

Therapeutic plasma exchange in expanded dengue patients having acute liver failure: a case series

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Introduction

- Patients with expanded dengue who experience acute liver failure and do not respond to standard therapy have a high risk of mortality. This is because expanded dengue causes a **cytokine storm** leading to **fulminant hepatic failure**.
- Plasma exchange can help by removing cytokines, bilirubin, and ammonia. This improves the overall outcome for the patient.

Objectives

To analyze the efficacy of therapeutic plasma exchange in expanded dengue patients with acute liver failure

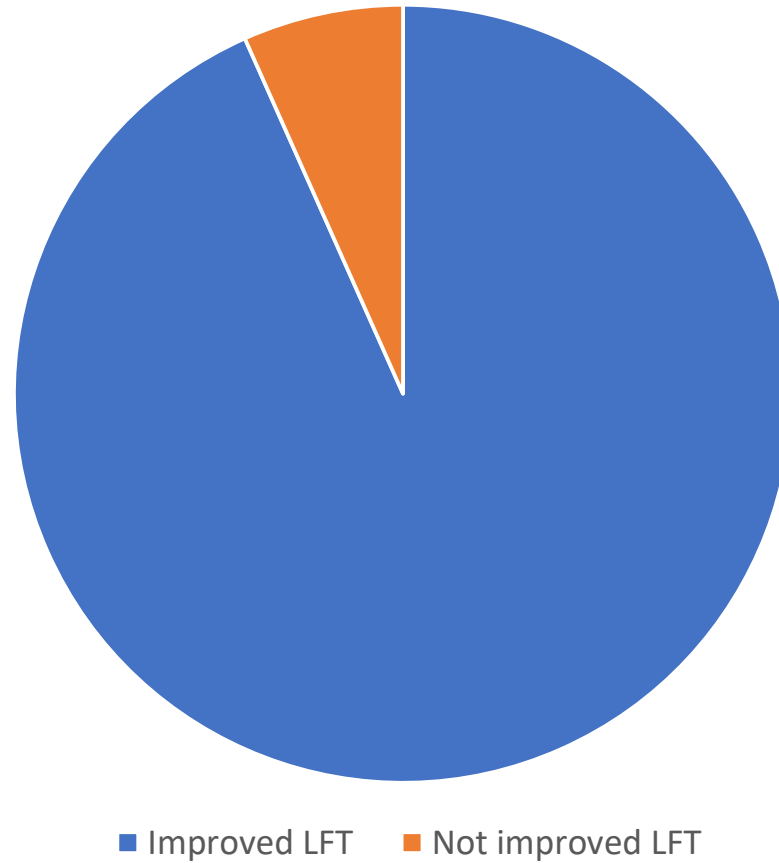
Methodology

We retrospectively analyzed data from 15 patients with expanded dengue patients with acute liver failure.

