IV IMMUNOGLOBULIN IN NEPHROLOGY

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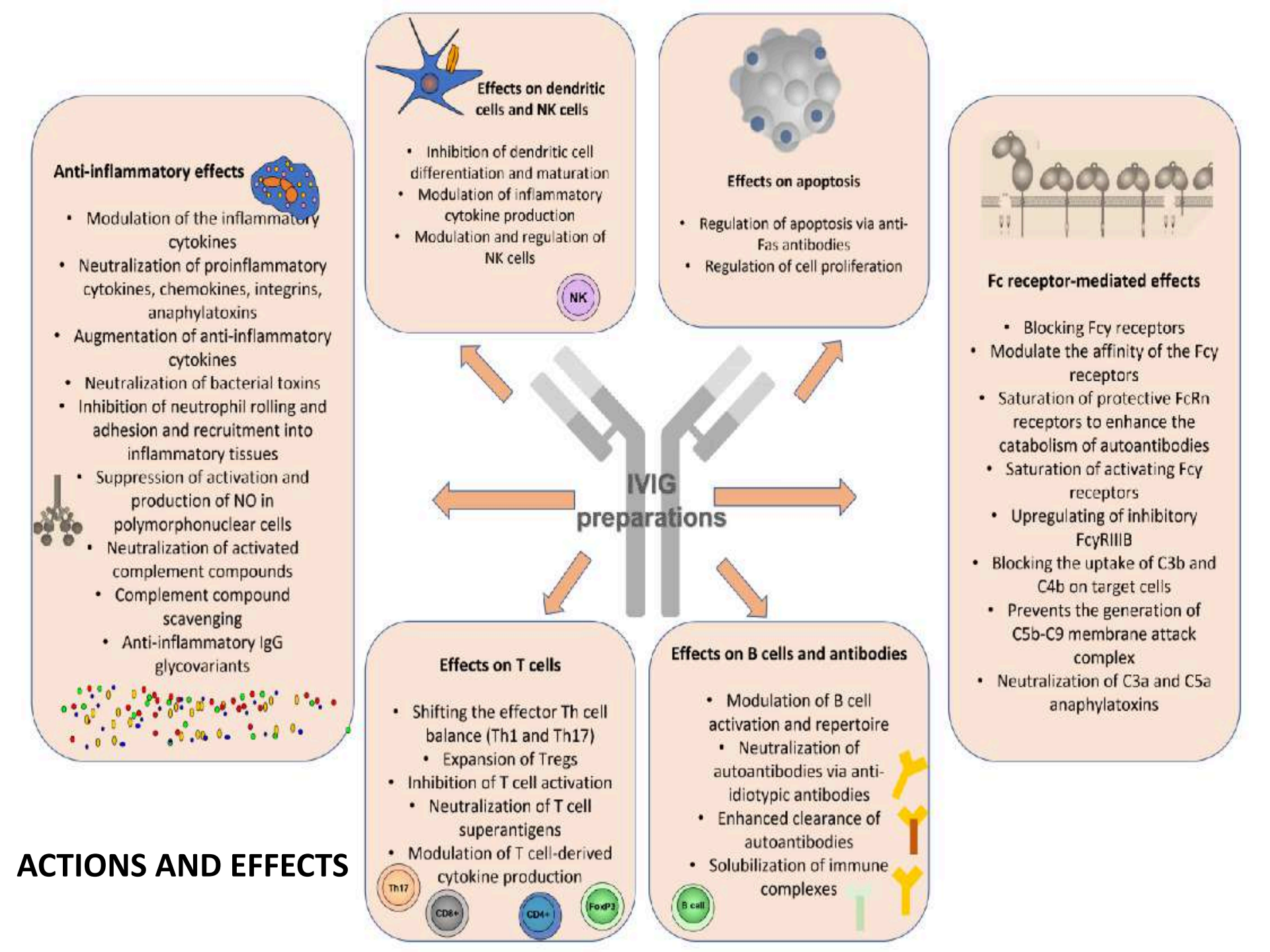
INTRODUCTION

- First commercial immunoglobulin product for IVIG was approved in 1980.

- Uses in nephrology :-Desensitization , ABMR, ABOi kidney transplantation, Post transplant infections [BKV].

- Components IV IG :- Immunoglobulin G (IgG) constitutes 95-98% of the preparation. Mainly IgG1 IgA and IgM - present in small amounts, cytokines and soluble receptors.

ACTIONS AND EFFECTS



Desensitization using IVIG alone for living-donor kidney transplant: impact on donor-specific antibodies

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JORNAL BRASILEIRO DE NEFROLOGIA

METHODS AND RESULTS

Retrospective study

Medical record data

Single center

From January, 2003 To December, 2014

45 sensitized patients

33 patients continued in the study

Positive cross-match (CDCXM ou FCXM) against potential living donor

Median 6 infusions

Monthly IVIG infusions (2 g/kg) only until they had a negative T-cell and B-cell FCXM

66.7% Living donor transplant

12.1% Did not undergo transplant

21.2% Deceased donor transplant

Antibody-mediated rejection **27.3%**

Graft survival

1 year	3 years	5 years
86.4%	86.4%	79.2%

Patient survival

1 year	3 years	5 years
95.5%	95.5%	83.7%

Conclusions: Desensitization using IVIG alone is an effective strategy, allowing successful transplantation in these highly sensitized patients.

Referência: Ulisses LRS, et al. Braz J Nephrol. 2022. DOI: https://doi.org/10.1590/2175-8239-JBN-2021-0200.

