

## INTRODUCTION AND AIM

Early fluid resuscitation has an essential role in the treatment of acute pancreatitis (AP). The quantity and quality of the administered fluid have long been studied, but the benefits of lactated Ringer's (LR) solution are not yet clear. We aimed to assess the benefits of LR in AP.

## MATERIALS AND METHODS

The protocol was registered on Prospero (CRD42021224542). The search was conducted on 20 November 2020 in MEDLINE, EMBASE, Scopus, Web of Science and CENTRAL to identify randomized controlled trials comparing LR to normal saline (NS) in AP patients. Risk ratio (RR) or mean difference (MD) and 95% confidence interval (CI) was calculated. Sensitivity analysis and trial sequential analysis (TSA) were conducted.

Outcomes	No of participants (studies)	Relative effect (95% CI)	Leave-one out	Trial Sequential Analysis	Risk of Bias (RoB2)	Certainty of evidence (GRADE)
ICU Admission	251 (4 RCTs)	RR 0.50 (0.30 to 0.85)	Influential study: Vasudevan (2014)	Significant difference between LR and NS; no further studies needed	1 High risk 1 Some concerns 2 Low risk	⊕⊕○○ LOW
CRP 48h change	102 (3 RCTs)	-	Influential study: de-Madaria (2017)	-	1 High risk 0 Some concerns 2 Low risk	⊕○○○ VERY LOW
Length of Hospitalisation	298 (5 RCTs)	-	Influential study: Wu (2011), Lee (2020) or de-Madaria (2017)	More clinical trials are required	1 High risk 1 Some concerns 3 Low risk	⊕○○○ VERY LOW
Fluid Infused	208 (3 RCTs)	-	Not significant	-	0 High risk 1 Some concerns 2 Low risk	⊕○○○ VERY LOW
Organ Failure	298 (5 RCTs)	RR 0.82 (0.61 to 1.12)	Not significant	No difference between LR and NS; no further studies needed	1 High risk 1 Some concerns 3 Low risk	⊕○○○ VERY LOW
Necrosis	177 (4 RCTs)	RR 0.50 (0.26 to 0.96)	Influential study: Choosakul (2018) or de-Madaria (2017)	More clinical trials are required	1 High risk 1 Some concerns 2 Low risk	⊕○○○ VERY LOW
SIRS 24h	248 (4 RCTs)	RR 0.68 (0.31 to 1.52)	Not significant	More clinical trials are required	0 High risk 1 Some concerns 3 Low risk	⊕⊕○○ LOW
SIRS 48h	208 (3 RCTs)	RR 0.79 (0.44 to 1.43)	Not significant	More clinical trials are required	0 High risk 1 Some concerns 2 Low risk	⊕⊕⊕○ MODERATE

## RESULTS

From 798 records seven studies were included. LR significantly reduced the need for intensive care (RR 0.50, CI 0.30 to 0.85). The risk of organ failure was not reduced (RR 0.82, CI 0.61 to 1.12) along with the risk of systemic inflammatory response syndrome at 24 and 48 hours (RR 0.68, CI 0.31-1.52; RR 0.79, CI 0.44-1.43). The decrease of C-reactive protein levels at 48 hours (mean CRP change: - 54.14 mg/l, CI: - 130.28 to 21.99) was not significant. To assess necrosis (RR 0.50; CI 0.26 to 0.96) and length of hospitalization (MD -1.32, CI -2.62 to -0.01) further studies are necessary. TSA demonstrated sample size reaching the required value for need for intensive care and organ failure only.

## CONCLUSION

LR reduces the need for intensive care but not organ failure.

Further randomized controlled clinical trials are needed to assess inflammation and local complications.