Results

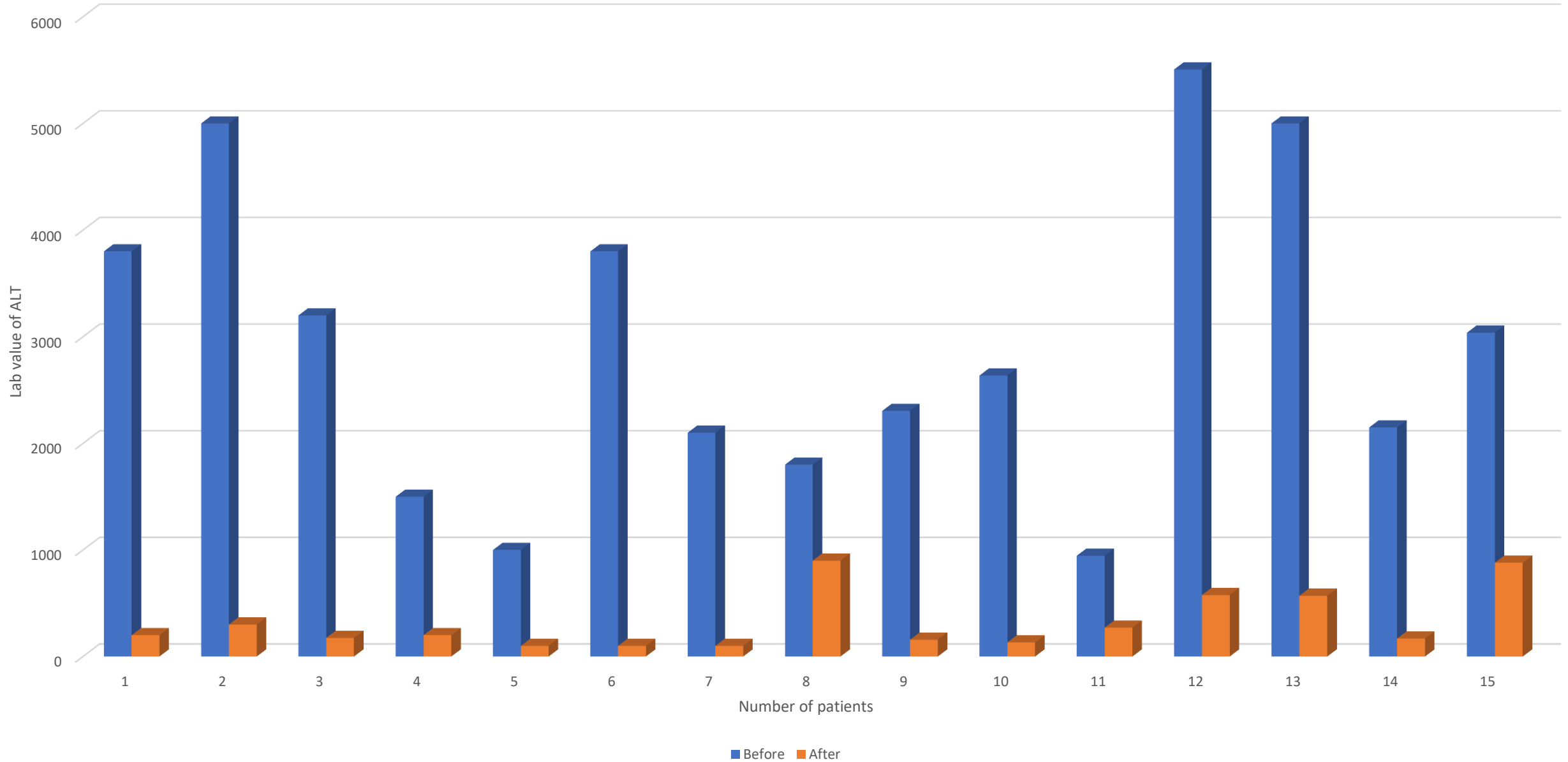
- We performed TPE on 15 patients with dengue-induced acute liver failure.
- Improvement in liver function in 14 patients.
- 11 patients survived while 4 patients died.

