



PEER-REVIEW REPORT

Name of journal: *World Journal of Gastroenterology*

Manuscript NO: 86626

Title: Machine learning-based decision tool for selecting patients with idiopathic acute pancreatitis for endosonography to exclude a biliary aetiology

Provenance and peer review: Unsolicited manuscript; Externally peer reviewed

Peer-review model: Single blind

Reviewer's code: 05226098

Position: Editorial Board

Academic degree: MD, PhD

Professional title: Director, Professor

Reviewer's Country/Territory: Japan

Author's Country/Territory: Germany

Manuscript submission date: 2023-06-28

Reviewer chosen by: AI Technique

Reviewer accepted review: 2023-07-12 02:38

Reviewer performed review: 2023-07-12 03:31

Review time: 1 Hour

Scientific quality	<input type="checkbox"/> Grade A: Excellent <input type="checkbox"/> Grade B: Very good <input checked="" type="checkbox"/> Grade C: Good <input type="checkbox"/> Grade D: Fair <input type="checkbox"/> Grade E: Do not publish
Novelty of this manuscript	<input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Good <input type="checkbox"/> Grade C: Fair <input type="checkbox"/> Grade D: No novelty
Creativity or innovation of this manuscript	<input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Good <input type="checkbox"/> Grade C: Fair <input type="checkbox"/> Grade D: No creativity or innovation



Scientific significance of the conclusion in this manuscript	<input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Good <input type="checkbox"/> Grade C: Fair <input type="checkbox"/> Grade D: No scientific significance
Language quality	<input type="checkbox"/> Grade A: Priority publishing <input checked="" type="checkbox"/> Grade B: Minor language polishing <input type="checkbox"/> Grade C: A great deal of language polishing <input type="checkbox"/> Grade D: Rejection
Conclusion	<input type="checkbox"/> Accept (High priority) <input type="checkbox"/> Accept (General priority) <input checked="" type="checkbox"/> Minor revision <input type="checkbox"/> Major revision <input type="checkbox"/> Rejection
Re-review	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Peer-reviewer statements	Peer-Review: <input checked="" type="checkbox"/> Anonymous <input type="checkbox"/> Onymous
	Conflicts-of-Interest: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

SPECIFIC COMMENTS TO AUTHORS

This is an useful study that proves that patients with acute biliary pancreatitis are hidden among patients with idiopathic acute pancreatitis. Please clarify whether the biliary sludge and microlithiasis visualized by this EUS are in the gallbladder or common bile duct, or only in the common bile duct. If only the gallbladder is visualized, it is difficult to prove whether it is true acute pancreatitis due to cholelithiasis. Therefore, only those visualized in the common bile duct should be examined.



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Peer-review model: Single blind

Reviewer's code: 05123031

Position: Editorial Board

Academic degree: Doctor, MD, PhD

Professional title: Associate Professor

Reviewer's Country/Territory: China

Author's Country/Territory: Germany

Manuscript submission date: 2023-06-28

Reviewer chosen by: AI Technique

Reviewer accepted review: 2023-07-12 02:23

Reviewer performed review: 2023-07-15 00:59

Review time: 2 Days and 22 Hours

Scientific quality	<input type="checkbox"/> Grade A: Excellent <input type="checkbox"/> Grade B: Very good <input checked="" type="checkbox"/> Grade C: Good <input type="checkbox"/> Grade D: Fair <input type="checkbox"/> Grade E: Do not publish
Novelty of this manuscript	<input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Good <input type="checkbox"/> Grade C: Fair <input type="checkbox"/> Grade D: No novelty
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	Conflicts-of-Interest: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

SPECIFIC COMMENTS TO AUTHORS

Manuscript ID: 86626 Title: A machine-learning based decision tool selecting patients with idiopathic acute pancreatitis for endosonography to exclude a biliary etiology

Introduction 1. What is the significance of accurately identifying the etiology of acute pancreatitis, particularly in cases classified as idiopathic? How does the lack of a clear definition for biliary sludge and microlithiasis pose challenges in assessing their role as causes of acute pancreatitis? 2. What are the current guidelines and recommendations for the management of idiopathic acute pancreatitis, particularly in cases suspected to be caused by biliary sludge and microlithiasis? How does the development of a predictive tool using a machine learning-based approach contribute to the decision-making process and potential interventions? 3. How does the proposed machine learning tool, based on routine laboratory values, assist clinicians in estimating the probability of the presence of biliary sludge and/or microlithiasis in patients with acute pancreatitis? What are the potential benefits of this tool in reducing the need for unnecessary endosonography and guiding the selection of appropriate interventions, such as cholecystectomy or biliary sphincterotomy?

