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Role of therapeutic plasma exchange in oncology patients with acute liver failure at a tertiary care oncology centre

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Background and Objectives

- Acute liver failure (ALF) in oncology patient poses significant challenges in patient management.
- Therapeutic plasma exchange (TPE) emerged as a bridging intervention.
- This study elucidate the outcomes of oncology patients with ALF treated with TPE.
- TPE performed on these patients as per ASFA recommendation.

Methods

- Study-Single centre retrospective observational study.
- Study Period - 3 years (January 2021- December 2023).
- Data source - Electronic medical records and Departmental records
- Parameters analysed -
  - Demographic data
  - Procedure details
  - Underlying malignancies,
  - Pre and post procedure LFT and coagulation profile.
- Wilcoxon paired T test used to analyse the co-relation between the variables.

Results

- Total 12 TPE procedures were performed on 6 oncology patients (Table2).
- Out of 6 patients 50%(3) were Male and 50%(3) were females.
- Mean age 39 years (9-66 years)
- Mean of 2 (1-3) TPE sessions performed on alternate day.
- Average 1.25 times total plasma volume were exchanged per session with combination of
  - Albumin
  - Normal Saline
  - Fresh Frozen Plasma as per patients clinical requirement.
- Data showed improvement in LFT (Figure 1,4,5,6 & Table 1) and coagulation profile (Figure 2,3 & Table 1) in these set of patients post TPE.
- More than 30 days survival was observed in 50% of the patients under study.

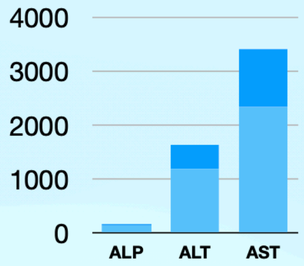

Figure 1- Pre and Post Procedure LFT

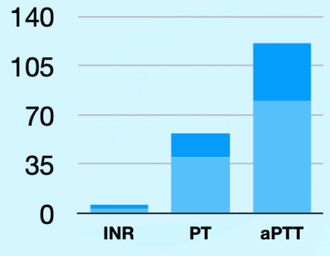

Figure 2 - Pre and post TPE Coagulation Profile

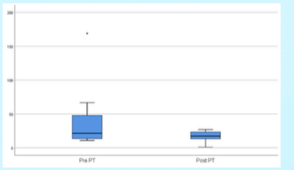

Figure 3- Pre and post TPE PT

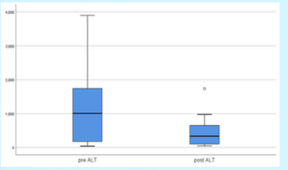

Figure 4- Pre and post TPE ALT

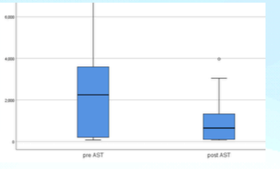

Figure 5- Pre and post TPE AST

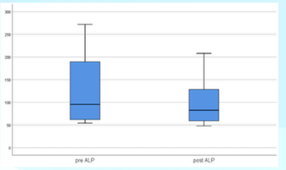

Figure 6- Pre and post TPE ALP

Table 1- Pre and Post TPE parameters

		Pre TPE	Post TPE	P value
PT (Seconds)	Mean (SD)	40 (45)	17.2 (7.3)	0.023
	Median (IQR)	22 (14, 41)	17.3 (13.4, 22.9)	
	Range	11, 169	1.0, 27.0	
INR	Mean (SD)	3.40 (4.01)	2.47 (3.49)	0.289
	Median (IQR)	1.79 (1.18, 3.13)	1.52 (1.18, 1.83)	
	Range	0.96, 14.86	0.99, 13.50	
aPTT (Seconds)	Mean (SD)	80 (78)	41 (15)	0.136
	Median (IQR)	46 (38, 69)	37 (30, 47)	
	Range	29, 247	29, 79	
ALT (U/L)	Mean (SD)	1,179 (1,148)	464 (497)	0.005
	Median (IQR)	1,005 (228, 1,541)	329 (120, 567)	
	Range	35, 3,901	41, 1,731	
AST (U/L)	Mean (SD)	2,338 (2,230)	1,065 (1,255)	0.005
	Median (IQR)	2,248 (238, 3,444)	648 (110, 1,255)	
	Range	75, 6,875	71, 3,968	
ALP (U/L)	Mean (SD)	127 (76)	99 (52)	0.034
	Median (IQR)	96 (63, 180)	83 (60, 116)	
	Range	54, 272	48, 208	
Bilirubin (mg/dL)	Mean (SD)	24 (17)	18 (12)	0.060
	Median (IQR)	21 (13, 32)	14 (10, 24)	
	Range	2, 58	4, 46	

Table 2- Patient Demography

Patient ID	AGE(Yr)	GENDER	WEIGHT(Kg)	TBV(mL)	TPV(mL)	TPVE(mL)	Times TPVE	Primary Diagnosis
Case 1	9	F	35	2975	2282	1721	0.75	**Hepatoblastoma**
Case 2	60	M	50	3500	2467	3770	1.5	**HBV-CLD**
Case 3	30	M	59	4130	3275	3787	1.15	**Hepatocellular Cancer**
Case 4	25	F	56	3640	2544	3258	1.3	**Ca Rectum**
Case 5	44	F	50	3250	2590	4763	1.85	**Ca Endometrium**
Case 6	66	M	71	4970	3330	4201	1.25	**Ca Esophagus**

TBV- Total Blood Volume, **TPV**- Total Plasma Volume, **TPVE**- Total Plasma Volume Exchanged.

Conclusions

- TPE is well tolerated and safe procedure.
- It can be considered as a bridging therapy in oncology patients with ALF.

References

1.Therapeutic plasma exchange in acute liver failure. Klaus Stahl, Johannes Hadem, Andrea Schneider, Michael P. Manns, Olaf Wiesner, Bernhard M. W. Schmidt, Marius M. Hoeper, Markus Busch, Sascha David https://doi.org/10.1002/jca.21737

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