In Sensitized Patients, Does IVIG After Heart Transplant Have Any Benefit?

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Abstract

Background: Strategies for sensitized patients undergoing heart transplant include post-op anti-thymocyte globulin (ATG) induction therapy as well as intravenous immunoglobulin (IVIG). We assessed whether the combination of IVIG and ATG affects the development of donor-specific antibodies (DSA) post-heart transplant (HTx) and clinical outcomes.

Methods: Between 2010 and 2015, we assessed 585 heart transplant patients. Of these, 43 patients were treated with both ATG induction therapy and IVIG and 215 were treated with ATG alone. Endpoints included 2-year freedom from de novo DSA development, 2-year survival, and 2-year freedom from cardiac allograft vasculopathy as defined by ≥ 30% stenosis by angiography.

Results: The ATG and IVIG group compared to the ATG alone group had a significantly higher pre-transplant mean PRA (72.0% vs 58.3%, p=0.044). Patients given ATG and IVIG had a similar 2-year freedom from de novo DSA development (see table). There was no significant difference in 2-year survival or 2-year freedom from CAV between the groups.

Conclusion: Patients who were treated with both ATG and IVIG compared to ATG induction therapy alone had similar outcomes. However, the addition of IVIG to ATG may have had benefit as this group had significantly higher pre-transplant PRA yet 2-year de novo DSA development and clinical outcomes were similar between study groups. Longer follow-up is needed.

Background

- Strategies for sensitized patients undergoing heart transplant include post-op anti-thymocyte globulin (ATG) induction therapy as well as intravenous immunoglobulin (IVIG).
- It is not clear if the addition of IVIG is of benefit

Purpose

- To assess whether the combination of IVIG and ATG affects the development of donor-specific antibodies (DSA) post-heart transplant (HTx) and clinical outcomes.

Methods

- Between 2010 and 2015, we assessed 585 heart transplant patients.
- Of these, 43 patients were treated with both ATG induction therapy and IVIG and 215 were treated with ATG alone.
- Endpoints included:
  - 2-year freedom from de novo DSA development
  - 2-year survival
  - 2-year freedom from cardiac allograft vasculopathy as defined by ≥ 30% stenosis by angiography

Demographics

Demographics	ATG + IVIG (n=43)	ATG Alone (n=215)	P-Value
Mean Recipient Age, Years ± SD	50.4 ± 16.0	56.5 ± 12.0	0.022
Mean Donor Age, Years ± SD	35.3 ± 14.2	35.6 ± 12.9	0.914
Body Mass Index, Mean ± SD	24.8 ± 4.6	25.7 ± 4.8	0.264
Female (%)	34.9%	34.9%	1.000
Previous Pregnancy in Females (%)	85.7%	77.1%	0.475
Ischemic Time, Mean Mins ± SD	165.2 ± 59.8	166.8 ± 60.1	0.873
Primary Reason for Transplant, Underlying Diagnosis of Coronary Artery Disease (%)	25.6%	46.8%	0.014
Status 1 at Transplant (%)	86.0%	81.4%	0.467
Cytomegalovirus Mismatch (%)	33.3%	24.4%	0.227
Diabetes Mellitus (%)	23.3%	36.7%	0.089
Treated Hypertension (%)	54.1%	51.9%	0.814
Insertion of Mechanical Circulatory Support Device (%)	30.2%	24.7%	0.443
Prior Blood Transfusion (%)	43.6%	47.8%	0.630
Pre-Transplant PRA ≥ 10% (%)	55.8%	47.9%	0.343
Pre-Transplant Creatinine, Mean ± SD	1.5 ± 1.2	2.0 ± 1.5	0.024

Outcomes

Endpoints	ATG + IVIG (n=43)	ATG Alone (n=215)	Log-Rank P-Value
2-Year Freedom from *De Novo* DSA Development	88.4%	89.3%	0.917
2-Year Survival	81.4%	89.3%	0.322
2-Year Freedom from CAV	86.0%	90.2%	0.643

Results Summary

- The ATG and IVIG group compared to the ATG alone group had a significantly higher pre-transplant mean PRA (72.0% vs 58.3%, p=0.044).
- Patients given ATG and IVIG had a similar 2-year freedom from de novo DSA development (see table).
- There was no significant difference in 2-year survival or 2-year freedom from CAV between the groups.

Conclusion

- Patients who were treated with both ATG and IVIG compared to ATG induction therapy alone had similar outcomes.
- However, the addition of IVIG to ATG may have had benefit as this group had significantly higher pre-transplant PRA yet 2-year de novo DSA development and clinical outcomes were similar between study groups.
- Longer follow-up is needed.

Author Disclosures

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