One year outcome of Anti-T-Lymphocyte Globulin (ATLG) Induction Therapy in Kidney Transplantation: A Single-Center Retrospective Analysis

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Introduction

Prevention of Graft Rejection is an important parameter in solid organ transplant.

The risk of acute rejection is maximum in the initial weeks to months.

Here in lies the need for strong initial immunosuppressant to deplete or modulate T-cell responses at the time of antigen presentation.

Induction therapy can mean any agent used peri operatively but it is now synonymous with the use of antibodies against various components of the immune system.

Multiple trials show that induction agents either prevent or delay the development of acute rejection.

In renal transplants, anti-T lymphocyte globulin is commonly used as an induction agent. This data represents our experience using anti-T lymphocyte globulin in kidney transplants.

Depleting antibodies

- Polyclonal antibody: Horse or Rabbit ATG
  - Rabbit ATG- Thymoglobulin (rATG) & Grafalon (ATLG) ← Available in India
- Alemtuzumab: anti CD52 antibody
- Rituximab: anti CD20 antibody ← Available in India
- Muromonab: anti CD3 antibody

Non-depleting antibodies

- Basiliximab: anti CD25 antibody ← Available in India
- Daclizumab: humanized anti CD25 antibody

Materials and Methods

In a retrospective, single-center observational study, adult patients who underwent kidney transplants from 2020 to 2024 at our centre and had received ATLG as a part of induction were included in the study.

The primary outcome measure was overall survival and graft function at 3, 6, 9, and 12 months.

The primary outcome was assessed by development of graft rejection.

Results (Demographic)

- Total **190** patients received ATLG as an induction agent on day of Transplant.
- The mean age of the patients was **40.23 ± 12.9 years**.
- Out of 190, **Male: 149 (78.42%), Female: 41 (21.57%).**
- The Mean weight was **64.7 ± 12.6 Kg**.

Naïve Kidney Disease	
Diabetic Nephropathy	**38 (20%)**
CGN	**44(23.15%)**
CIN	**6(3.15%**
IgAN	**28(14.73%)**
VUR	**5((2.63%)**
ADPKD	**6 (3.15%)**
Alport Syndrome	**3 (1.5%)**
ANCA	**1 (0.05%)**
FSGS	**3 (1.5%)**
MPGN	**2 (1.05%)**
Donor Status	
Living Donor transplant	**185 (97.36%)**
Cadeveric Donor Transplant	**5 (2.63%)**
Donor Gender	
Male	**74 (38.94%)**
Female	**116 (61%)**

Result: Graft Fucntion

- The mean cumulative dose of ATLG was **268.3 ± 89 mg** and a mean dose **of 4.14 ± 1.4 mg/kg**. Tacrolimus, Mycophenolate Sodium, and Prednisolone were used as maintenance immunosuppressants.

- Patient survival rates were high at 186, (97.89%), with 4 (2.1%) patients dying due to septic shock and multiorgan dysfunction syndrome (MODS).

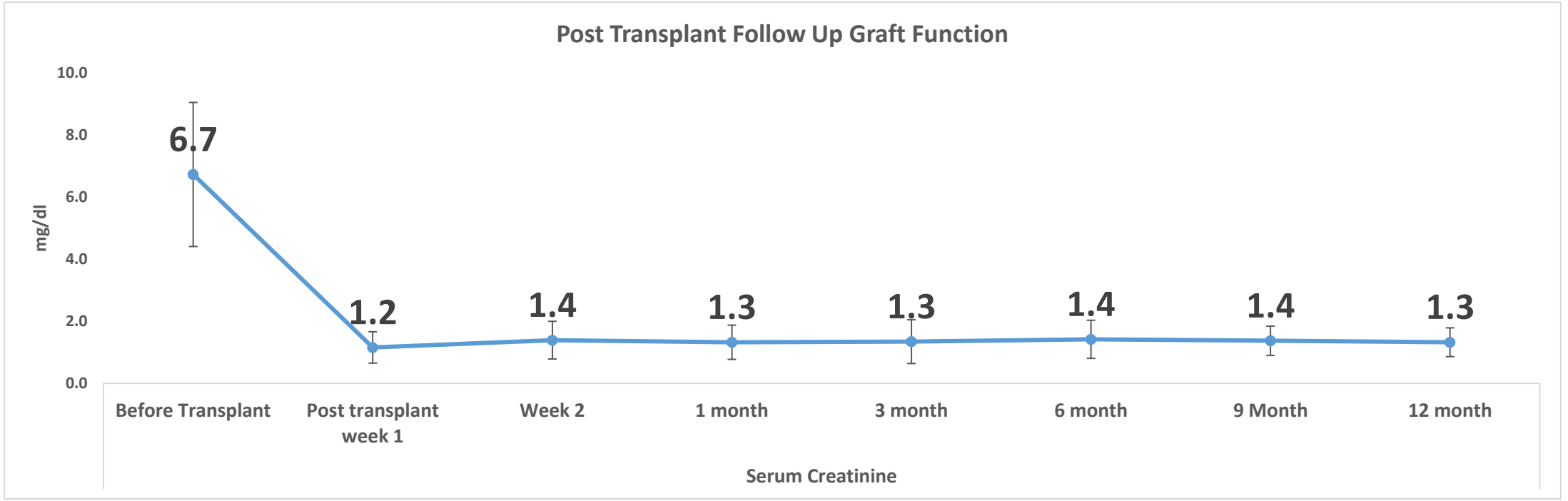

Figure 1: Graft Function Post Transplant (n=190)

- Post-transplant graft function and tacrolimus levels were also evaluated at 3, 6, 9 &12 months, as shown in Figures 1 and 2.

