

Evaluation of Fibrinogen Levels in Patients with Acute Cardiac Transplant Rejection who Receive Daily Therapeutic Plasma Exchange

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Background

- Therapeutic plasma exchange is often used to emergently treat patients who are experiencing acute cardiac transplant rejection.
- At our institution, the treatment protocol typically involves a minimum of three daily TPEs for these patients.
- The purpose of removing plasma is to deplete pathogenic substances from the intravascular space, such as undesirable alloantibodies that can precipitate acute cardiac transplant rejection.

Background

- One of the complications of daily TPE is coagulopathy secondary to hypofibrinogenemia.
- Patients who develop hypofibrinogenemia during the course of daily TPE are either:
 - deferred for further treatment until endogenous fibrinogen levels increase to ≥ 110 mg/dL
 - transfused with thawed plasma or cryoprecipitate to replenish fibrinogen levels.

Hypothesis

- Patients with acute cardiac transplant rejection may have diminished liver function due to chronic passive congestion.
- Are post-treatment fibrinogen levels significantly lower in this patient population when compared to other patients treated with daily TPE, such as renal transplant patients with recurrent focal segmental glomerulosclerosis (FSGS)?

Methods

- A chart review was performed to evaluate 27 patients with acute cardiac transplant rejection and 20 patients with recurrent FSGS who underwent at least two consecutive TPEs from January 2004 to October 2010.
- Baseline and post-treatment fibrinogen levels for the first and second daily TPE were compared.