LFT after TPE

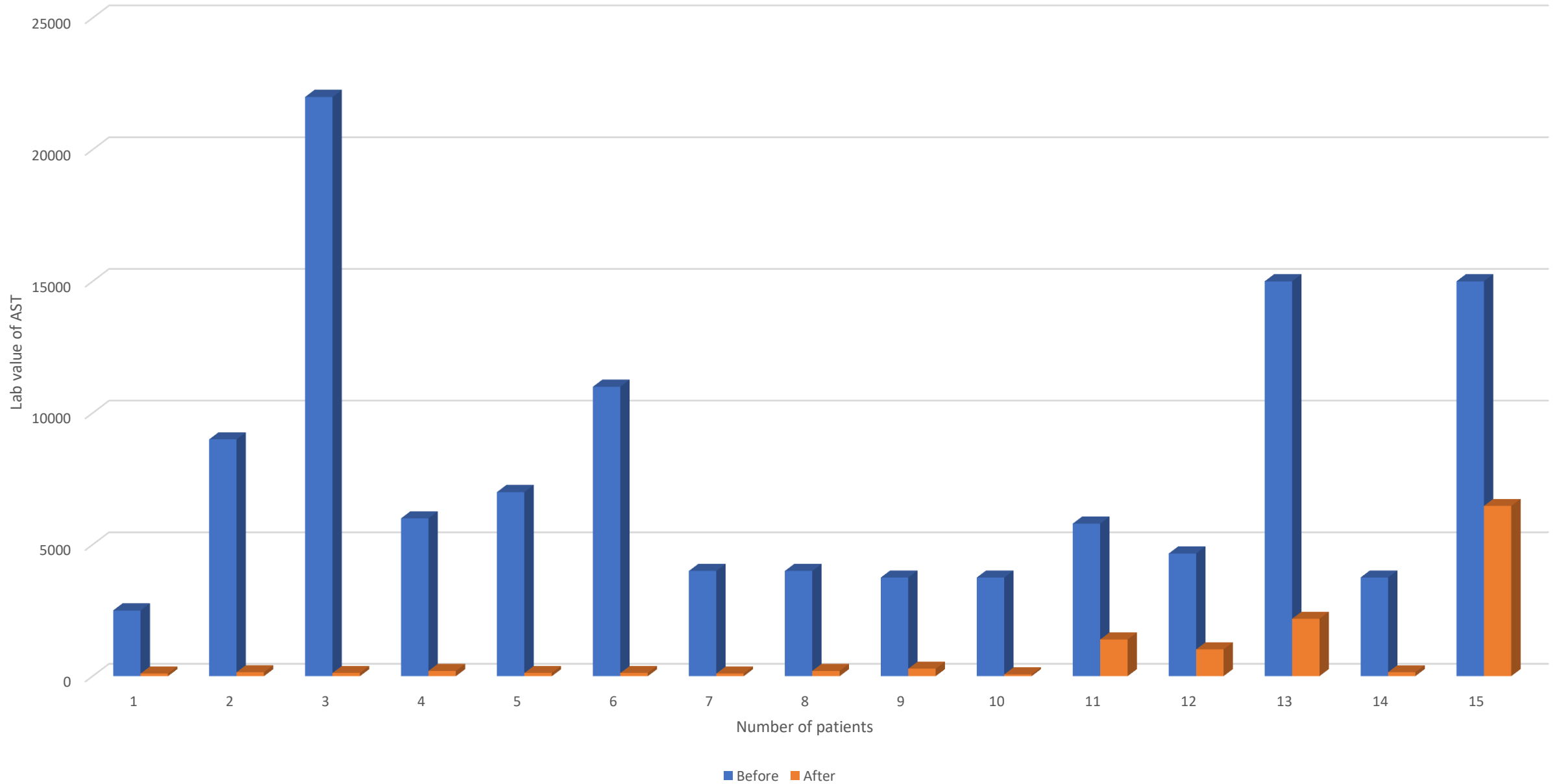


Patients	Clinical course	Session of TPE	Improvement of LFT	Mortality
1	ALF, AKI, Rhabdomyolysis, HAP, VAP	6	Improved	Survived
2	ALF, AKI	4	Improved	Survived
3	ALF	1	Improved	Died, Intracranial hemorrhage
4	ALF, HAP, Sepsis	12	Improved	Died, Septic shock
5	ALF	1	Improved	Survived
6	ALF, HAP, AKI	3	Improved	Died, Septic shock
7	ALF	3	Improved	Survived
8	ALF, AKI, DIC, IUD	1	Not improved	Died, Septic shock
9	ALF	2	Improved	Survived
10	ALF	3	Improved	Survived
11	ALF	3	Improved	Survived
12	ALF, AKI	4	Improved	Survived
13	ALF	3	Improved	Survived
14	ALF	2	Improved	Survived
15	ALF	2	Improved	Survived

