

Large Vessel Occlusion Detection In Acute Ischemic Stroke Using Non-Contrast CT

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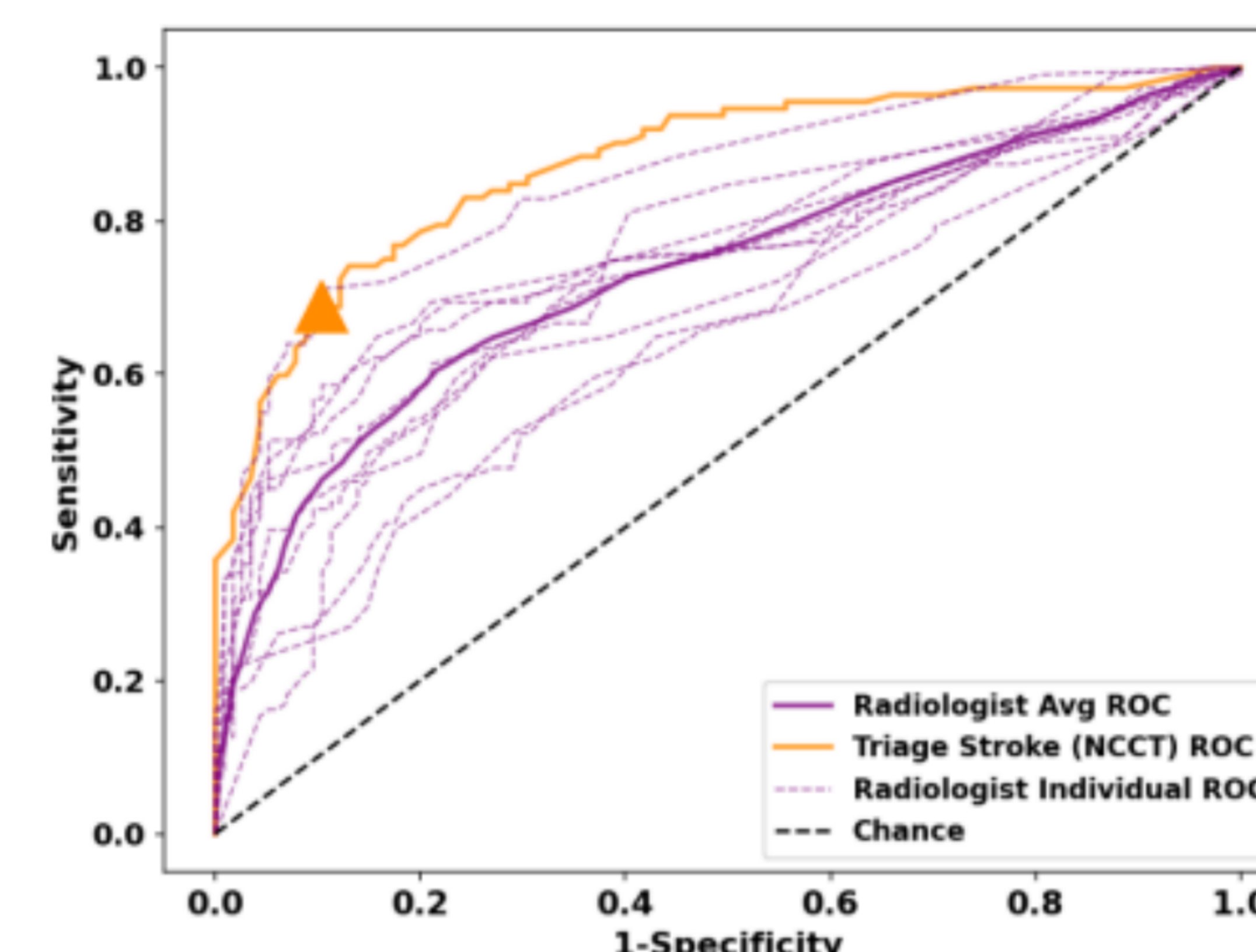
Rationale & Methods

- This study evaluated the performance of Brainomix 360 Triage Stroke, an FDA-cleared AI-driven software for detection of ICA and MCA M1 large vessel occlusions (LVO) on non-contrast CT (NCCT) in patients with suspected acute ischemic stroke (AIS).
- A multisite dataset of 612 cases with suspected AIS from US hospitals was used. Half of the cases had LVO (ICA 15%, M1 74%, M2 11%). Ground truth used CTA evaluated by expert neuroradiologists.
- Sensitivity and specificity of Triage Stroke was evaluated and compared to a reference standard device ('Triage LVO'), which detected LVO from CTA imaging.
- Additional analyses compared Triage Stroke's performance to that of 10 radiologists detecting LVO on NCCT imaging. A final model explored performance of Triage Stroke when combined with clinical information (NIHSS) to predict LVO.

Results

Model	Sensitivity	Specificity	AUC	PPV	NPV
Triage Stroke (NCCT)	67%	93%	80%	59%	95%
Triage LVO (CTA)	89%	93%	91%	66%	98%
Radiologists (NCCT)	48%	89%	68%	47%	92%
Triage Stroke + NIHSS (≥ 6)	65%	99%	82%	91%	95%

- Triage Stroke detected LVOs with good sensitivity and specificity. As expected, the reference standard (Triage LVO), using CTA, had better performance.
- When combined with NIHSS (≥ 6), Triage Stroke had a high specificity and a strong PPV and NPV.
- Triage Stroke (orange) outperformed radiologists (purple) at detecting LVOs from NCCT: sensitivity and AUC were significantly higher for Triage Stroke than radiologists.



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Conclusion

- Triage Stroke demonstrated strong predictive capabilities for detecting LVO (ICA / MCA M1) from NCCT.
- While less sensitive than using CTA imaging, the device outperformed radiologists at the same task.
- Coupled with clinical information (NIHSS), the device may help centers without routine access to angiography to identify thrombectomy candidates, especially in resource constrained environments.

Disclosure of interest: AP, ZW, DC and GH are employed by and have share options in Brainomix Limited. MA has provided consultancy services for Brainomix Limited. TN is a member of the advisory board for Brainomix Limited and Aruna Bio, and an associate editor for Stroke.