Retrospective Comparative Analysis of Short Term Outcome of Induction Agent: Thymoglobulin vs Grafalon

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DISCLOSURES: NIL

INTRODUCTION

- Anti-thymocyte immunoglobulin is the preferred induction agent in kidney transplantation.
- Anti-thymocyte immunoglobulin derived from rabbit is most commonly used and available in two formulations.
- Thymoglobulin is produced by immunizing rabbits with human lymphocytes and manufactured by Sanofi.
- Grafalon is produced by immunizing rabbits with T cell leukaemia line Jurkat and manufactured by Neovii.
- They have different antigen specificities. Grafalon has greater selectivity for activated T-cells and also depletes CD4+ CD28-.T-cells
- Though both are rabbit antithymocye globulin, there are differences in efficacy.
- In few studies Grafalon has been shown to be associated with higher rejection rates.
- This retrospective comparative analysis is done to determine the efficacy and adverse event of the the two agents.

STUDY DESIGN

- RETROSPECTIVE ANALYSIS
- ABO COMPATIBLE KIDNEY TRANSPLANTATION
- LIVING DONOR PROGRAM
- PERIOD- 2021-2022
- FOLLOW UP- 6 MONTHS
- THYMOGLOBULIN GP- 20 PTS
- GRAFALON GP- 10 PTS
- EXCLUSIONS:
  - AGE <18YRS
  - PRIOR H/O KIDNEY TRANSPLANTATION

IMMUNOSUPRESSION PROTOCOL:

- INDUCTION
  - ATG TOTAL DOSE 3MG/KG (1MG/KG ON DAY 0, 1, 2)
  - GRAFALON DOSE 6MG/KG (2MG/KG ON DAY 0,1,2)
- TACROLIMUS :
  - 0.1MG/KG IN DIVIDED DOSE
  - TARGET C0 LEVEL- 8-10
- MYCOPHENOLATE SODIUM 360MG:
  - 2 TAB BD IF >60KG
  - 1 TAB TDS IF <60KG
- STEROIDS
  - PULSE METHYLPRED 125MG OD X 3 DAYS ON POD 0,1,2 + 500MG IN OT
  - FOLLOWED BY PREDNISOLONE 0.5MG/KG:

BASELINE CHARACTERISTICS

	THYMOGLOBULIN (n=20)	GRAFALON (n=10)
MEAN AGE	49.7yrs	44.1yrs
MALE	13 (65%)	5 (50%)
NATIVE KIDNEY DISEASE	DKD-6 IGAN-4 ADPKD-1 AAV-1 UNKNOWN-8	DKD-2 IGAN-1 FSGS-1 UNKNOWN-6
DIALYSIS VINTAGE	0.9yrs	0.7yrs
H/O MULTIPLE BLOOD TRANSFUSION	8 (40%)	2 (20%)
H/O MULTIPLE PREGNANCY	4 (20%)	3 (30%)
HLA MATCH		
LESS THAN 3	18 (90%)	9 (90%)
3 OR MORE	2 (10%)	1 (10%)
P/H/O IMMUNOSUPRESSION	1 (5%)	1 (10%)
DESENSITISATION	2 (10%)	1 (10%)
DONOR MEAN AGE	34.1yrs	32 yrs
DONOR KIDNEY MEAN GFR	52.2	61.9
HCV POSITIVE	1	0

