

CLINICAL CHARACTERISTICS AND OUTCOMES OF PATIENTS WITH LIVER FAILURE TREATED WITH MOLECULAR ADSORBENT RECIRCULATING SYSTEM (MARS) - A SINGLE CENTER EXPERIENCE -

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INTRODUCTION

- Molecular Adsorbent Recirculating System (MARSTM) is an albumin-based dialysis system has been utilized in patients with severe liver failure with AKI and Hepatic Encephalopathy at our center for the last 3 years.
- The aim of this retrospective study was to identify change in total bilirubin, ammonia, and PSE stage in patients with acute liver failure (ALF) and acute-on-chronic liver failure (ACLF) who received MARS.

METHODS

- This is a single center retrospective study performed at Methodist Dallas Medical Center.
- Data included 42 patients with alcoholic hepatitis (AH), ACLF or ALF who underwent at least one session of MARS from January 2019 to March 2022.
- MARS was performed 12 hrs/day for 5 days – MARS was interrupted in the case of hemodynamic instability, clinical deterioration, or in cases of substantial clinical improvement.
- Measured outcomes included change in total bilirubin, ammonia, MELD-Na scores and PSE stage pre- and post-MARS. We assessed their overall mortality after receiving MARS.
- Wilcoxon signed-rank test was used to compare continuous variables. McNemar's test was used for categorical variables.

IMAGES

Variable	Total Patients (N=42)
Age [years, median (Q1-Q3)]	47 (38-57)
Etiology of Liver Failure (%)	81.8% AH 57.1% AoCLF 38.1% ALF
Sessions of MARS therapy [median (Q1-Q3)]	4 (3-5)
ICU Length of Stay [days, median (Q1-Q3)]	7.5 (4-14)
Length of Stay [days, median (Q1-Q3)]	16.5 (11-32)
28-day transplant free survival (n, %)	15 (38.4%)
30-day readmission (n, %)	18 (42.9%)

Table 1: Patient demographics

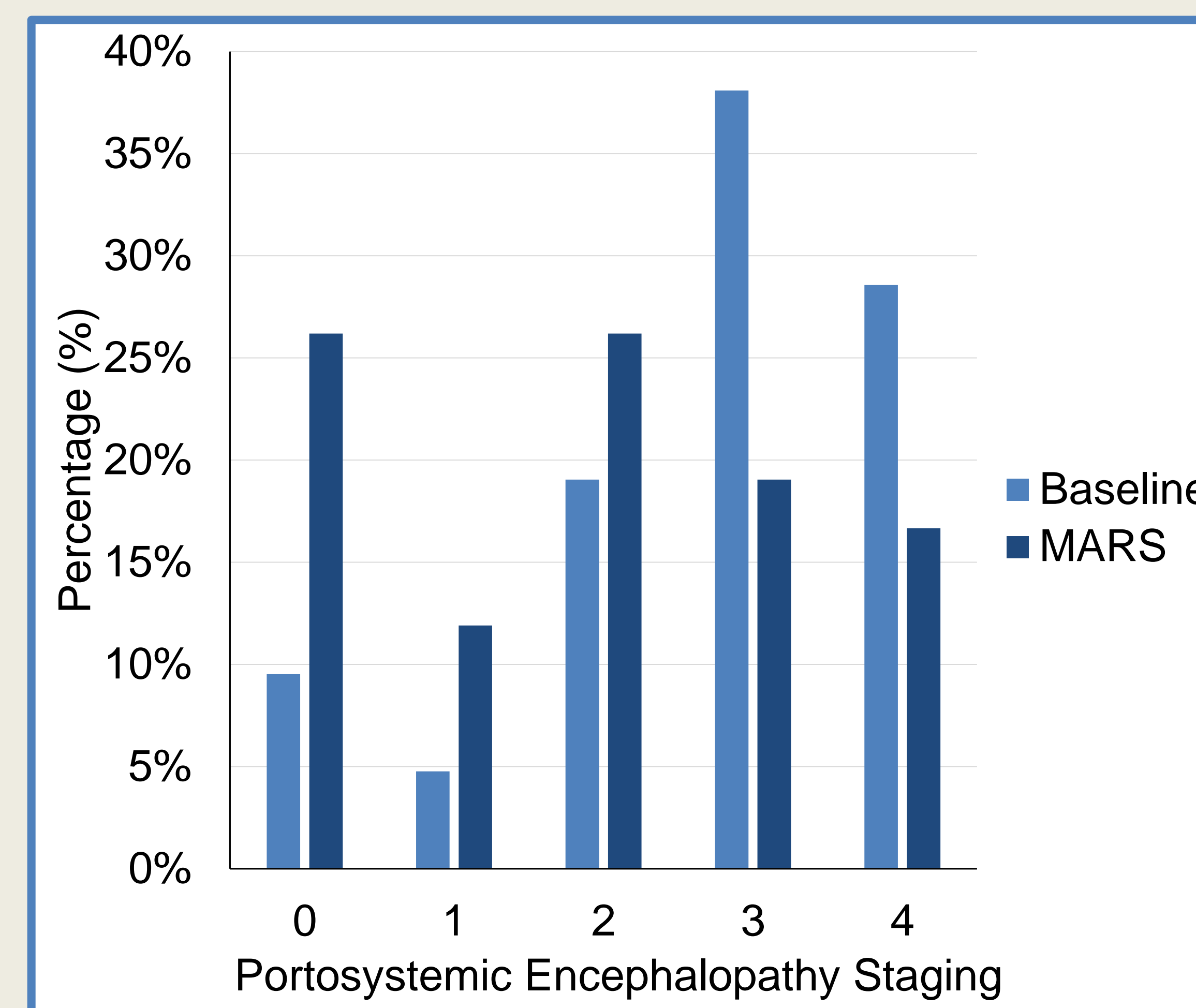


Figure 2: Frequency of patients in portosystemic encephalopathy stages 0-4 at baseline and after MARS therapy.