Methods a. Study design 1. What were the specific inclusion criteria



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used to select the patient cohorts for this retrospective study of acute pancreatitis? b. Participants 1. What were the diagnostic criteria used to identify patients with acute pancreatitis for inclusion in the study? Were these criteria based on the APA/IAP guidelines and the German S3-Guideline? 2. How were the patients stratified into the two study groups (microlithiasis and non-microlithiasis)? What were the specific criteria used to classify a patient as having microlithiasis or another cause of acute pancreatitis? 3. Can you provide more information about the retrospective evaluation of patient data? What specific variables were assessed, and how were they evaluated in relation to microlithiasis or other causes of acute pancreatitis? c. Test methods 1. How were the baseline variables filtered and selected for inclusion in the machine learning-based predictor model? Were any specific criteria applied to determine the variables' relevance and impact on the prediction of microlithiasis? 2. Can you provide more details on the machine learning methods used in the study? What specific machine learning algorithms were employed, and how were their parameters optimized during the training process? 3. How was the performance of the predictor model assessed and evaluated? What measures or metrics were used to determine the model's accuracy and predictive capabilities? Additionally, could you provide information on the external validation dataset and how it was utilized to validate the final predictive model? Results a. Microlithiasis predictive score - results of the identification cohort 1. How were the patients in the identification cohort categorized into the microlithiasis/sludge cohort versus the Other-AP cohort? Were specific diagnostic criteria or imaging techniques used to determine the presence of microlithiasis/sludge in the biliary system? 2. Could you provide more information on the variables used in the machine learning-based microlithiasis prediction algorithm? How were these variables measured and what significance did they have in predicting the presence of microlithiasis/sludge in acute pancreatitis patients? 3. What were the performance metrics used to evaluate the



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accuracy and predictive capabilities of the ML-based microlithiasis prediction algorithm? Can you provide a more detailed explanation of how sensitivity, positive predictive value (PPV), negative predictive value (NPV), and specificity were calculated and interpreted in the context of the study results? b. Microlithiasis predictive score – validation cohort 1. How were the patients in the validation cohort selected and categorized into the microlithiasis AP and Other-AP groups? Were the inclusion criteria and diagnostic methods consistent with those used in the identification cohort? 2. Can you provide more information on the automated machine learning (autoML) process used for the iterative reduction of variables and model optimization in the validation cohort? What specific algorithms or techniques were employed in the autoML approach? 3. The sensitivity and specificity values for the microlithiasis predictive score in the validation cohort are reported as 0.96 and 0.31, respectively. Can you discuss the implications of these values in terms of accurately predicting the presence of microlithiasis in acute pancreatitis patients? How do these performance metrics contribute to the overall utility and reliability of the microlithiasis predictive score?



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Position: Peer Reviewer

Academic degree: MD

Professional title: Professor

Reviewer's Country/Territory: China

Author's Country/Territory: Germany

Manuscript submission date: 2023-06-28

Reviewer chosen by: AI Technique

Reviewer accepted review: 2023-07-12 01:17

Reviewer performed review: 2023-07-16 04:16

Review time: 4 Days and 2 Hours

Scientific quality	<input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Very good <input type="checkbox"/> Grade C: Good <input type="checkbox"/> Grade D: Fair <input type="checkbox"/> Grade E: Do not publish
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Peer-reviewer statements	Peer-Review: <input checked="" type="checkbox"/> Anonymous <input type="checkbox"/> Onymous
	Conflicts-of-Interest: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

SPECIFIC COMMENTS TO AUTHORS

This is a carefully done study and the findings are of considerable interest. The authors “present a robust and validated machine learning-based predictor model consisting of routinely recorded parameters at admission that can predict biliary sludge and microlithiasis as cause of acute pancreatitis”. This article provides a research method for establishing a good machine and network based etiology prediction model, and obtains good experimental results through the validated pattern. Furthermore, an explanation of following questions should be pointed. 1. What is the role of this model in clinical treatment? 2. In addition to the Cohort study, has the accuracy of this model been verified in a randomized controlled study? 3. Has Ig4 been tested on every patient as an excluded diagnosis? I would be very glad to re-review the paper in greater depth once it has been edited because the subject is interesting.