

Albumin Levels in a Newly Intubated Critically Ill Patient

Purpose

We evaluated the change of albumin within 72 hours of intubation in critically ill patients with respiratory failure.

Inclusion Criteria

- 1) Newly intubated patient within 24 hours of admission to intensive care unit.

Exclusion Criteria

- 1) Liver disorders (Cirrhosis/Failure)
- 2) Nephrotic syndrome
- 3) Malabsorbtive disorders
- 4) Albumin levels less than 2.0
- 5) Patients extubated with in 24 hours
- 6) No albumin level at day of intubation
- 7) Pregnant patients
- 8) Terminally Ill Patients

Methods

We prospectively evaluated 33 consecutive patients with respiratory failure admitted to an intensive care unit over a four month period. Simplified Acute physiology score (SAPS II) score was calculated at admission, albumin levels were monitored every twenty four hours for three days. Hospital and Intensive care length of stay as well as number of days of mechanical ventilation were noted.

Table 2- Results	Minimum	Maximum	Average +/- SD
Albumin Level Baseline	2.0 g/dL	4.4 g/dL	3.2 +/- 0.6 g/dL
Albumin Level 24 hours	1.3 g/dL	3.7 g/dL	2.6 +/- 0.5 g/dL
Albumin Level 48 hours	1.4 g/dL	3.6 g/dL	2.5 +/- 0.5 g/dL
Albumin Level 72 hours	1.3 g/dL	3.4 g/dL	2.4 +/- 0.5 g/dL
Delta Albumin 24 hours	-2.0 g/dL	-0.6 g/dL	-0.6 +/- .4 g/dL
Delta Albumin 48 hours	-2.2 g/dL	0.4 g/dL	-0.7 +/- 0.5 g/dL
Delta Albumin 72 hours	-2.3 g/dL	0.3 g/dL	-0.8 +/- 0.5 g/dL
% Delta Albumin 24 hours	-46.5 %	-4.2 %	-18.5 +/- 10.0 %
% Delta Albumin 48 hours	-51.2 %	13.8 %	-21.8 +/- 11.9 %
% Delta Albumin 72 hours	-53.5 %	10.3 %	-23.7 +/- 13.1 %

Results

33 patients were included in our study (See Table 1). Eight patients died and five became ventilator dependent. The average hospital stay was 17.2 days, while the average ICU stay was 9.3 days and average length of mechanical ventilation was 9.2 days. Albumin level decreased during the first 72 hours in all but one patient. In the first 24 hours the albumin levels had approximately a 18.47% drop, the albumin levels continued to decrease in day two and three by 21.8% and 23.7% respectively. The average albumin level reduction was greatest in the first 24 hours by 0.61grams/deciliter (g/dL) and continued to decrease further in day two and three by 0.72 g/dL and 0.79 g/dL respectively; comparing to albumin level at admission. (See table 2)

Further analysis was made to see if the change of albumin levels played a role in the outcome and length of stay. While a trend of greater delta albumin and greater percentage change of albumin was present, it was not statistically significant (See Graph 1-2 and table 3).

Table 1- Patient Demographics

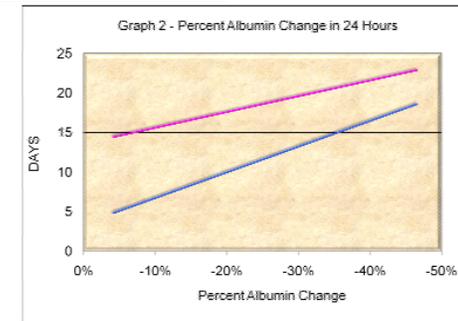
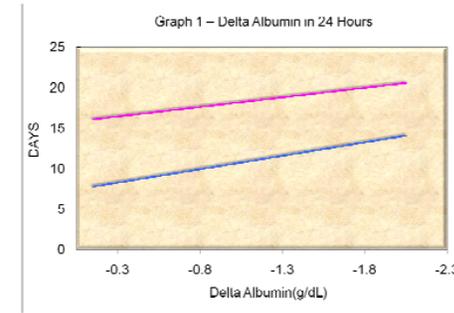
Age	67.8 +/- 15.66
Male	18/33

PMH:

Hypertension	16
Heart Failure	8
Lung Disease	6
Diabetes Mellitus	6
Obstructive Sleep Apnea	3
Coronary Artery Disease	6
Reflux Disease	3

Reason for Mechanical Ventilation

Hypoxia/Respiratory distress	16
Heart Failure/Myocardial Infarction	4
Pneumonia	5
Mental Status Changes	2
Stroke	2
Substance Abuse	2
Misc	2



KEY

— Length of Stay

— Days of Mechanical Ventilation

Table 3- Mortality Comparison

	Average Mortality +/- SD	Average Discharged +/- SD
Length of Stay (Days)	17.2 +/- 12.3	17.3 +/- 12.5
Duration of Mechanical Ventilation (Days)	11.8 +/- 11.0	8.7 +/- 11.9
Baseline Albumin (g/dL)	3.3 +/- 0.8	3.2 +/- 0.6
Delta Albumin in 24 hrs (g/dL)	-0.6 +/- 0.3	-0.6 +/- 0.4
% Alb change in 24 hours	-17.9 +/- 8.8	-18.6 +/- 10.5

Conclusions

There is a significant drop of albumin level in newly intubated critically ill patients especially during first 24 hours.

Albumin monitoring alone in this population may not be prognostic predictor of outcome; however, more studies need to be performed.