INPLASY

Immature granulocytes and delta neutrophil index as predictors of mortality in critically ill patients – meta-analysis

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - The review has not yet started.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 10 February 2025 and was last updated on 10 February 2025.

INTRODUCTION

Review question / Objective To assess diagnostic accuracy of immature granulocytes and delta neutrophil count as a predictor of fatal outcome in severe and critically ill non-hematologic patients.

Rationale To investigate an early predictor of the outcome.

Condition being studied Severe and critically ill non-hematologic and non-oncological patients.

METHODS

Search strategy Articles in the Russian and English languages have been searched in academic electronic databases PubMed, Researcher Gate, e-library. A combination of keywords «immature granulocytes», «delta neutrophil index» OR «DNI» AND «mortality» OR «sepsis» OR «predictor» were used.

Participant or population Severe and critically ill non-hematologic and non-oncological patients.

Intervention Complete blood count.

Comparator PCT and CRP.

Study designs to be included Cross-sectional, non-randomized comparative studies and retrospective case-control studies.

Eligibility criteria Inclusion criteria - patients over 18 years who had been treated in the ICU; immature granulocytes quantitative automatic analyses as a part of the CBC; studies with IG and DNI data in the survivors/non-survivor's groups
Exclusion criteria - patients under 18 years; patients with hemo- and oncopathology; mixed populations (not identified data from ICU-treatment).

Information sources PubMed, Researcher Gate, e-library.

Main outcome(s) Fatal outcome.

Additional outcome(s) None.

Data management The initial search was performed using keywords in the title and abstract, the secondary selection included reviewing the full paper. Potentially suitable articles were selected independently by two authors according to the PRISMA guidelines protocol. Any disagreements were discussed with the involvement of other researchers.

Quality assessment / Risk of bias analysis The Newcastle-Ottawa Scale was used to assess the risk of bias in non-randomized comparative studies. The risk of bias in diagnostic test accuracy studies was assessed using the QUADAS.

Strategy of data synthesis The following data were extracted: first author, year of publication, study design, number of patients, main disease or clinical profile, laboratory data (IG count and percentage in CBC), calculated DNI, statistical data – mean (M) and standard deviation (SD) or median (Me) and interquartile range (IQR), Receiver operating characteristic (ROC) analysis data – area under the curve (AUC), sensitivity (Se), specificity (Sp), positive and negative predictive values (PPV and NPV, respectively).

Subgroup analysis If we would find enough amount of studies in subgroups according clinical profile (main disease) – surgical, cardiologic and therapeutic patients.

Sensitivity analysis If we would find ROC-analysis data – area under the curve (AUC), sensitivity (Se), specificity (Sp), positive and negative predictive values.

Language restriction English and Russian.

Country(ies) involved Russia.

Keywords immature granulocytes, mortality, delta neutrophil index, DNI, mortality.

Contributions of each author

Author 1 - Nadezhda Chulakova - Author 1 will collect data, perform statistical expertise, draft the manuscript.
Email: chulakovan@list.ru
Author 2 - Alexander Potapov - Author 2 will assess risk of bias and quality of studies, approved the final manuscript.
Email: potapov-paf@mail.ru
Author 3 - Albina Ivanova - Author 3 will assess risk of bias and quality of studies.
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Author 4 - Kirill Chulakov - The author read and provided feedback.
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