



*Comparison of the Efficacy of Induction
Therapy between Ethnicities in Low
Immunologic Risk Kidney Transplant
Recipients*

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PGY 2 – Solid-organ Transplant Resident

MUSC Medical Center and College of Pharmacy Residency Program

Background

- African American (AA) kidney recipients
 - 1995-2004
 - 5-year adjusted graft survival
 - AA – 61%
 - Caucasians – 72%
 - Hispanics – 74%
 - Asians – 78%
 - “High immunologic risk”

Etiology of poor graft function in African Americans

Non-immunologic

- “Center effect”
- Hypertension
- Longer wait times on dialysis
- Socioeconomic factors
 - Noncompliance
 - Educational background
 - Less access to care
- Delayed/decreased referral for transplant

Immunologic

- Immune hyperresponsiveness
- Duffy antigens
- Greater variation in HLA polymorphisms
- Differences in immunosuppressive requirements
- Pharmacokinetics/dynamics of immunosuppressive medications

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Induction agents

- Anti-lymphocyte antibodies (ALA)
 - Lower biopsy-proven acute cellular rejection (BPAR) rates in high-risk recipients (including AA)
 - Adverse effects
 - Increased incidence CMV infection
 - Increased incidence PTLD
- Interleukin-2 receptor antagonists (IL-2RA)
 - Similar BPAR rates in low-risk recipients vs. ALA
 - Adverse effects
 - Minimal

Purpose

- Determine if type of induction therapy impacts graft outcomes in AA versus non-AA

- Single-center analysis
- August 1996 – June 2007
- 667 patients
 - Antilymphocyte antibody (ALA)
 - Interleukin-2 receptor antagonist (IL-2RA)
 - No induction (NI)

Induction protocol

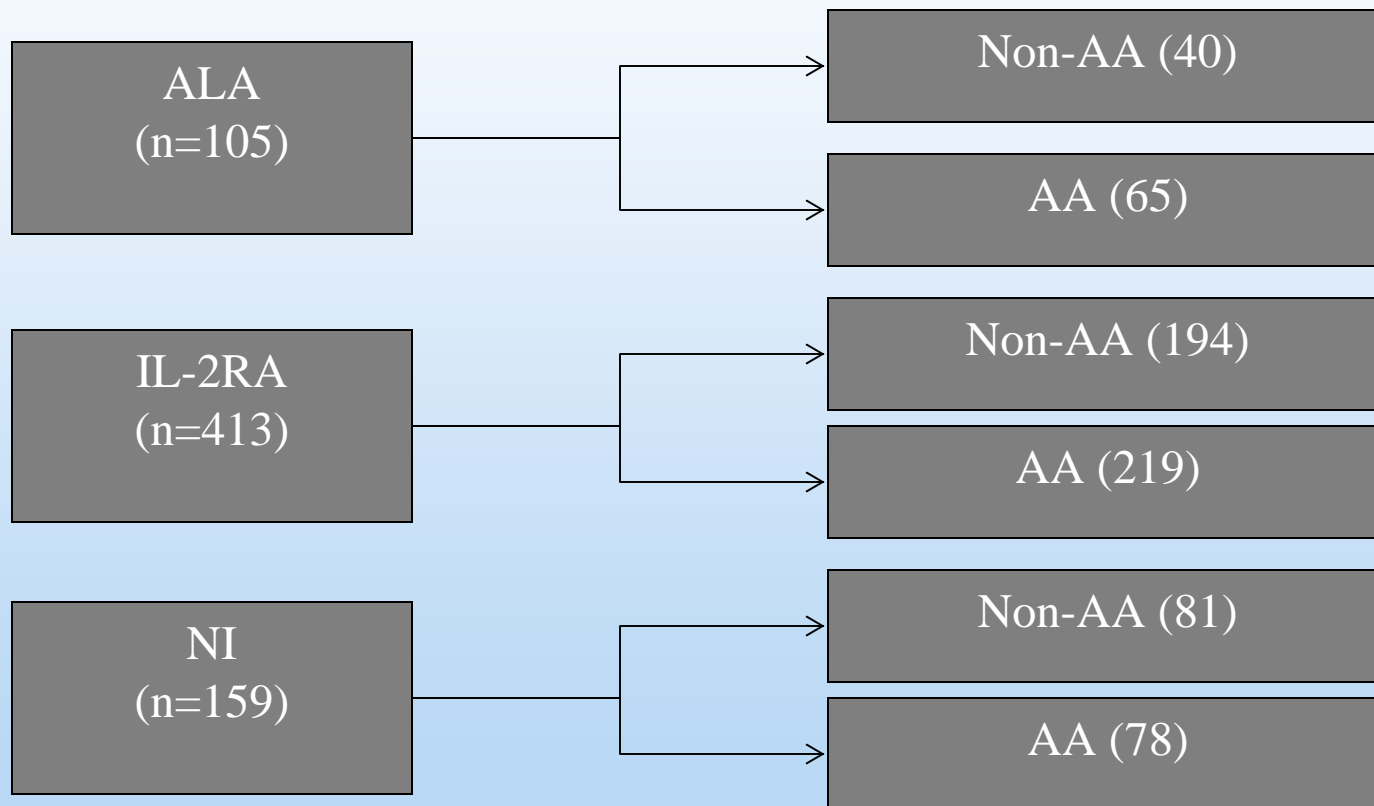
- “Low risk”
 - Panel reactive antibody (PRA) < 20%
 - Cold ischemic time (CIT) < 24 hours
 - Receive IL-2RA (Basiliximab, Daclizumab)
 - 6 HLA antigen match – no induction
- “High risk”
 - Not low-risk
 - Re-transplant
 - Delayed graft function (DGF)
 - Receive ALA (Thymoglobulin, ATGAM, OKT3, Campath)