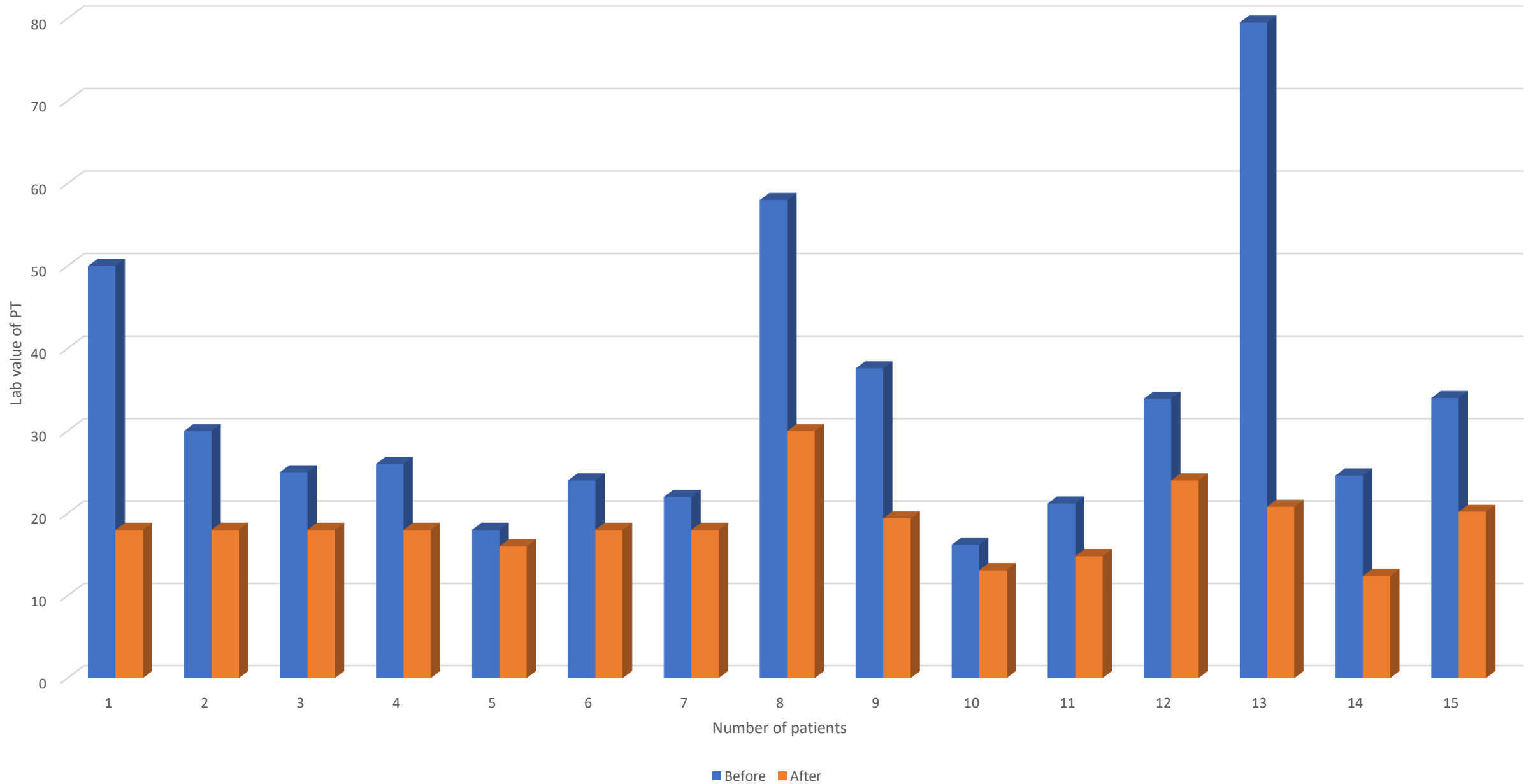
ALT before and after TPE



AST before and after TPE



PT before and after TPE



Discussion

- Hepatic involvement in dengue can vary from asymptomatic elevation of liver enzymes to severe liver failure.

Discussion.....cont

- The pathogenesis of liver involvement is multifactorial
 - Direct viral effects on liver cells
 - Dysregulated host immune response against the virus
 - Severity of the disease including prolonged shock or ischemic hepatitis
 - Drug-induced liver injury
 - Preexisting liver damage

Discussion.....cont

- Dengue infection, particularly during a second heterotypic infection, triggers an immune-mediated response that can result in excessive production of **pro-inflammatory cytokines**.
- Additionally, the infection may also lead to the production of **cross-reactive autoantibodies**.
- Therefore, Therapeutic plasma exchange is the ultimate solution which removes both the inflammatory cytokines and pathological antibodies from the plasma.

Discussioncont

- High-volume plasma Exchange (HVP) has been effective in treating acute hepatic failure in recent randomized controlled trials.
- Based on this data, we treated 15 patients with High Volume Plasma Exchange. We observed a significant improvement in liver enzymes and the clinical condition of our patients.

Discussioncont

- However, there is **not enough clinical data** on the use of TPE in dengue-induced acute liver failure.
- We were **only able to find one study** on dengue-induced acute liver failure treated with TPE, which was performed on three patients. Unfortunately, two patients died while one improved.

Discussioncont

- In our study, we performed TPE on 15 patients with dengue induced acute liver failure.
- Improvement in liver function in 14 patients.
- 11 patients survived while 4 patients died.

Discussioncont

- Three patients died due to septic shock. They acquired hospital-associated infection & sepsis as a result of prolonged hospital stay.
- One patient died due to a massive intracranial hemorrhage.
- The 4 patients who passed away had delayed admission and received TPE later than the other patients.

Discussioncont

- From our findings, we can suggest that if a patient got early admission with elevated liver enzymes & we could institute early TPE, we may expect a better outcome.

Conclusion

- Therapeutic plasma exchange is a potential treatment option for patients with expanded dengue who are suffering from acute liver failure.
- The **earlier this treatment**, the **better the outcome** will likely be.
- However, further research is needed to determine the appropriate timing and dosage of plasma exchange for patients

References

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Thank You!