Efficacy of IVIG for Treatment of De-Novo Donor Specific Antibodies in Renal Transplant Recipients

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Efficacy of IVIG for Treatment of De-Novo Donor Specific Antibodies in Renal Transplant Recipients

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Abstract

- Development of Donor Specific Antibodies (DSA) is linked to worsened outcomes in renal transplant recipients. Intravenous immunoglobulin (IVIG) is an immune-modulator utilized in treatment of antibody mediated rejection. A retrospective review of kidney transplant cases at Lehigh Valley Health Network (LVHN) from January 2009 to June 2014 was performed to evaluate the efficacy of IVIG in treatment of new DSAs. All patients undergoing renal transplant at LVHN are cross-match compatible at the time of procedure. Desensitization is not utilized. All highly sensitized patients (PRA>50%) receive prophylactic IVIG monthly x 4 months post-transplant. Study patients that tested positive for DSA post-transplant were treated with additional IVIG (0.5g/kg monthly). 95 patients were treated with IVIG during the study period. Of 55 patients with newly positive DSA, 24 of these cleared the DSA after IVIG treatment. IVIG was more effective in clearance of class I than class II DSA. Highest rates of graft loss occurred in patients that tested positive for both a class I and class II DSA. Conclusion: 1. IVIG can be a useful in eliminating DSA post-renal transplant. 2. IVIG is effective in eliminating Class I DSA. 3. Class II DSA can be difficult to eliminate and requires further investigation.

Background

- Intravenous immunoglobulin (IVIG) is a medication that has emerged as a useful tool in modulating immunity, treatment of antibody mediated rejection (AMR), and in desensitization protocols Studies have still not demonstrated optimal regimens for treatment of new DSA. The purpose of this study was to investigate the effectiveness of IVIG in elimination of DSAs.

Methods

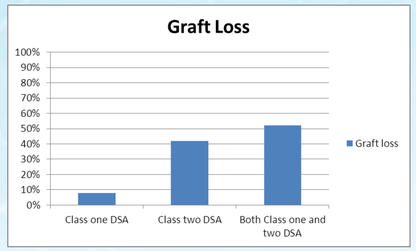
A retrospective chart review was performed of all kidney transplant patients at Lehigh Valley Health Network who were treated with IVIG post transplantation from January 2009 to June 2014. All patients were cross match compatible (no DSA presence at time of transplant). All highly sensitized patients (PRA greater than 50%), were prophylactically treated with 0.5g/kg of IVIG monthly for four doses beginning at the time of transplant.

Patients that tested positive for DSA post-transplant were biopsied and treated monthly with 0.5g/kg of IVIG until clearance of DSA. Time to DSA clearance, dates of graft loss, AMR, and development of Class I versus Class II DSA were noted.

Results

	Prophylactic IVIG (Sensitized patients)	Non Prophylactic patients (nonsensitized)
Total Patients	61/95	34/95
Total percent	64.20%	35.80%
New DSA	32.8% (20)	100%
DSA clearence	45% (9/20)	44.1% (15/34)
AMR	35% (7/20)	64.7% (22/34)

- Of the 293 patients who received kidney transplantation at Lehigh Valley Health Network in the study period, 95 were treated with IVIG. 55 patients that were treated with IVIG had a positive DSA (57.8%). 24 (43.6%) of those patients cleared the DSA after treatment with IVIG. Of the remaining 31 patients, 28 did not clear the DSA and 3 patients expired during the study interval.



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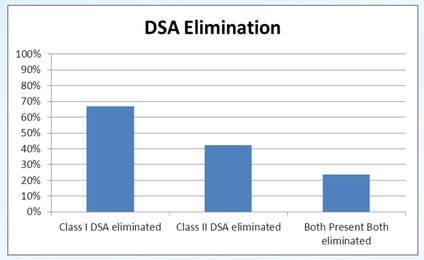

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61 of the 95 (64.2%) patients received prophylactic IVIG. Out of those, 41/61 (67.2%) never developed a DSA while 20/61 (32.8%) did. Out of the 20 that developed a DSA, 9 cleared the DSA. 34 non-sensitized patients (12% total non-sensitized transplants) developed DSAs and then received treatment with IVIG.

IVIG was more effective in the clearance of class I DSA's than class II. Following treatment with IVIG, 8/12 (66.7%) of the Class I DSAs cleared and 11/26 (42.3%) of the class II DSAs cleared (p=0.05). Lowest rates of graft loss occurred in patients with a class I DSA, followed by class II, and lastly if a patient had both (p=0.02).

Conclusions

- 1. IVIG can be a useful in eliminating DSA post-renal transplant.
- 2. IVIG is effective in eliminating Class I DSA.
- 3. Presence of Class II DSA is associated with higher rates of graft loss. Class II DSA can be difficult to eliminate and requires further investigation, possibly in combination with biologic agents.
- 4. Limited numbers of patients at this time make statistically significant results difficult to achieve. Further investigation is necessary.

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