Inclusion Criteria

- > 18 years old
- Kidney transplant
- Transplanted at MUSC Transplant Center

Exclusion Criteria

- Multi-organ recipients
- Non-CNI, non SRL based regimens
- PRA > 20%
- Retransplant
- DGF



- Primary
 - Graft survival
 - 1-yr BPAR
- Secondary
 - Serum creatinine (SrCr) at 2 yrs
 - CMV infection
 - BK virus infection

Baseline characteristics

Baseline Demographic	ALA		IL-2RA		NI	
	AA (65)	Non (40)	AA (219)	Non (194)	AA (78)	Non (81)
Recipient Age	48±12	50±13	46±13*	51±14*	47±12	48±14
Gender Male	54%	55%	60%	62%	60%	62%
Years Dialysis	3.9±2.9*	2.7±2.3*	3.6±2.2*	2.2±1.6*	3.9±2.5*	2±1.6*
Living Donor	5%	25%	10%	41%	13%	30%
Donor Gender Male	60%	62%	64%	50%	49%	56%
Donor Race AA	40%	16%	26%	11%	39%	11%
Donor Age	31±18	34±16	33±15*	36±15*	36±15	35±15

*P < 0.05

Baseline characteristics

Immunologic Characteristic	ALA		IL-2RA		NI	
	AA (65)	Non (40)	AA (219)	Non (194)	AA (78)	Non (81)
Cold Ischemic Time	1066±557	947±707	1009±531*	694±636*	870±526*	659±540*
HLA Mismatch	5*	4*	5*	4*	4*	3*
Pre-emptive	0%	23%	3%	26%	16%	30%
Maintenance						
Cyclosporine	29%	43%	60%	63%	83%	96%
Tacrolimus	71%	57%	37%	37%	17%	4%
Adjunctive						
MMF/MPA	94%	95%	89%	93%	85%	80%
mTOR	6%	5%	11%	7%	15%	20%

