Carotid pulse

Reviews

In a Review Ben-Pazi et al. from Avertto Medical LTD, Aderet (Israel) published in Frontiers in Neurology to highlight the underutilized potential of continuous carotid hemodynamic monitoring, particularly when coupled with AI, for enhanced stroke prevention and cerebrovascular care. Emerging sensor technologies enable non-invasive, real-time capture of carotid pulse features—pulse-wave velocity, vascular stiffness, waveform morphology—that can be integrated with AI analytics to improve early detection of cerebrovascular compromise and proactive intervention [1)].

Critical Review

* **Scope & novelty**: The authors revisit an ancient physiological measurement—carotid pulse—and advocate for its revival through modern sensor-AI integration. The topic is timely given current gaps in real-time vascular surveillance and the AI zeitgeist.

* **Comprehensiveness**: The review traverses historical context, physiology, sensor modalities (e.g., ultrasound, baro-sensors), and AI opportunities. However, it stays largely conceptual—lacking discussion of concrete validation studies, clinical trials, or cost-benefit data.

* **Bias & COI concerns**: Multiple authors are affiliated with Avertto Medical LTD, including roles as founder, employees, and investigators. Although disclosed, this extensive COI raises concerns that the review may be drawing toward promoting proprietary sensor-AI solutions over a balanced appraisal.

* **Balance and critique**: The review summarizes potential hemodynamic markers (e.g., pulse wave velocity) but misses limitations—sensor variability, motion artifacts, signal specificity, integration burdens with EHRs. A more rigorous discussion of negative findings or engineering hurdles is absent.

* **Clinical relevance**: For neurosurgeons focused on stroke prevention, continuous carotid monitoring is provocative—but without supporting evidence from RCTs or diagnostic accuracy studies, the proposal remains speculative. Surgeons need guidance on indications, threshold values, or actionable signals.

* **Scientific rigor**: As a narrative review, it's well-written and coherent but lacks systematic methodology. No PRISMA statement, no meta-analysis, and no explicit search strategy. That limits reproducibility and completeness.

Final Verdict

- **Score**: 5.0 / 10
- **Strengths**: Innovative re-examination of classical physiology; aligns with precision medicine trends; potential to generate new research avenues for continuous cerebrovascular monitoring.
- **Weaknesses**: Heavy COI bias, lack of empirical validation, insufficient critique of technological

and clinical challenges.

Takeaway for practicing neurosurgeon

An intriguing call-to-action: the carotid pulse could be a rich, continuous biomarker for cerebrovascular health—but only if rigorous validation, robust sensing, and reproducible AI modelling are pursued. Do not change practice based on this review alone.

Bottom Line

A visionary but speculative narrative. Valuable for inspiring studies—but premature for clinical adoption.

Citation

Rediscovering the carotid pulse: unlocking hidden insights in the era of AI-driven healthcare Ben-Pazi H., Jhashan S., Salame H., Cohen H., Matot I., Ben Pazi M., Kirma Y., Elmaliach L., Lavi Y., Mintz P., Corvaja N., Dvir D., Danenberg H., Ribo M. *Frontiers in Neurology.* eCollection 2025;2025 Jun 16:1608651. doi:10.3389/fneur.2025.1608651. Corresponding author: Hilla Ben-Pazi ‹email@example.com›

[1)]

Ben-Pazi H, Jhashan S, Salame H, Cohen H, Matot I, Pazi MB, Kirma Y, Elmaliach L, Lavi Y, Mintz P, Corvaja N, Dvir D, Danenberg H, Ribo M. Rediscovering the carotid pulse: unlocking hidden insights in the era of AI-driven healthcare. Front Neurol. 2025 Jun 16;16:1608651. doi: 10.3389/fneur.2025.1608651. PMID: 40589982; PMCID: PMC12206777.