

Prognostic Value of Elevated Lipase in Pancreatitis versus Non-Pancreatitis Hyperlipasemia due to Non-Malignant Causes

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INTRODUCTION

While elevated lipase is typically used to diagnose acute pancreatitis, it has also been associated with other critical disease states including sepsis, COVID-19, bowel obstruction, and trauma. In this study we compared outcomes of patients with elevated lipase who had pancreatitis and non-pancreatitis hyperlipasemia (NPHL).

METHODS

Between February 2016 and August 2020, all patients who presented to the Emergency Department with lipase $\geq 3x$ the upper limit of normal were entered into a database.

Demographics and medical history, including active cancer and therapy, were noted. Patient outcomes were followed through November 2021. In patients who had a diagnosis other than acute pancreatitis (AP), the primary reason for hospitalization was also noted.

RESULTS

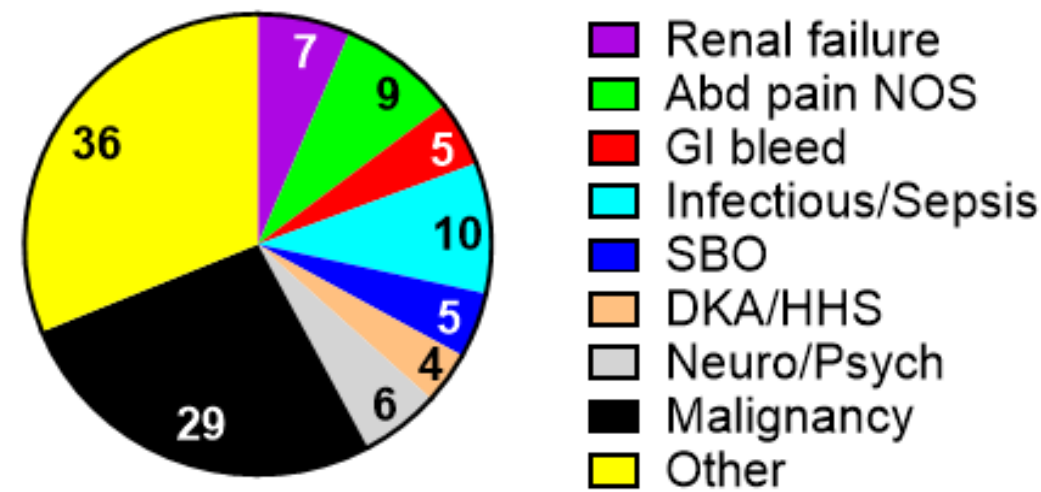
414 total patients were included in this study. Upon initial evaluation, 305/414 (74%) were diagnosed with AP and 109/414 (26%) had NPHL. The NPHL group had higher rate of malignancy (29/105; 28%) compared to those with AP (35/305; 11%, $p < 0.0001$). NPHL patients without malignancy had a higher mortality rate (63/80; 80%) compared to those without malignancy in the AP group (17/270; 6.3%, $p < 0.0001$).

TABLE 1. DEMOGRAPHICS

	NPHL (n=109)	AP (n= 305)	P-value
Age	58 ± 18	54 ± 17	P=0.0220
Sex (male)	49 (45.0%)	164 (53.7%)	P=0.1194
BMI	25.8 ± 4.6	28.9 ± 7.4	P=0.0066

FIGURE 1. DIAGNOSES IN NPHL

Total number of patients with NPHL = 109



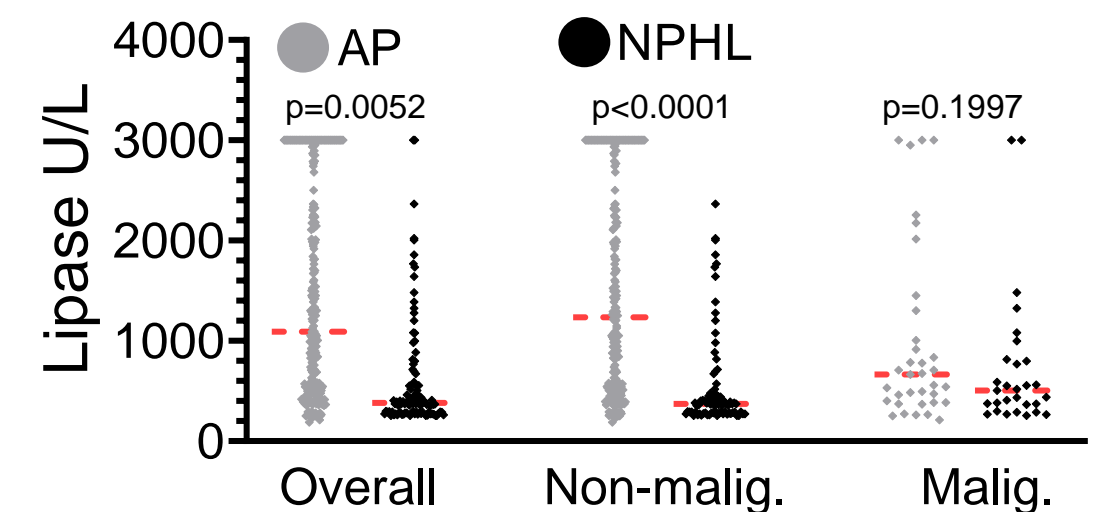
Most common diagnosis in patients with NPHL was malignancy (26%), followed by sepsis (9%), abdominal pain (8%), and renal failure/AKI (6%).