RESULTS AND CONCLUSION

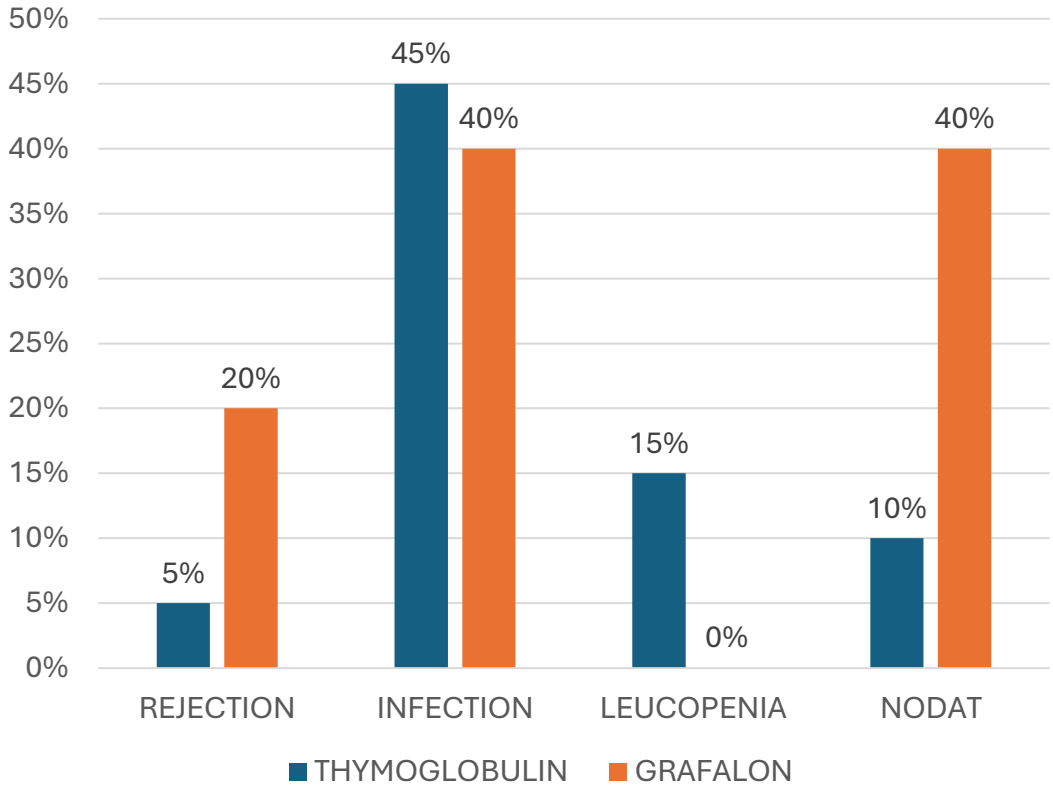
- Graft outcome and survival was similar in both group
- Acute rejection was more common in Grafalon group 2/10 (20%) as compared to Thymoglobulin group 1/20 (5%) which needs to be validated in larger cohort.
- Infection was similar in both groups. 4/10 (40%) in Grafalon cohort as compared to 9/20 (45%) in Thymoglobulin cohort.
- UTI was most common infection occurring in 9/30 pts (30%). Herpes Zoster occurred in 2/30 pts (6.6%).