Result: TAC level

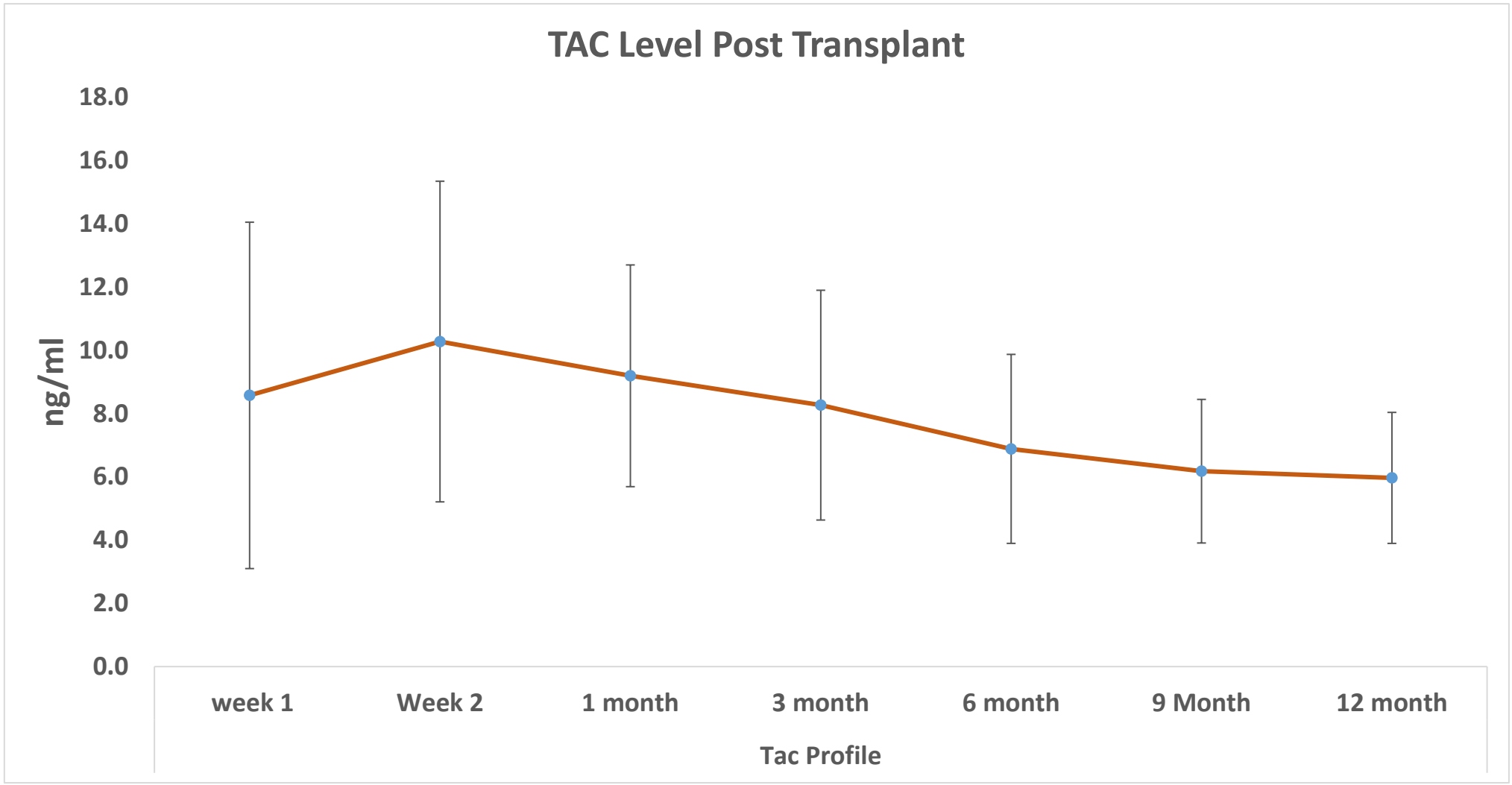

Figure 2: TAC level Post transplant (n=190)

Result: Graft Rejection

Rejection episodes included

- **Acute cellular rejection ACR: (12, 6.31%)**
- **Antibody mediated rejection ABMR: (4, 2.1%).**

Other complications

- acute tubular necrosis (11, 5.78%),
- acute tubular injury (4, 2.1%),
- pyelonephritis (2, 1.05%),
- patchy necrosis of renal parenchyma (2, 1.05%).

Disease recurrence occurred in 2, (1.05%) cases, primarily IgA nephropathy.

Conclusion

Based on the data presented in this study, it is evident that Anti-T-Lymphocyte Globulin (ATLG) at a low dose (≈ 4 mg/kg) serves as an effective induction therapy in kidney transplantation.

The study highlights the efficacy of ATLG in preventing graft rejection, with high patient survival rates and low incidences of acute cellular rejection and antibody-mediated rejection.

The outcomes suggest that ATLG can be a valuable component of immunosuppressive regimens in kidney transplant patients.

However, further research, particularly in ABO-incompatible (ABOi) transplants, is necessary to comprehensively evaluate the long-term benefits and potential broader applications of ATLG.