Visual abstract by Jenyffer Ribeiro Bandeira

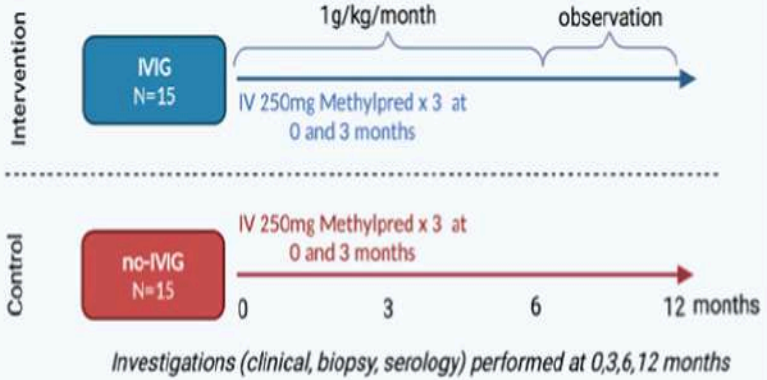
A randomized controlled trial of intravenous immunoglobulin vs standard of care for the treatment of chronic active antibody-mediated rejection in kidney transplant recipients

kidney INTERNATIONAL

ISN INTERNATIONAL SOCIETY OF NEPHROLOGY

Cohort/Methods

- Kidney transplant recipients with chronic active antibody mediated rejection were randomized 1:1 to intravenous immunoglobulin (IVIG) or standard of care.

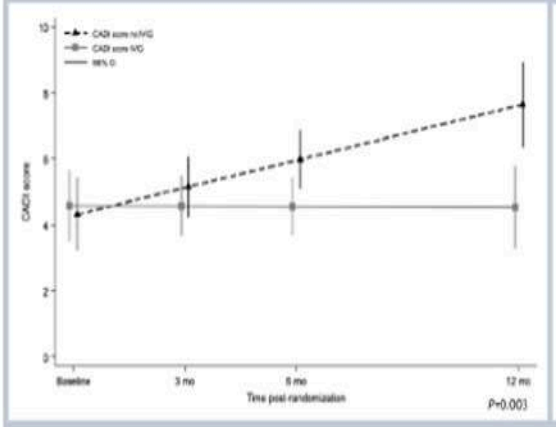


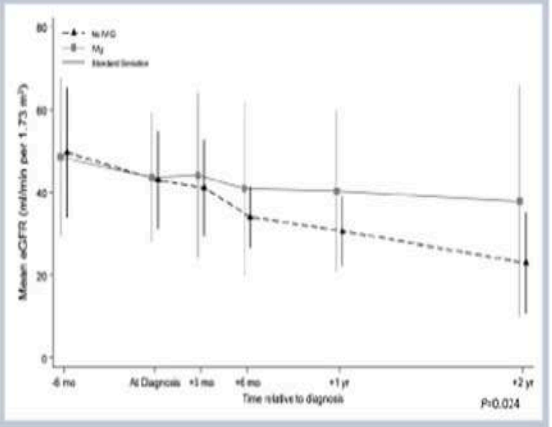
Investigations (clinical, biopsy, serology) performed at 0,3,6,12 months

Endpoints:

- **Primary** – chronic allograft damage index (CADI)
- **Secondary** – estimated glomerular filtration rate (eGFR), donor specific anti-HLA antibodies (DSA), allograft & patient survival and intragraft mRNA expression.

Findings:





1. IVIg stabilized histological damage
2. IVIg stabilized eGFR
3. IVIG did not reduce donor specific antibodies or proteinuria
4. Patient and allograft survival was similar at 12 months
    - At 5 yrs, 0 deaths in IVIG and 5 deaths in no-IVIG group
5. IVIg stabilized/reduced intragraft gene transcripts – particularly B-cell, T-cell, NK-cell and fibrosis associated transcripts.

Mulley et al, 2025

CONCLUSION: In kidney transplant recipients with chronic active antibody mediated rejection, IVIG therapy stabilized allograft histology, function and intragraft gene transcripts.

IV IG in post transplant infections

- Treating Parvovirus B19, Polyoma BK virus and Cytomegalovirus (CMV).

- **Mechanisms**:

  - Broad-spectrum neutralizing antibodies against viruses.
  - Complement inhibition (↓ MAC, ↓ C3 convertase activity).
  - Anti-inflammatory modulation of immune responses in infected tissues.

  - In BKVN : - Combining immunosuppression reduction with IVIG therapy showed the most significant benefit for viral clearance.

- Parvo –B19 :- IVIG therapy contains neutralizing antibodies against HPV-B19 .Dose: IVIG 2 g/kg over 2–5 days

Complications of IVIG

Adverse effect	Predisposing factors
Flu-like symptoms	High dose, rapid infusion rate, accompanying infection, previous adverse effects
Dermatological adverse effects	High dose, rapid infusion rate, accompanying infection, male patients with chronic inflammatory demyelinating polyneuropathy
Arrhythmia and hypotension	History of heart disease
Transfusion-related acute lung injury	Rapid infusion rate
Thrombotic events	High dose, rapid infusion rate, advanced age, being bedridden, diabetes mellitus, hypertension, dyslipidemia, prior/current thrombosis, preexisting atherosclerotic disease, elevated serum viscosity, oral contraceptive use, hereditary hypercoagulable state, idiopathic thrombocytopenic purpura
Aseptic meningitis	High dose
Renal impairment	Rapid infusion rate, advanced age, renal insufficiency, nephrotic syndrome, diabetes mellitus, dehydration, sepsis paraproteinemia, nephrotoxic drugs, hemolysis, sucrose-containing preparations
Hemolysis	High dose, rapid infusion rate, non-O blood group, underlying inflammatory state