

PEER-REVIEW REPORT

Name of journal: *World Journal of Radiology*

Manuscript NO: 89102

Title: Deep learning-based magnetic resonance imaging reconstruction for improving the image quality of reduced-field-of-view diffusion-weighted imaging of the pancreas

Provenance and peer review: Unsolicited Manuscript; Externally peer reviewed

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: Japan

Manuscript submission date: 2023-10-22

Reviewer chosen by: AI Technique

Reviewer accepted review: 2023-10-29 08:02

Reviewer performed review: 2023-10-29 08:57

Review time: 1 Hour

Scientific quality	☐ Grade A: Excellent ☒ Grade B: Very good ☐ Grade C: Good ☐ Grade D: Fair ☐ Grade E: Do not publish
Novelty of this manuscript	☐ Grade A: Excellent ☒ Grade B: Good ☐ Grade C: Fair ☐ Grade D: No novelty
Creativity or innovation of this manuscript	☐ Grade A: Excellent ☒ Grade B: Good ☐ Grade C: Fair ☐ Grade D: No creativity or innovation

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

SPECIFIC COMMENTS TO AUTHORS

Manuscript ID: 89102 Title: Deep Learning-based Magnetic Resonance Imaging Reconstruction for Improving the Image Quality of Reduced-field-of-view Diffusion-weighted Imaging of the Pancreas

1. How does reduced-field-of-view (FOV) DWI address artifacts such as motion, ghosting, and distortion in abdominal imaging, particularly in the case of the pancreas? What are the specific challenges associated with imaging the pancreas using DWI?
2. Can you elaborate on the potential benefits of combining reduced-FOV DWI with deep learning-based MRI reconstruction (DLR) for improving image quality in pancreas imaging? What are the key advantages of DLR in this context?
3. In terms of image quality, what are the differences between FOCUS-DLR+ and FOCUS-DLR- when compared to FOCUS-conv? How do these differences impact the visualization of anatomical structures and lesions in the pancreas?
4. How does DLR affect the sharpness of the pancreas contour in DWI images, and what clinical implications does this have for diagnosing pancreatic conditions?
5. Can you explain the significance of contrast ratios (CRs) between the pancreas parenchyma and adjacent fat tissue, and how does DLR influence these ratios at different b-values?

What does this mean for lesion detection and characterization? 6. What are the potential clinical applications of DLR-enhanced DWI in differentiating between benign and malignant pancreatic cystic lesions, and how do the quantitative assessments support these applications? 7. Given the variations in ADC measurements among FOCUS-DLR+, FOCUS-DLR-, and FOCUS-conv, how should radiologists interpret ADC values in the context of DLR-enhanced DWI for pancreatic imaging? 8. Are there any limitations or challenges associated with the use of DLR for pancreas imaging that were not addressed in this study? How might these limitations impact the broader clinical utility of DLR? 9. What further research is needed to validate the findings of this study and to establish standardized guidelines for the use of DLR in pancreatic imaging? Are there plans to conduct larger-scale studies or investigate DLR in solid pancreatic tumors? 10. In clinical practice, how could the combination of reduced-FOV DWI and DLR potentially enhance the early detection of pancreatic tumors, improve the prediction of tumor malignancy, or aid in the assessment of pancreas cystic lesions? What are the implications for patient care and outcomes? 11. How does the introduction of DLR into the MRI reconstruction pipeline impact the signal-to-noise ratio (SNR) in pancreas imaging with reduced-FOV DWI? Are there trade-offs between denoising and preserving image sharpness? 12. Can you provide insights into the technical aspects of DLR, such as the deep convolutional network and the training database, and how these components contribute to its effectiveness in reducing image noise and artifacts? 13. Are there specific patient populations or clinical scenarios where the combination of reduced-FOV DWI and DLR is particularly advantageous for pancreas imaging, and how does it compare to traditional imaging methods in these cases? 14. Given that DLR was introduced to improve image quality for FOCUS, are there any implications for the detection of small pancreatic lesions or the ability to predict tumor aggressiveness? How does DLR contribute to these aspects? 15. What are the practical considerations for



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implementing DLR into routine clinical practice, including the training and expertise required for radiologists and technologists? Are there any additional costs or resource implications? 16. Are there other organs or anatomical regions within the abdomen where reduced-FOV DWI and DLR could potentially offer similar benefits in terms of image quality improvement and artifact reduction? 17. Could you discuss the potential impact of DLR on patient comfort and compliance during MRI scans, particularly for those with pancreatic conditions who may require frequent follow-up imaging? 18. In the context of pancreatic cystic lesions, how might the improved image quality and denoising capabilities of DLR influence the ability to differentiate between various cystic lesions, including IPMNs and other types? 19. Are there ongoing developments or future directions in DLR technology that could further enhance its effectiveness in pancreas imaging or address some of the limitations identified in this study? 20. Lastly, what are the implications of the significantly shorter scan time associated with FOCUS-DLR+/- compared to FOCUS-conv? How might this impact clinical workflow and patient throughput in a clinical setting?

RE-REVIEW REPORT OF REVISED MANUSCRIPT

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Author's Country/Territory: Japan

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Reviewer chosen by: Cong Lin

Reviewer accepted review: 2023-11-14 07:45

Reviewer performed review: 2023-11-17 14:26

Review time: 3 Days and 6 Hours

Scientific quality	☐ Grade A: Excellent ☒ Grade B: Very good ☐ Grade C: Good ☐ Grade D: Fair ☐ Grade E: Do not publish
Language quality	☐ Grade A: Priority publishing ☒ Grade B: Minor language polishing ☐ Grade C: A great deal of language polishing ☐ Grade D: Rejection
Conclusion	☒ Accept (High priority) ☐ Accept (General priority) ☐ Minor revision ☐ Major revision ☐ Rejection
Peer-reviewer	Peer-Review: ☒ Anonymous ☐ Onymous



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statements

Conflicts-of-Interest: [] Yes [Y] No

SPECIFIC COMMENTS TO AUTHORS

The author has finished revising the manuscript according to the reviewer's comments, and the revised manuscript meets the requirements.