TABLE 2. FREQUENCY OF MALIGNANCY TYPES IN AP VERSUS NPHL

	NPHL (n=109)	AP (n=305)	P-value
Cases with Malignancy	29 (27%)	35 (11%)	<0.0001
Malignancy Type			
Hematologic	4 (14%)	8 (23%)	0.52
Breast	3 (10%)	6 (17%)	0.49
Bowel	4 (14%)	4 (11%)	1.0
Pancreatic	4 (14%)	3 (9%)	0.69
GU/Renal	3 (10%)	3 (9%)	1.0
Lung	2 (7%)	2 (6%)	1.0
Biliary	2 (7%)	0 (0%)	0.2
Other	7 (24%)	9 (26%)	1.0

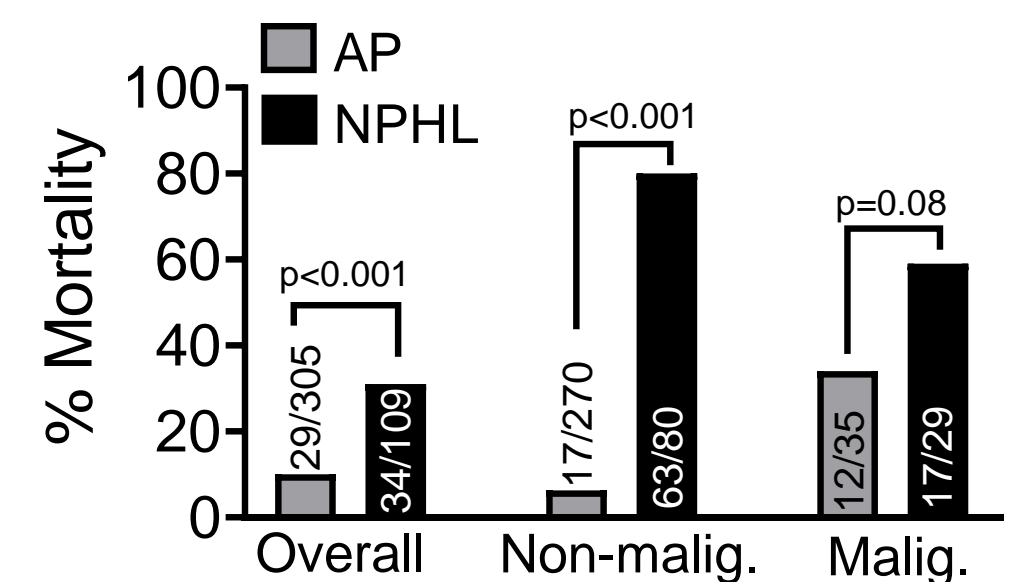
Patients with NPHL had higher proportion of malignancy.

FIGURE 2. LIPASE LEVELS IN AP VERSUS NPHL



Lipase was higher in AP compared with NPHL overall, although there was no statistically significant difference in lipase in patients with malignancy.

FIGURE 3. MORTALITY RATES IN AP VERSUS NPHL



Mortality rates in NPHL overall were higher than AP. Specifically, non-malignant NPHL had higher mortality (80%) compared with AP (6.3%). Mortality rates in patients with malignancy were not statistically significant.

CONCLUSIONS

Patients presenting to the ED with NPHL and without underlying malignancy have a statistically significant higher mortality than those presenting with AP, despite lower serum lipase levels upon presentation. The mechanism remains unclear and whether this impacts the prognostic relevance of NPHL on survival needs to be studied further. A limitation of our study is a statistically significant difference between age and BMI of AP versus NPHL patients.