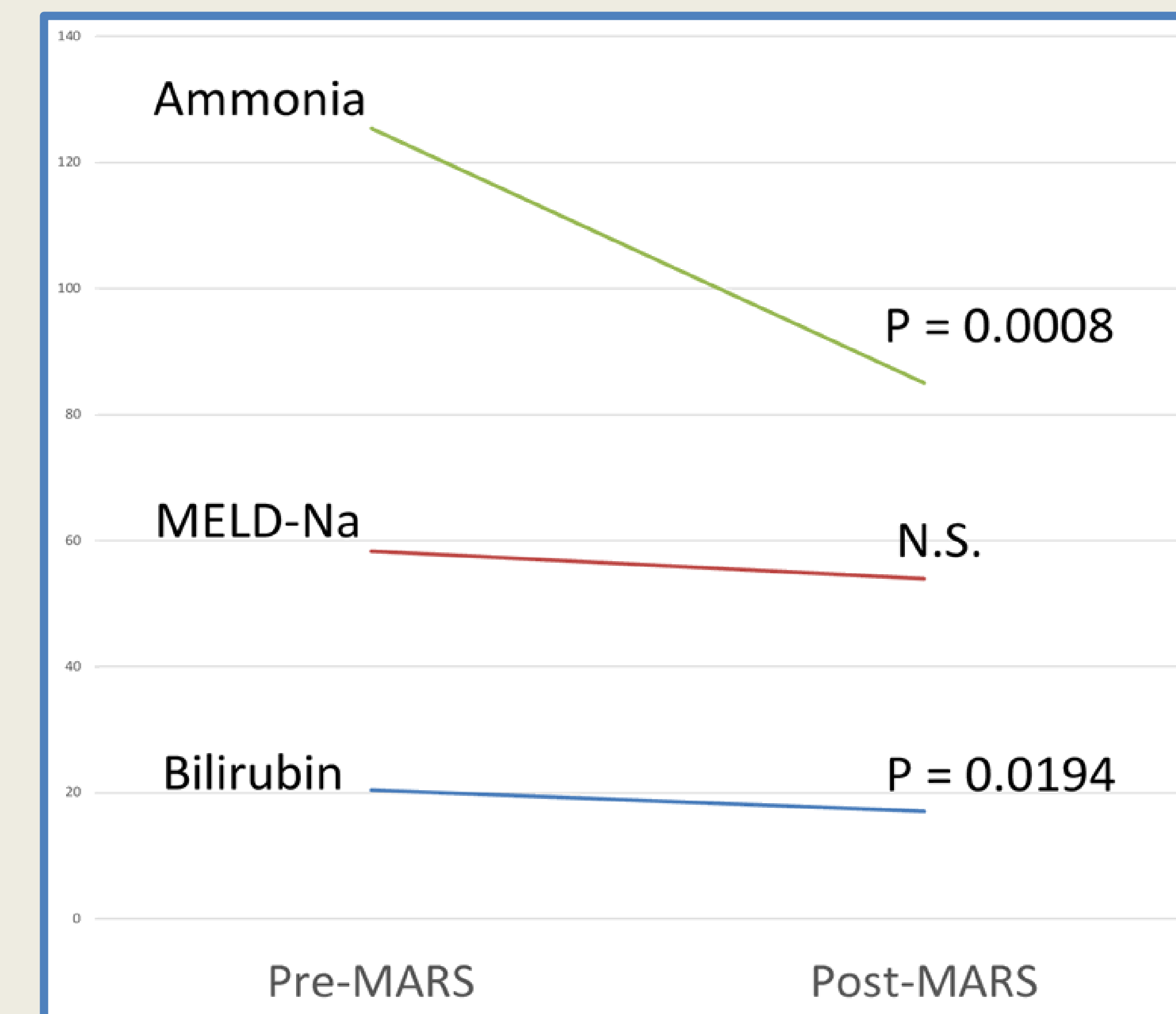


Figure 1: Line graph showing outcomes after treatment with MARS therapy.

RESULTS

- We studied data on 42 patients.
- Median age was 47 years old.
- Etiology of liver failure comprised of 57.1% ACLF and 38.1% ALF; 81.8% had AH.
- Mean sessions of MARS was 4.
- 28-day transplant free survival was 38.4% (15/39) – 3 patients underwent liver transplant. Overall survival was 42.8% (18/42).
- There was a statistically significant difference in total bilirubin (median 20.35 vs 17) and ammonia levels (median 67 vs 31) after MARS.
- 30 patients had available pre- and post-MARS ammonia levels – this population was not significantly different from the total population. The proportion of patients with stage 3 or 4 PSE significantly decreased after MARS therapy (28/42 vs 15/42).
- There was no statistically significant difference in MELD-Na pre- and post-MARS (mean 38 vs 37).

CONCLUSIONS

- In this descriptive and exploratory analysis, MARS therapy led to a significant decrease in total bilirubin and ammonia levels, and in the proportion of patients with PSE stage 3 or 4.
- There was not a significant change in MELD-Na.
- Overall mortality was 57.1% (The predicted mortality of this group based on this MELD score is 70%⁴). A more meaningful analysis could be achieved with historical controls based on age and MELD, which is in process.

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