Characteristics of Patients

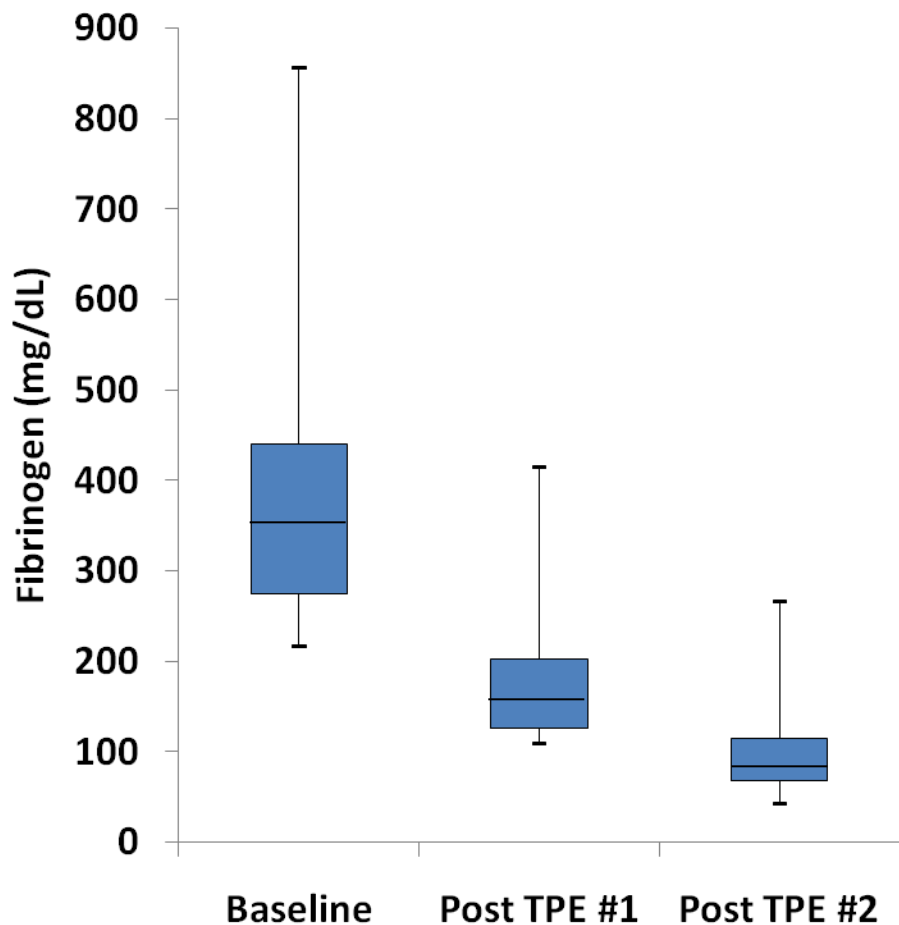
Heart Tx

FSGS

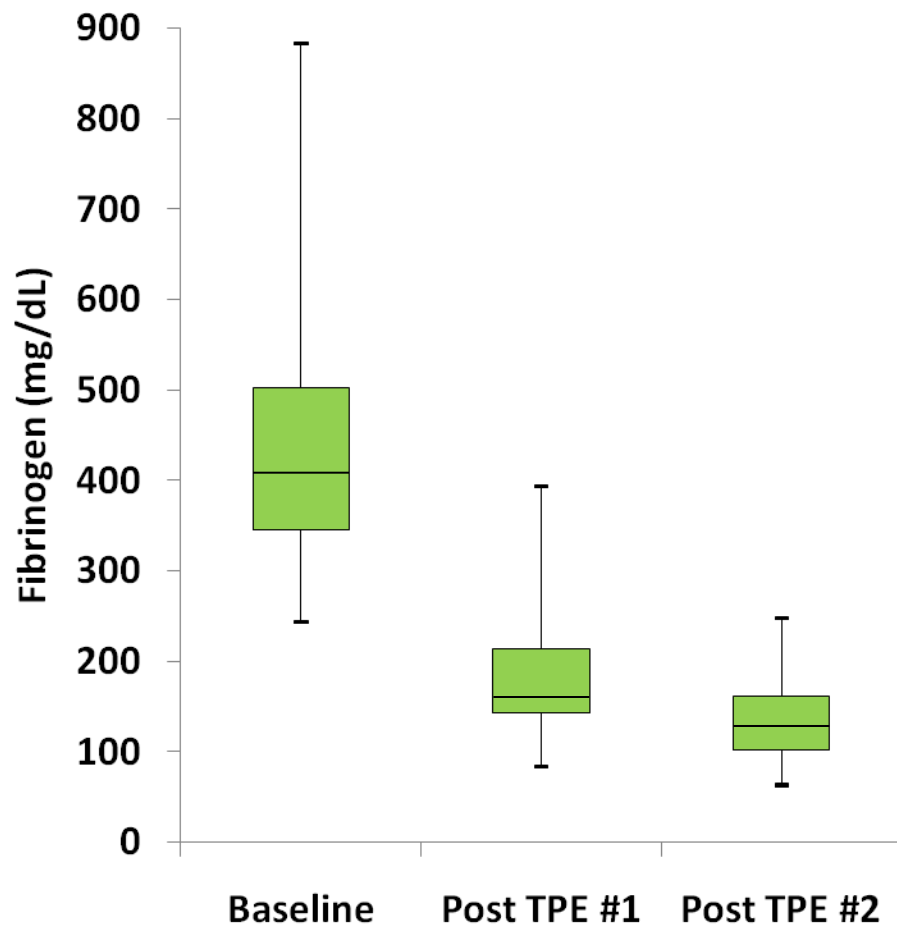
	Mean	SD	Mean	SD	
N	27		20		
Males	17		10		
Females	10		10		
Age	45.0	22.0	48.4	14.7	(p = 0.56)
Albumin	3.6	0.6	3.0	0.6	(p < 0.01)*
Time s/p TPE #1 (hr)	14.1	4.7	14.8	4.9	(p = 0.62)
Time s/p TPE #2 (hr)	15.3	3.0	17.5	8.4	(p = 0.22)
Total Time (hr)	38.7	5.8	43.4	10.3	(p = 0.0543)

Acute cardiac transplant patients had lower initial fibrinogen levels and a larger overall decrease after two TPEs.