CLINICAL OUTCOME

GRAFT OUTCOME

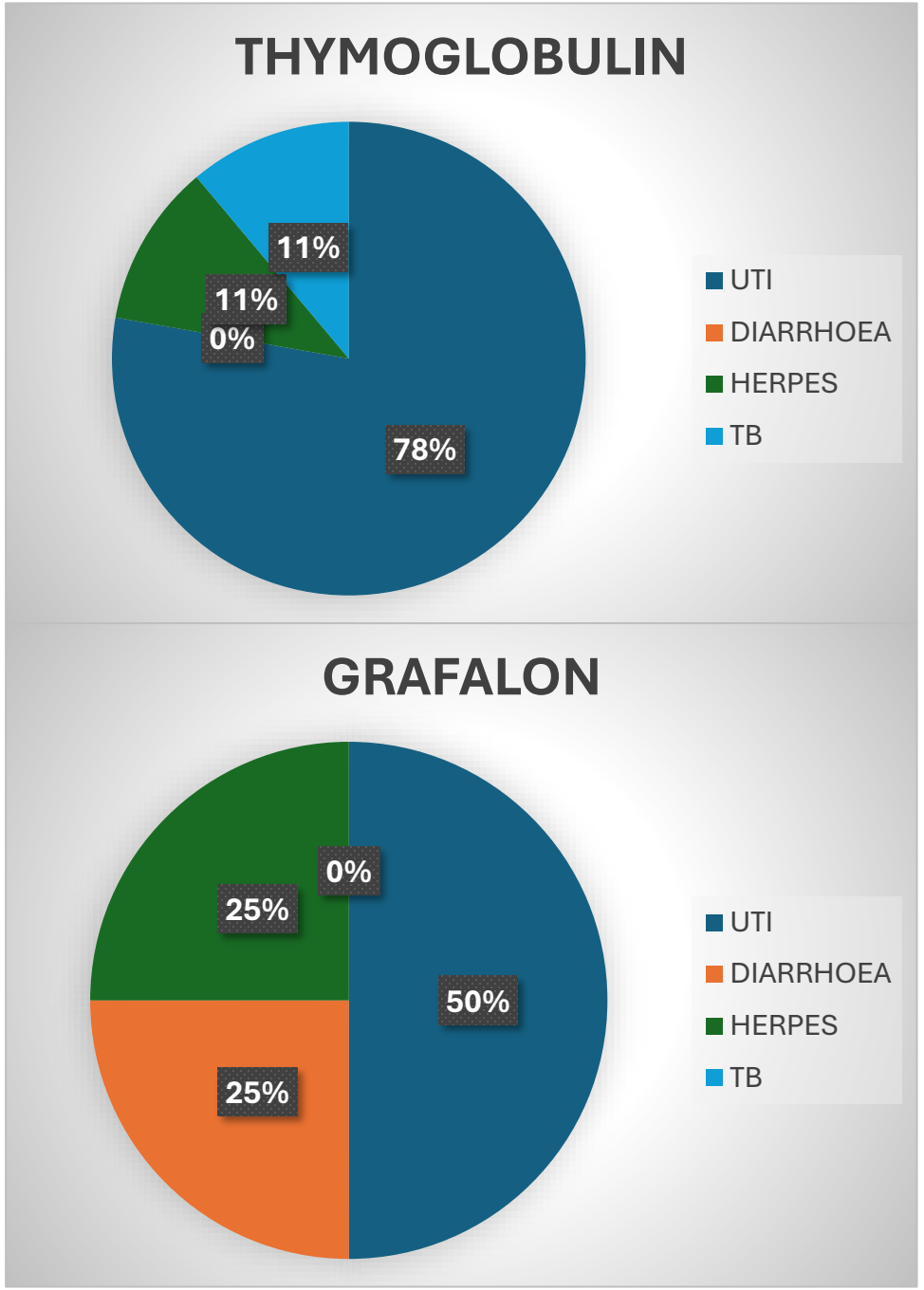
	THYMOGLOBULIN	GRAFALON
NADIR CREAT (mg/dl)	0.88	0.94
CREAT AT 1 MONTH (mg/dl)	1.01	1.12
CREAT AT 3 MONTH (mg/dl)	1.05	1.15
CREAT AT 6 MONTH (mg/dl)	1.12	1.21

COMPLICATIONS



INFECTIONS

	THYMOGLOBULIN (N=20)	GRAFALON (N=10)
INFECTION INCIDENCE	9 (45%)	4 (40%)
UTI	7 (35%)	2 (20%)
DIARRHOEA	0 (0%)	1 (10%)
HERPES ZOSTER	1 (10%)	1 (10%)
TB	1 (5%)	0 (0%)



STUDY COMPARISION

STUDIES	FU	REJECTION		INFECTION		LEUCOPENIA		NODAT	
		THYMO	GRAF	THYMO	GRAF	THYMO	GRAF	THYMO	GRAF
STYRC et al	12 mth	25.3%	10.1%	32.9%	42.3%	81.2%	41.5%	NA	NA
THUKRAL et al	12 mth	6.45%	9.67%	22.58%	19.35%	NA	NA	7.4%	10.7%
JHA et al	18 mth	5.1%	12.8%	20.7%	12.8%	NA	NA	6.7%	5.1%
BURKHALTER et al	24 mth	17.6%	11.1%	NA	NA	NA	NA	NA	NA
OUR STUDY	6 mth	5%	20%	45%	40%	15%	0%	10%	40%

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Check for updates

ORIGINAL ARTICLE

Clinical TRANSPLANTATION WILEY

Effectiveness and safety of two different antithymocyte globulins used in induction therapy in kidney transplant recipients: A single-center experience

Beata Styrc[1] | Michał Sobolewski[1] | Jerzy Chudek[2] | Aureliusz Kolonko[1] | Andrzej Więcek[1]

Indian J Nephrol. 2021 Jul-Aug;31(4):336-340. doi: 10.4103/ijn.IJN_205_20. Epub 2020 Nov 11.

