Serum Lactate Dehydrogenase levels: the Grim Reaper Sign in Acute Pancreatitis?

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Background

- Acute pancreatitis (AP) is one of the most common gastrointestinal presentations to the emergency department with reported annual incidence of 5 to 34 per 100,000 population in the United States. (1,2,3)
- To predict the severity and mortality rate of AP, scoring systems such as Ranson criteria, APACHE II, and BISAP has been established.
- These scoring system have their limitations and variable utility.
- Lactate Dehydrogenase (LDH) is an enzyme found in almost all body tissues that is released during tissue damage and can be used as a marker of an organ injury. (7)

Aim

Investigate whether specific LDH values can predict mortality risk in patients with AP and it's correlation with hospital length of stay

Methods

- We conducted a retrospective cohort study of patients who had presented to HCA Healthcare facilities with the diagnosis of AP and had serum LDH level obtained on admission.
- Total of 514 patients were identified and divided into 3 different groups based on serum LDH cutoff level.

Group 1 (301 patients) Patients with LDH level <300 IU/L.

Group 2 (158 patients) Patients with LDH level 300 – 600 IU/L

Group 3 (55 patients) Patients with LDH level >600 IU/L.

- Duration: 10 years.
- Demographics: age, gender.
- Outcome measures
  - Length of hospital stay, length of intensive care unit stay (ICU), and mortality rate were compared among groups.
- Statistic calculation
  - Logistic Regression approach that used statistical analysis to predict the odds of a desired association. A Chi-Square test was used to ensure that the predictors in the model were not simultaneously equal to zero.

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Results

- AP patients with an initial LDH value of more than 600 IU/L on admission were likely to have longer hospital length of stay, by 4.5 days on average, than patients with an initial LDH value of less than 300 IU/L.

Table 1. Mean, median, and mode of hospital length of stay (days).

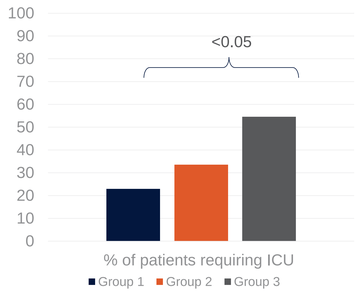
Groups	Mean	Median	Mode
Group 1	8.09	4.09	3.0
Group 2	10.03	6.0	3.0
Group 3	15.63	10.0	11.0

- AP patients with initial LDH > 600 IU/L were 3.2 times (1.58-6.62, p <0.05) more likely to be admitted to the ICU in comparison to patients with an initial LDH level <300 IU/L.

Table 2. Number and percent of patients requiring ICU

Groups	Percent of patients required ICU care	Number of patients required ICU care
Group 1	22.92%	69/301
Group 2	33.54%	53/158
Group 3	54.55%	25/55

Figure 1. Higher percent of patients with serum LDH >600 IU/L required ICU stay. Reports of percentage of patients requiring ICU stay between group 1 vs. group 2 vs. group 3. *P<0.05*

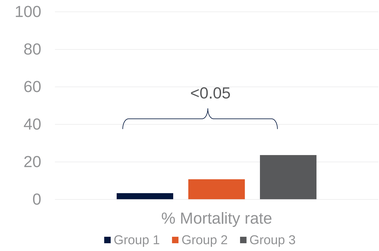


- AP patients with an initial LDH >600 IU/L were 12.1 times (4.5-32.9, p <0.05) more likely to expire than patients with an initial LDH level <300 IU/L on admission.

Table 3. Mortality rate and number of patients that expired in each group

Groups	Mortality rate	expired patients
Group 1	3.32%	10/301
Group 2	10.76%	17/158
Group 3	23.64%	13/55

Figure 1. Higher mortality rate of patients with serum LDH > 600 IU/L. Reports of mortality rate between group 1 vs. group 2 vs. group 3. *P<0.05*



Discussion

- LDH is a cheap and convenient test that can be obtained in AP patients to predict the length of hospital stay, ICU needs, and Mortality rate.
- Given that these results are based on our retrospective study, additional randomized controlled studies are necessary to corroborate the beneficial effects of obtaining LDH to identify patients with severe acute pancreatitis presentation.

References

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