Effect Of Therapeutic Plasma Exchange With Membrane On Glomerular Filtration Rate In Patients With Acute Humoral Rejection

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Introduction

AMR is the main risk factor for graft loss, especially after the first post transplant year. Up to 80% of patients achieve response with immunosuppressive treatment and TPE, although the response is lower in patients with late AMR. The objective was to determine the effect of TPE on GFR at 0, 1 and 3 months postTPE.

Methods

Retrospective study that included patients with renal transplant of the CMN“November 20”ISSSTE from 2016to2019, undergoing membrane TPE for AMR. Analysis was performed using student's t or MannWhitneyU, repeated measures analysis and Spearman or Pearson test. Significant p was less than 0.05.

Table 1. Characteristics of the Patients at Baseline.

Characteristics	(N = 25)
Age (years)	32 ± 11.6
Sex (%)	
Male	72
Female	28
Diabetes (%)	28
Hypertension (%)	76
Donor Type (%)	
Living	72
Deceased	28
Induction therapy (%)	
Thymoglobulin	48
Basiliximab	52
Tacrolimus (No. / %)	21/87
Avergae (ng/ml ± ED)	8.5 ± 5.06
Intraindividual variability[a] (%)	47
AAMR[b] (%)	
Early	20
Late	80
Hystollogic score (g + ptc)	3.62 ± 1.0
C4d %	
Positive	36
Negative	64
DSA Subtype[c] (%)	
A	7
C	7
DQ	57.2
DR	28.8

[a]Equal to the ratio of the standard deviation between the arithmetic average multiplied by 100. [b]Acute antibody mediated rejection, early if < 6 months pos-trasplant; late if > 6 months pos-trasplant. [c]Donor specific antibodies.

Results

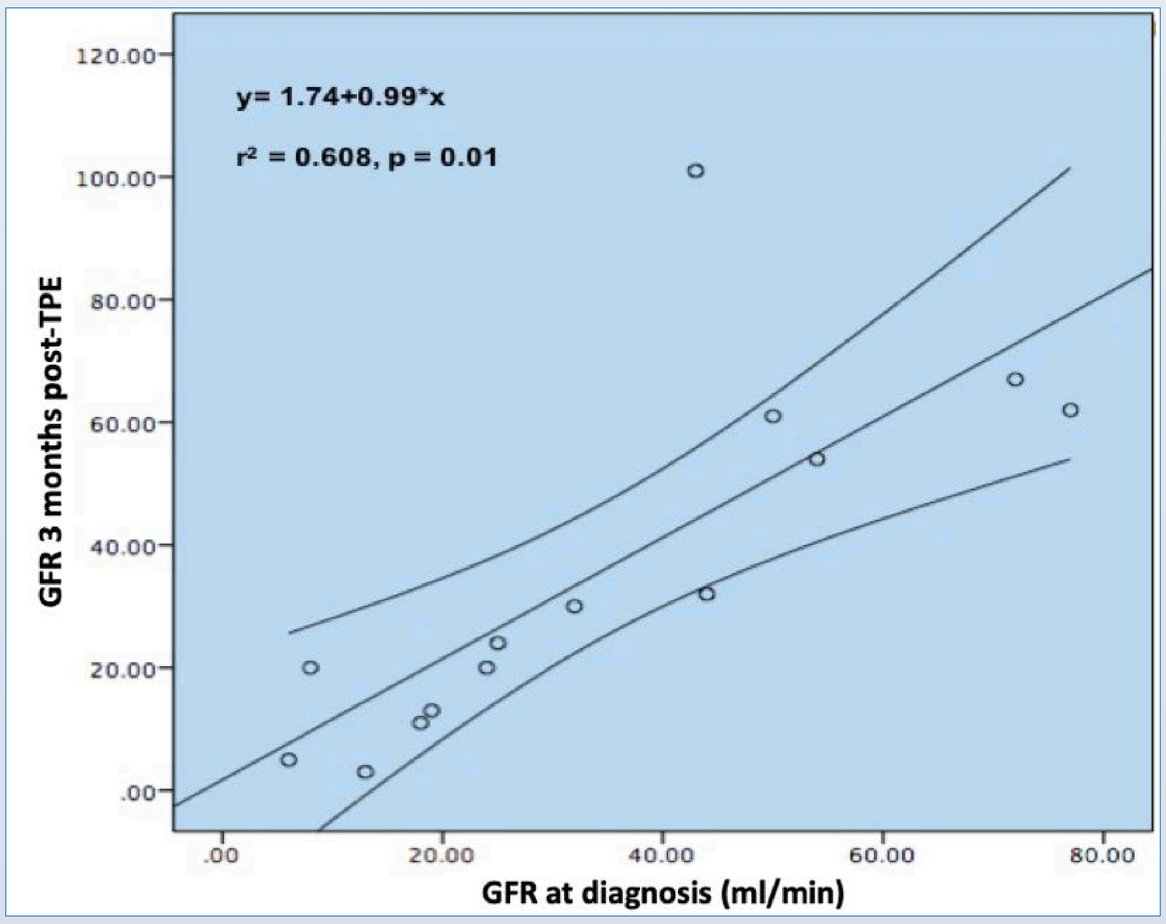
25 patients with AMR who received TPE were evaluated. Age:32±11.6 years, 72% from living donor, and 52% received Basiliximab. 87% received tacrolimus. 80% of AMR events were late (more than 6 months post-transplant). The GFR at the time of diagnosis was38.2±23.8 ml/min, and at discharge (0), 1 and 3 months postTPE were 43.3±24.8, 34.1±19.5, and 35.9±28.7 ml/min. Prevalence of HLA class II DSA(66%), specifically vs DQ and DR (57.2% and 28.8%). There was a significant difference between preTPE GFR and at the end of treatment(p=0.015, r=0.53). There were no significant differences when comparing the preTPE GFR, with one monthGFR(p=0.58), or after 3 months postTPE(p=0.36). When evaluating IFTA, no difference was detected in the GFR at 3 months postTPE.

When analyzing the histological score(g+ptc), no differences were detected between the score obtained and the average GFR at discharge(p=0.19), one month(p=0.22) and 3 months(p=0.06) post-TPE.

Table 2. Primary outcome (Effect of TPE on GFR)

Variable	(N = 25)	p value
GFR (ml/min)		
Pre-TPE	38.2 +/- 23.8	
Post-TPE	43.3 +/- 24.8	**0.015**
1 month	34.1 +/- 19.5	0.58
3 months	35.9 +/- 28.7	0.36

When comparing the effect of the AMR temporality on the GFR, difference was found at one month (p=0.01) and 3 months (p=0.022) postTPE, with a lower recovery of GFR in patients with early AMR. The response to treatment(GFR±30% from baseline at 7 days postTPE) was 60%. There was a moderate correlation between GFR at the time of diagnosis of rejection and GFR at 3 months postTPE(r2=0.68,p=0.01). There were 9 minor complications related to TPE, being the most frequent hypocalcemic syntoms and moderate hypotension (MAP > 55 mmHg).



Conclusions

Significant difference was demonstrated between the preTPE GFR and the immediate postTPE GFR. IFTA did not appear to influence the GFR at 3 months. In our study patients with early AMR presented a poor response to treatment. The GFR upon admission correlated positively with the GFR detected at 3 months post-TPE. This suggests a beneficial effect of TPE over GFR fall during the first 3 months after diagnosis. Also TPE with membrane appears to be a safe therapy, with no more frequent complications compared with centrifuge TPE.

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