

Non-alcoholic fatty liver disease worsens the outcome in acute pancreatitis: a systematic review and meta-analysis

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Purpose

Acute pancreatitis (AP) is a common acute gastrointestinal disease, posing a substantial social and economic burden. The prevalence of **fatty liver disease (FLD)** and that of **non-alcoholic fatty liver disease (NAFLD)** share some risk factors known to exacerbate the course of acute pancreatitis (AP).

This meta-analysis aimed to investigate whether FLD or NAFLD carry a higher risk of untoward outcomes in AP. Our hypothesis was, AP has a more severe course in patients with FLD or NAFLD

Conclusion

Our results showed that FLD or NAFLD is a risk factor of **mortality**, severe disease course, necrosis, systemic complications and longer length of hospitalization in AP. FLD or NAFLD can be easily diagnosed through abdominal ultrasonography (affordable, non-invasive investigation) therefore, we suggest the incorporation of FLD and NALFD into the **prognostic tools** in AP. In this group of AP patients we should consider a more individualized patient-care.

Disclosure: Nothing to disclose

Materials and methods

PROSPERO registration number: CRD42019123416. This meta-analysis was conducted in accordance with PRISMA guidelines. We performed a systematic search in seven medical databases for cohort studies that compared the outcomes of AP for the presence of FLD or NAFLD and reported in hospital mortality, AP severity, length of hospital stay and/or local complications. We calculated pooled odds ratio (OR) or weighted mean difference (WMD) with 95% confidence interval (CI) for FLD vs. no-FLD and NAFLD vs no-NAFLD comparisons.

Results

Altogether 15 articles were eligible to be included in the systematic review, 13 of which in the meta-analysis. The prevalence of FLD and NAFLD ranged from 18 to 82%, and from 24 to 58%, respectively. FLD and NAFLD was diagnosed using an unenhanced abdominal CT scan in 6 of 13 articles. Other studies used abdominal US or MRI to diagnose FLD or NAFLD, 2 out of 13 articles did not report the used method. In multivariate analysis, there was an independent association between FLD and the odds of moderately severe/ severe AP based on five studies (OR=3.68, CI: 2.16-6.29).

Outcomes assessed	OR/ WMD (95% CI)	I ² (%)	N ^o of studies	Proportion of outcome (FLD vs no-FLD)
Fatty liver disease group (FLD vs no-FLD comparison)				
AP mortality	3.56 (1.77-8.28)	43.2	7	5.09 vs. 1.89%
Moderately severe and severe AP	3.14 (1.87-5.25)	91.5*	7	48.02 vs. 24.34%
Severe AP	2.67 (2.01-3.56)	32	8	16.33 vs. 7.87%
Severe AP †	4.70 (2.65-8.32)	0	2	57.89 vs.22.92%
Multivariate analysis ‡	3.68 (2.16-6.29)	65.6*	5	ND
Acute necrotic collection	3.08 (2.44-3.90)	17.5	5	34.83 vs. 15.75%
Acute peripancreatic fluid	3.27 (1.97-5.42)	57.9*	3	44.55 vs 17.73%
Pancreatic pseudocyst	2.69 (1.64-4.40)	0	3	14.24 vs. 5.34%
Systemic inflammatory response syndrome	2.39 (1.74-3.28)	47	4	38.19 vs. 18.63%
Length of hospital stay ¶	1.46 (0.54-2.39)	40.7	5	ND
Non-alcoholic fatty liver disease subgroup (NAFLD vs no-NAFLD)				
Mortality	2.81 (0.39-20.03)	68.7*	2	4.09 vs. 2.79%
Moderately severe and severe AP	2.64 (1.37-5.11)	94*	5	45.24 vs. 24.42%
Severe AP	2.21 (1.70-2.88)	0	3	12.93 vs 7.39%
Multivariate analysis ‡	3.39 (1.52-7.56)	79.2*	3	ND
Length of hospital stay ¶	1.41 (0.03-2.7)	68.5*	3	ND

Table 1
Summary of findings

† severe AP based on the Atlanta 1992 classification
‡ pooled multivariate analyses, comparing the composite of moderately severe and sever AP with mild AP
¶ WMD, numbers represent days