Bouassida Score Versus Neutrophil-to-Lymphocyte Ratio for Assessing Bowel Ischemia in Adhesive Small Bowel Obstruction: A Single-Center Study in Medan, Indonesia

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Abstract

Background: Bowel ischemia is the key time-critical complication in adhesive small bowel obstruction (ASBO). This research is to compared Bouassida score and neutrophil-to-lymphocyte ratio (NLR) for assessing ischemia.

Methods: Adult ASBO patients undergoing surgery at a tertiary center were analyzed. NLR was calculated from preoperative blood counts; Bouassida categories were assigned using clinical, laboratory, and CT variables. Ischemia was defined intraoperatively and/or by histopathology.

Results: Ischemia was associated with prolonged pain, fever, leukocytosis, decreased bowel-wall enhancement, and segmental mesenteric fluid on CT (all $p<0.001$). No ischemia was observed in the Bouassida low-risk category, while the high-risk category aligned with ischemia ($p<0.001$). Mean NLR was higher in ischemia than non-ischemia (12.0 ± 4.3 vs 5.6 ± 2.1; $p<0.001$).

Conclusion: Both tools were significantly associated with ischemia; NLR is simple and rapid, whereas Bouassida offers structured clinicoradiological stratification.[1–4]

INTRODUCTION

ASBO is a common emergency condition. While many patients improve with conservative management, suspected ischemia requires timely surgery. The Bouassida score estimates ischemia probability using clinical, laboratory, and CT features, and NLR has emerged as an inexpensive inflammatory biomarker for ischemic complications. We compared Bouassida score and NLR to assess bowel ischemia among ASBO patients at Haji Adam Malik General Hospital, Medan.[1–4]

METHODS

Analytic observational study (August 2025–January 2026). Adults (≥18 years) with ASBO who underwent operative management and had complete records (CBC and abdominal imaging) were included; major hematologic disorders, dominant extra-abdominal sepsis, and major immunosuppression were excluded. NLR=absolute neutrophils/absolute lymphocytes. Bouassida categories were defined as low (≤6), intermediate (7–15), and high (≥16). Ischemia was determined intraoperatively and/or by histopathology. Group comparisons used standard parametric/nonparametric tests ($p<0.05$).[1,2]

RESULTS

About 72 ASBO patients were analyzed (mean age 55.8±12.7 years; 58.3% male). Ischemia was significantly associated with pain duration >72 hours, fever >37.8°C, leukocytosis >10×10⁹/L, decreased bowel-wall enhancement, and segmental mesenteric fluid on CT (all $p<0.001$). Bouassida category correlated with ischemia: no ischemia occurred in the low-risk group and ischemia clustered in the high-risk group ($p<0.001$). Mean NLR was higher in ischemia than non-ischemia (12.0±4.3 vs 5.6±2.1; $p<0.001$), and ischemia occurred predominantly when NLR ≥7 ($p<0.001$).[2–4]

DISCUSSION

In this cohort, Bouassida score and NLR were both strongly associated with bowel ischemia. The Bouassida framework aligns with its original derivation study, in which the high-probability category identified patients with near-certain ischemia. NLR is rapidly obtainable and has shown similar predictive value in prior studies of adhesional/adhesive SBO, with proposed cut-offs around 6.8–7. Limitations include single-center design and the absence of ROC-based optimization for the NLR cut-off.[2–4]

CONCLUSION

Bouassida score and NLR were significantly associated with bowel ischemia in ASBO at our center. NLR offers a simple bedside marker, while Bouassida provides a structured clinicoradiological approach that may support earlier operative decision-making.

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