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Summary

PERFORMANCE OF AN ARTIFICIAL INTELLIGENCE-BASED DIAGNOSTIC SUPPORT SYSTEM FOR EARLY GASTRIC CANCERS WITH MAGNIFYING ENDOSCOPY

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A new AI diagnostic support system using non-degraded magnifying endoscopy with narrow band imaging (M-NBI) images achieved 87.0% accuracy in detecting early gastric cancer, outperforming non-specialist endoscopists and showing superior sensitivity to both specialists and non-specialists.

KEY POINTS

- The M-NBI AI system was trained on 6174 images (1776 normal mucosa, 1947 gastric cancers, 2451 non-neoplastic lesions) using four image recognition models and tested on 100 lesions (50 cancers, 50 non-cancerous).
- M-NBI AI achieved 87.0% accuracy (95% CI: 0.80–0.94) and 86.3% sensitivity (95% CI: 0.77–0.96), compared to specialist accuracy of 80.0% (95% CI: 0.72–0.88) and non-specialist accuracy of 71.0% (95% CI: 0.62–0.79).
- The AI was statistically superior to non-specialists in accuracy ($p<0.01$) but not to specialists ($p=0.18$), while demonstrating superior sensitivity to both specialists and non-specialists ($p<0.05$).
- This is the first AI system to use non-degraded M-NBI images obtained directly from selective depth inspection output, potentially enabling real-time diagnostic support in clinical endoscopy practice.

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