

SERUM LDH LEVELS MAY PREDICT POOR NEUROLOGICAL OUTCOME AFTER ANEURYSMAL SUBARACHNOID HEMORRHAGE

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INTRODUCTION

- Serum lactate dehydrogenase (LDH) levels are often elevated in cardiovascular diseases. Their prognostic role after subarachnoid hemorrhage (SAH) remains poorly evaluated

METHODS

- Retrospective single-center study of patients admitted to the intensive care unit (ICU) of an University Hospital from 2007 to 2022
- Inclusion criteria: patients with non-traumatic SAH
- Exclusion criteria: age < 18 years, SAH from other causes, pregnancy, incomplete medical record or follow-up
- Data collection: baseline information, clinical data, radiologic data, the occurrence of neurological complications, serum LDH levels during the first 14 days of ICU stay; neurological outcome at 3 months based on the Glasgow Outcome Scale (GOS)
- Outcome: prognostic value of admission or the highest LDH value over the ICU stay. Neurological outcome was defined as favorable (FO) and unfavorable (UO) as GOS 4-5 and GOS 1-3 respectively

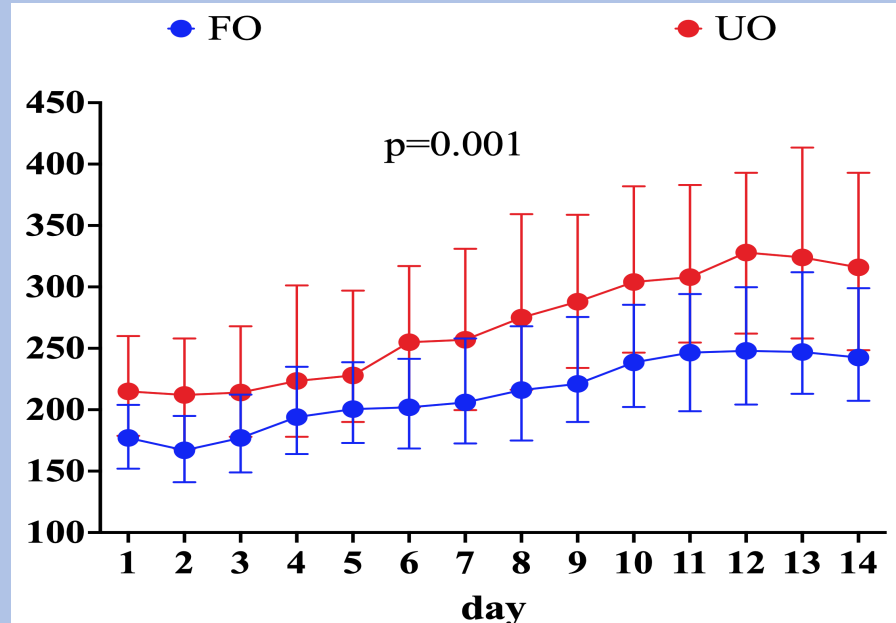
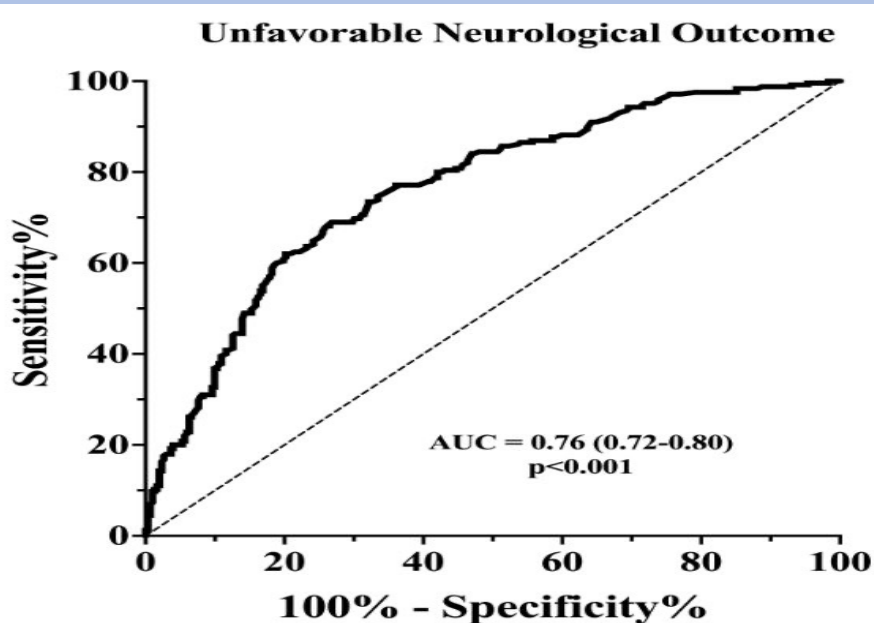
RESULTS

- 547 patients were included in the final analysis; 248 (45,3%) had UO, 299 (54,6%) had FO
- LDH values on admission were 215 [179.8-260] IU/L vs. 176 [152-202] IU/L ($p < 0.001$) in UO and FO patients respectively
- The highest LDH value was 323 [257-429] IU/L vs. 226 [159-279] IU/L ($p < 0.001$) in UO and FO patients respectively
- The highest LDH value was recorded after a median of 4 [2-10] days after ICU admission

Table 1 Logistic regression of factors associated with unfavorable outcome (GOS 1-3) at 3 months

Variables	Univariate analysis	Multivariate analysis
	OR [CI 95%]	OR [CI 95%]
Highest LDH	1.007 [1.005 – 1.009]	1.004 [1.002 – 1.006]
Age	1.041 [1.027 – 1.056]	1.069 [1.046 – 1.092]
WFNS	10.125 [6.824 – 15.024]	5.976 [3.483 – 10.265]
Fisher	5.757 [2.387 – 13.886]	3.340 [0.979 – 11.390]
DCI	4.773 [3.100 – 7.348]	4.373 [2.386 – 8.015]
ICHT	14.033 [9.182 – 21.448]	9.561 [5.412 – 16.892]
Hydrocephalus	2.780 [1.928 – 4.000]	0.606 [0.347 – 1.059]
Rebleeding	5.880 [2.535 – 13.638]	9.703 [2.860 – 32.920]
Epilepsy	2.099 [1.403 – 3.140]	1.175 [0.652 – 2.118]

LDH: Lactate dehydrogenase; WFNS: World Federation of Neurological Surgeons; DCI: Delayed cerebral ischemia; ICHT: intracranial Hypertension.]



CONCLUSIONS

- LDH values on admission and over the ICU stay were significantly higher in patients with poor outcome, when compared to others
- LDH levels over the ICU stay were independently associated with UO in SAH patients
- The AUROC curve for the highest LDH value over the ICU stay showed a moderate accuracy to predict UO
- Therefore, as a readily and available biomarker, serum LDH levels should be evaluated to help with the prognostication of SAH patients

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