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Combined Continuous Renal Replacement Therapy (CRRT) and Therapeutic Plasma Exchange (TPE): Alternative Method in Dual Therapies

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Introduction: Studies by other investigators have concluded that Continuous Renal Replacement Therapy (CRRT) concurrently with Therapeutic Plasma Exchange (TPE) is achievable. Limiting disruptions and time off the machine produces the best outcomes for CRRT patients. Continuation of the CRRT while providing TPE without disruption minimizes hemodynamic instability and fluid stability. For pediatric patients, it also reduces the amount of blood exposure than if the treatments were done separately.

There are two techniques for providing both therapies without interruption: “In Parallel” and “In Series”. The difference between the two is the way in which the blood flow is routed between the CRRT and TPE equipment. We tested to see which technique was most effective.

Methods: The data was gathered as part of a performance improvement project. The skills and techniques used provide optimal patient outcomes while receiving CRRT and TPE. Sodium citrate anticoagulant is used for both techniques and calcium gluconate replacements are given via central line.

Results:

	In Parallel with TPE	In Series with TP
Ionized Calcium		
Pre	1.2	1.13
Mid	1.19	1.2
Post	1.19	1.2
Fibrinogen		
Pre	243	323
Post	121	78
Sieving Coefficient		
Pre	100%	100%
Post	100%	100%

Both techniques were shown to be adequate in that the fibrinogen levels dropped greater than 50% and the CRRT sieving coefficient was maintained at 100% pre and post levels.

Conclusion: This study demonstrates that TPE can be concurrently performed safely with CRRT. In Series and In Parallel processes are both effective methods to connect CRRT to TPE. The CRRT Sieving Coefficients were 100 percent pre and post results in both techniques and the CRRT treatment was not disrupted. TPE was completed with no access or clotting issues.

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