Grafalon® vs. Thymoglobulin® as an Induction Agent in Renal Transplantation - A Retrospective Study

Pranaw Kumar Jha [1], Abhyudaysingh Rana [1], Ajay Kher [2], Shyam Bihari Bansal [1], Sidharth Sethi [1], Ashish Nandwani [1], Manish Jain [1], Dinesh Bansal [1], Dinesh Kumar Yadav [1], Ashwini Gadde [1], Amit Kumar Mahapatra [1], Puneet Sodhi [1], Vijay Kher [1]

ELSEVIER

Transplantation Proceedings
Volume 54, Issue 8, October 2022, Pages 2133-2139

Comparison of Thymoglobulin and Grafalon as Induction Agents in Renal Transplantation: A Prospective Study

Sharmila Thukral [a], Ratnesh Rokde [b], Deepak Shankar Ray [b]

DISCUSSION

- Grafalon has been in use worldwide for a longtime. It was introduced in India in 2016. It is used commonly now.
- Jha et al reported increased risk of acute rejection in Grafalon group but infection risk was increased in Thymoglobulin group. These findings were similar to our results.
- Thukral et al which included low risk cases did not report increased risk of rejection in Grafalon group.
- Bayesian network metanalysis revealed less acute rejection episodes in thymoglobulin group but increased graft loss, infection and death.

TABLE 3 | Results of network meta-analyses and surface under the cumulative ranking curve (SUCRA) values.

Outcomes	Study number	Model	ATG (vs. ATG-F) OR (95%CI)	SUCRA (THG/ATG-F)
DGF	18	Consistency	1.27 (0.53–2.89)	0.58/0.78
		Inconsistency	1.67 (0.48–7.71)	
BPAR	22	Consistency	0.59 (0.27–1.40)	0.78/0.39
		Inconsistency	0.83 (0.22–4.85)	
Steroid-resistant BPAR	5	Consistency	0.61 (0.08–4.62)	0.76/0.49
		Inconsistency	0.54 (0.08–4.41)	
Patient survival	18	Consistency	2.78 (0.78–11.82)	0.34/0.83
		Inconsistency	2.41 (0.36–11.86)	
Graft survival	21	Consistency	1.40 (0.59–5.98)	0.59/0.83
		Inconsistency	1.12 (0.23–4.69)	
Infection	14	Consistency	1.49 (0.43–5.23)	0.54/0.79
		Inconsistency	1.32 (0.25–6.32)	
CMV infection	10	Consistency	0.96 (0.22–4.22)	0.37/0.40
		Inconsistency	1.15 (0.19–7.41)	
De novo diabetes	4	Consistency	2.95 (0.57–21.33)	0.30/0.90
		Inconsistency	3.12 (0.59–25.03)	
Malignancies	5	Consistency	8.33 (0.48–332.79)	0.06/0.89
		Inconsistency	7.84 (0.55–319.32)	

Front. Immunol., 03 April 2020
Sec. Alloimmunity and Transplantation
Volume 11 - 2020 | https://doi.org/10.3389/fimmu.2020.00457

Thymoglobulin vs. ATG-Fresenius as Induction Therapy in Kidney Transplantation: A Bayesian Network Meta-Analysis of Randomized Controlled Trials

Turun Song[1,2†] Saifu Yin[1,2†] Xingxing Li[2] Yamei Jiang[1]

Limitations

- Small study
- Retrospective design
- Follow up only 6 months
- DSA and protocol biopsy not done
- CMV and BKV protocol screening not done