Fibrinogen Levels – Heart Tx Group



Fibrinogen Levels – FSGS Group

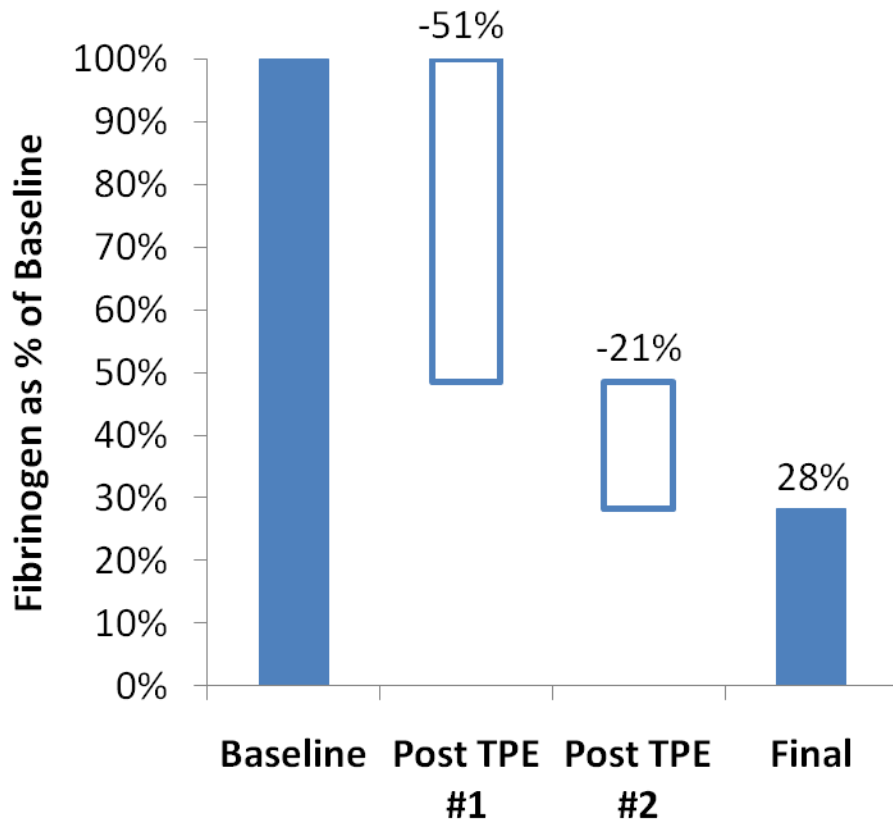


Mean: 382.1 180.1 102.0
Median: 358 152 84

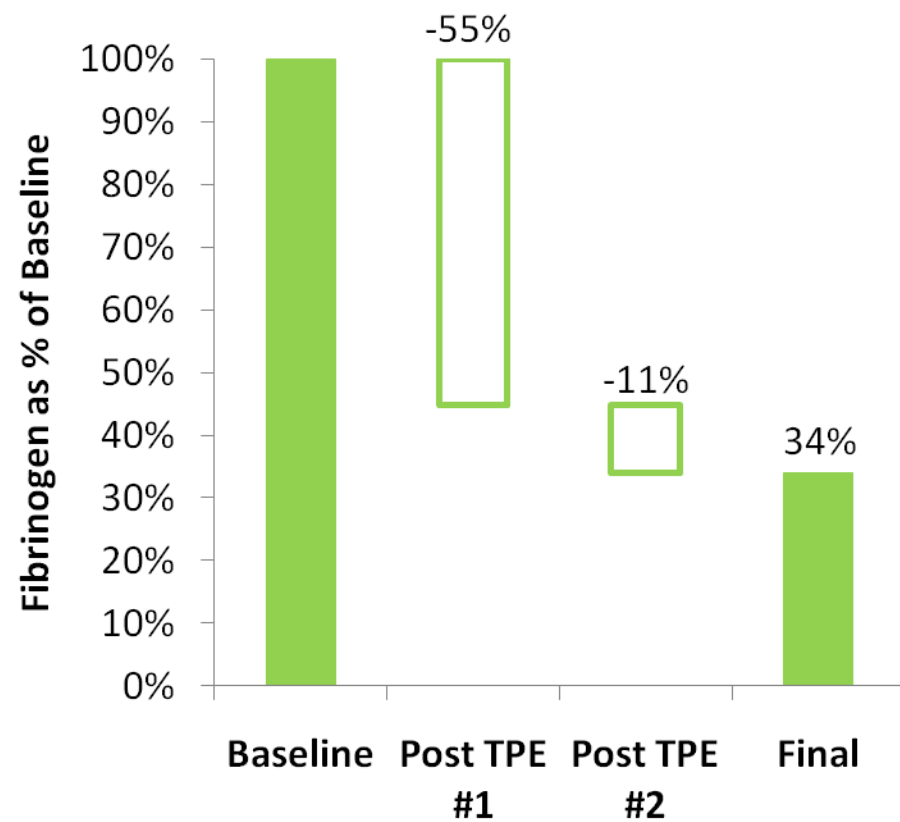
Mean: 439.8 191.1 140.0
Median: 403 160 139

Both groups had similar % decrease in fibrinogen after first TPE, but acute cardiac transplant group showed a larger decrease after the second TPE.

Fibrinogen Levels – Heart Tx Group



Fibrinogen Levels – FSGS Group



$p = 0.0016$

Conclusions

- Patients with acute cardiac transplant rejection tend to have reduced baseline fibrinogen levels.
- This patient population also shows a diminished capacity for fibrinogen synthesis.

Conclusions

- Daily monitoring of fibrinogen levels in all patients receiving consecutive TPE, especially in those with impaired liver function, is recommended to prevent iatrogenic coagulopathy due to hypofibrinogenemia.

QUESTIONS?