miRNA 125a and lnc- MALAT1 in Early Prediction of Sepsis: Systematic Review and Meta-analysis

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Introduction

- Long non-coding RNA metastasis-associated lung adenocarcinoma transcript 1 (lnc-MALAT1) has been correlated with inflammatory processes and cell apoptosis leading to organ dysfunction.
- miR-125a has anti-inflammatory effects, regulating neutrophil development and suppressing pro-inflammatory factor production via the NF-κB signaling pathway.
- we postulated the diagnostic potential of the lnc-MALAT1/miR-125a axis in distinguishing sepsis patients from healthy individuals

Method

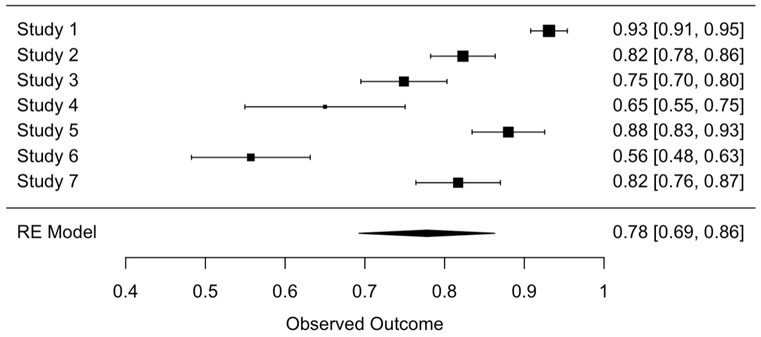
- A comprehensive systematic review and meta-analysis were undertaken, drawing data from PubMed, Cochrane, Embase, and Google Scholar. Seven studies met our inclusion criteria for the review. (Table1)

Conclusion

lnc-MALAT1/miR-125a axis may be useful in early distinguishing of sepsis patients from healthy controls

SR No.	First Author	Gene	Subjects (Sepsis)	Subject (Control)	Area under the Curve
1	Liu At	Lnc-MALAT1/miRNA 125a axis	196	196	0.931 (95% CI: 0.908-0.954
2	Geng F	Lnc-MALAT1	190	190	0.823 (95% CI: 0.783-0.864)
3	Zhao D	miRNA 125a	150	150	0.749 (95% CI: 0.695-0.803)
4	Li S	miRNA 125a	150	150	0.650 (95%CI: 0.549-0.750)
5	Yang Y	miRNA 125a	102	100	0.880 (95% CI: 0.835-0.926)
6	Zhu X	miRNA 125a	120	120	0.557 (95%CI 0.483-0.632)
7	Gui F	miRNA 125a	126	125	0.817 (95% CI: 0.764-0.870)

Table 1: 7 Studies included for meta-analysis with AUC (Area under the curve)



Results & Discussion

- Our meta-analysis indicates that the lnc-MALAT1/miR-125a axis holds substantial promise for the early diagnosis of sepsis, with pooled AUC values 0.78 (95% CI 0.69-0.86), highlighting its diagnostic accuracy.
- Beyond this, the axis also shows a significant correlation with key clinical indicators such as disease severity, inflammation levels, organ injury, and mortality, suggesting its utility as both a diagnostic and prognostic tool.
- The biological roles of lnc-MALAT1 and miR-125a in inflammatory pathways raise the possibility of their use as therapeutic targets.
- However, the study's limitations, including variability in sample sizes and methodology across the included studies, underscore the need for further, more standardized research to validate these promising findings.

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