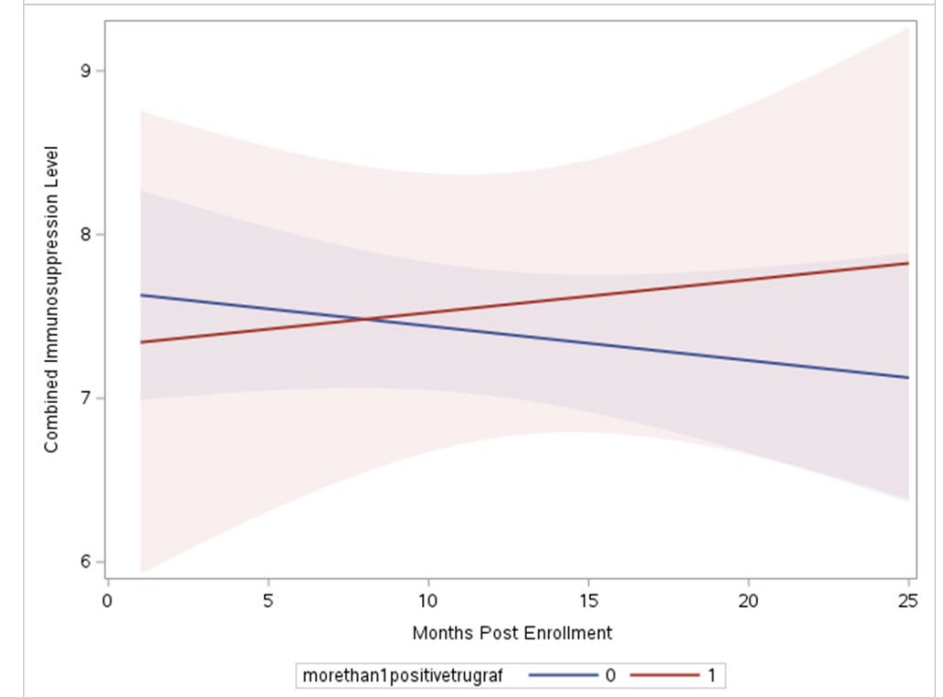
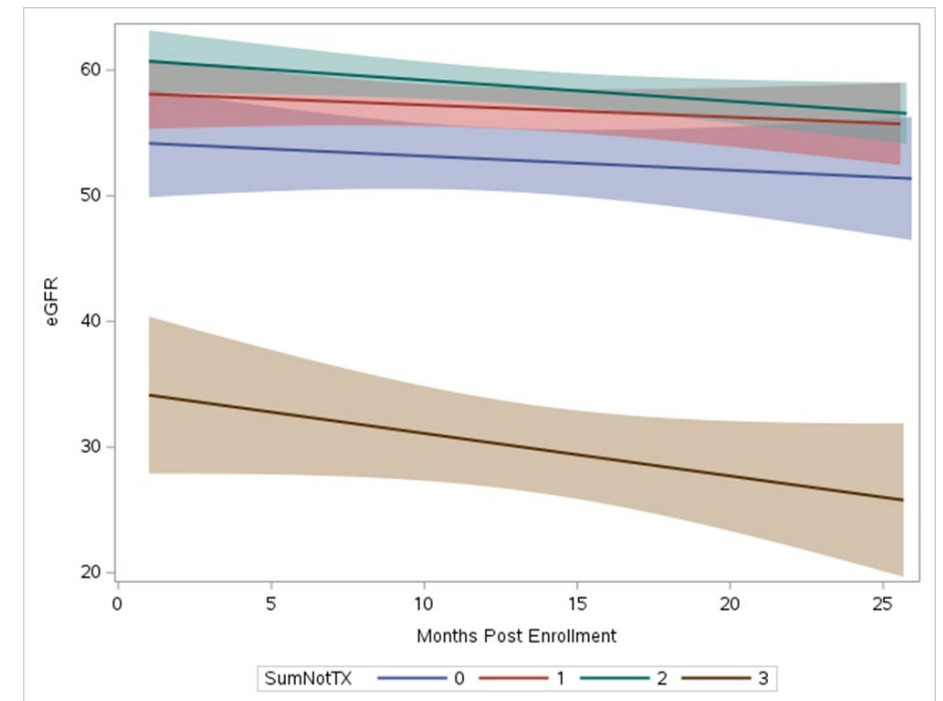
- No differences in number of tests between cohorts (7, 8.5, 8)
- All rejections occurred in the All TX cohort, but occurred in the first or second visit
 - 1A, 1B, 1B, chronic active rejection
 - One 1B rejection subsequently developed BKVAN
 - All BKVAN cases (3) occurred in the All TX or 1 Not-TX cohort

Table 2. Clinical Outcomes

	Overall (n=27)	All TX (n=13)	1 Not-TX (n=10)	>1 Not-TX (n=4)
Rejection	4 (15%)	4 (31%)	0 (0%)	0 (0%)
Last eGFR	59 [42,60]	59 [40,60]	60 [54,60]	53 [37.5,60]
Last SrCr	1.1 [1.0,1.3]	1.1 [1.0,1.5]	1.1 [0.9,1.3]	1.1 [0.9,1.7]

Results

- eGFR remained stable except for 1 subject with 3 positive TruGraf tests
- The combined immunosuppressant trough (FK, SRL, FK+SRL) increased throughout follow-up for the >1Not-TX cohort
- Subjects in All TX and 1Not-TX cohorts saw reduced immunosuppressant trough throughout follow-up



Conclusions

- In this pilot study, patients with multiple positive GEP tests had increasing exposure to narrow therapeutic index immunosuppressants and experienced no acute rejection episodes
 - They also had similar eGFR to other cohorts with the exception of 1 subject with 3 positive TruGraf tests
- Results are not consistent with previous observational studies where the TruGraf results were not acted upon clinically
- This could indicate that changes made based on TruGraf results prevented the increased rejection and renal function decline seen in observational studies
- More controlled studies with larger sample sizes are required to validate the results