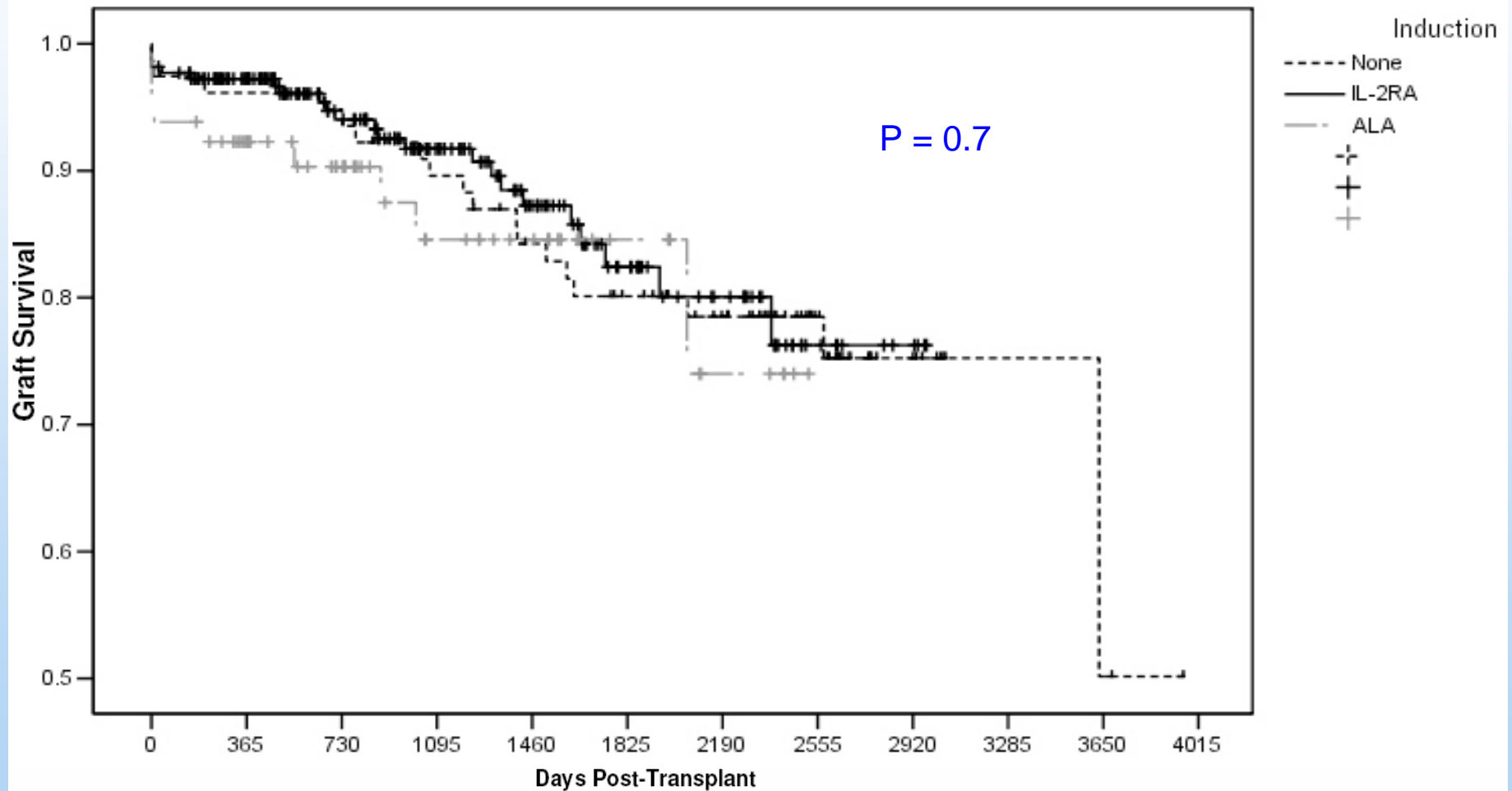
*P < 0.05

Results

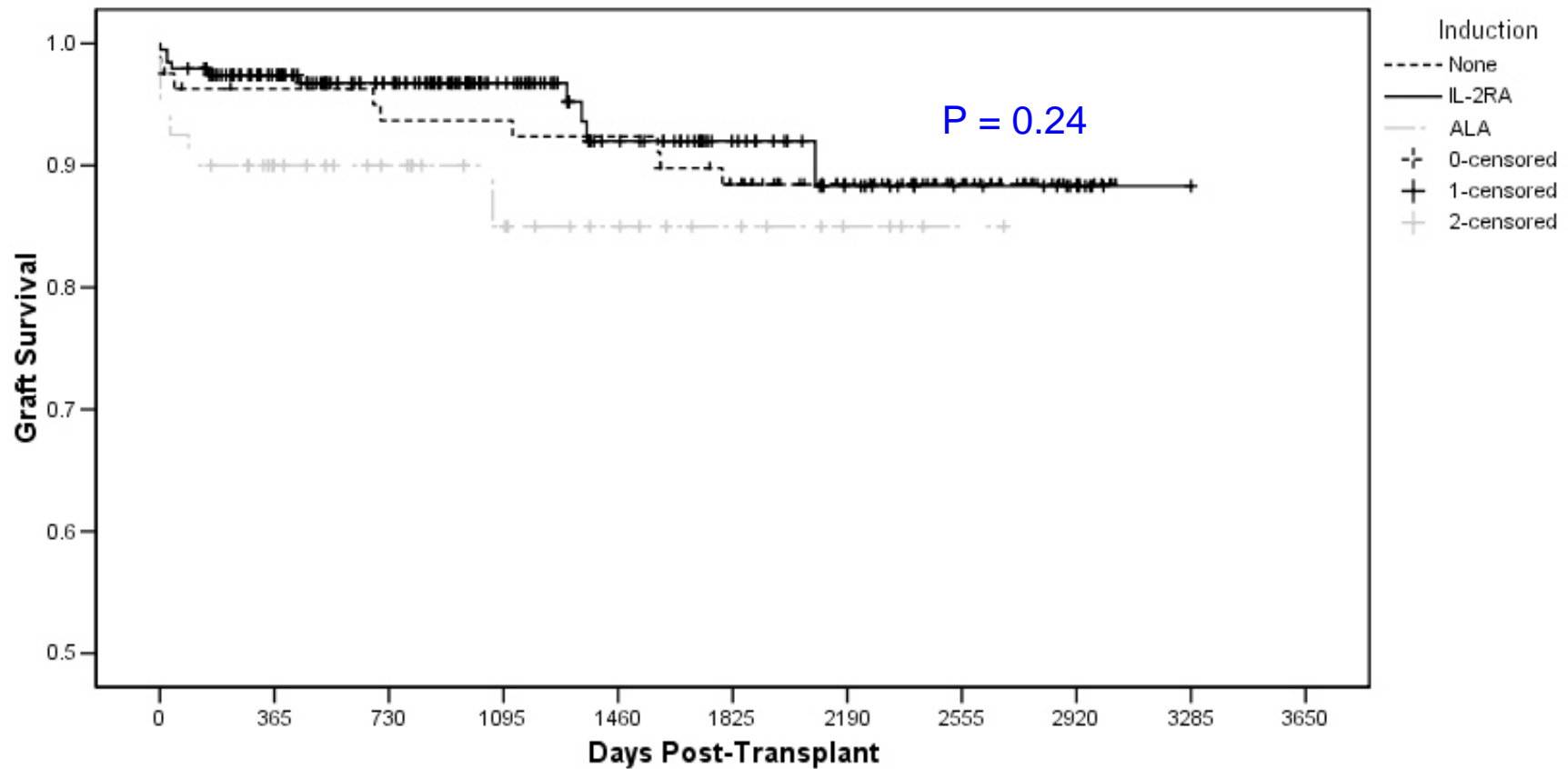
Outcomes	ALA		IL-2RA		NI	
	AA (65)	Non (40)	AA (219)	Non (194)	AA (78)	Non (81)
1-yr BPAR	17%	10%	15%	9%	16%	19%
SrCr at 2 yrs	2.4±1.4	2.1±1.5	2.3±1.1*	1.9±0.6*	2.6±1.2	2.1±0.5
CMV Infection	12%	18%	6%	7%	10%	6%
BK Infection	3%	0%	1%	1%	0%	0%
Follow-up (Days)	1050±708	1027±767	1126±760	1088±766	2119±825	2131±783

*P < 0.05

Kaplan-Meier Death-censored Graft Survival



Kaplan-Meier Death-censored Graft Survival



Conclusion

- AA have lower long-term graft survival rates compared to other ethnicities
- Type of induction therapy does not appear to affect 1-yr BPAR
- Type of induction therapy does not appear to affect long-term graft survival
- Prospective randomized studies needed to confirm results

Limitations

- Retrospective chart review
 - Uneven distribution
- Intraoperative decision to use ALA not able to be recorded/assessed
- Immunosuppression protocols changed in the midst of analysis

Acknowledgement

- David J. Taber, Pharm.D., BCPS
- Nicole A. Weimert, Pharm.D., BCPS



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