Contrast-Induced Encephalopathy (CIE)

Overview

CIE is a rare neurological complication after iodinated contrast use, typically reversible.

Etiology

- Blood-brain barrier disruption
- Direct neurotoxicity
- Risk factors: HTN, renal failure, diabetes, prior stroke

Symptoms

- Confusion, seizures
- Cortical blindness
- Hemiparesis, aphasia
- Symptoms mimic stroke or PRES

Imaging

- CT: cortical/subarachnoid hyperdensity
- MRI: T2/FLAIR hyperintensity, NO DWI restriction

Management

- Supportive: hydration, seizure control
- Avoid repeat contrast
- Prognosis usually good

Differential Diagnosis

- Stroke (persistent, DWI+)
- PRES
- Meningitis
- SAH

Notes

- Often resolves within 72 hours
- May be underdiagnosed

Multicenter Retrospective Observational Cohort Studies

In a Multicenter Retrospective Observational Cohort Study Mariajoseph et al. attempts to catalog “stereotypical clinical features” of contrast-induced encephalopathy (CIE), yet never justifies *why* such a catalog is needed, nor how it adds value beyond existing case series and reviews [1)]. By treating a collection of loosely connected cases as a cohesive scientific discovery, the authors fall into the trap of **data aggregation without hypothesis**, **epidemiology without inference**, and **observation without insight**.

 2. **Methodological Fragility Disguised as Multicentric Strength**

Though presented as a robust “nationwide” study, it lacks **standardization of diagnostic workup**, **radiological confirmation**, or **independent adjudication** of outcomes. Relying on **Australian diagnostic criteria** (which remain unpublished and internally defined), the entire inclusion framework is built on a **circular logic**: patients were included *if they looked like CIE*, and the study then concluded what CIE looks like. This is textbook **selection bias** masquerading as pattern recognition.

 3. **Statistical Inadequacy: Significance Without Substance**

Using χ^2 and Fisher’s exact tests in a sample of only 56 patients with multiple overlapping symptoms is statistically futile. The “significant” p-values (e.g., hemianopia with posterior circulation interventions, p=0.001) are **cherry-picked associations** from a shallow pool of events. There is no correction for multiple comparisons, no control group, no logistic regression—only **descriptive statistics pretending to be explanatory**.

 4. **Radiological Inconsistency and Vague Criteria**

Descriptions of radiological findings such as “sulcal effacement” and “subarachnoid contrast staining” are made without consistent interpretation or core review. There's **no mention of MRI confirmation**, **no exclusion of ischemia**, and **no longitudinal imaging** to rule out mimics like PRES or small vessel infarction. For a syndrome with such heterogeneous imaging presentations, the reliance on CT findings alone borders on negligent.

 5. **Clinical Course? Or Clinical Guesswork?**

The symptom profile (motor deficit, confusion, dysphasia) overlaps nearly perfectly with stroke mimics and post-procedural TIAs. Yet the authors never clarify:

* how stroke was excluded, * whether perfusion or angiographic imaging was done, * how they defined “complete recovery.”

The reader is left to **trust the authors’ interpretation**, which is unsupported by robust neurological assessments or outcome scales (e.g., NIHSS or mRS).

6. **Conclusion Laced with Contradictions**

The paper ends by claiming that CIE is “recognized,” that it shows “territorial correlation,” and that patients “recover fully.” Yet it simultaneously admits the entity remains “poorly defined” and needs further study. This contradiction encapsulates the problem: **this paper brings no new clarity**—just more fog, with confidence.

Final Verdict

This paper is a **parade of descriptive fluff**, built on unverified criteria, overinterpreted associations, and circular logic. It confuses **multicenter participation with scientific rigor**, and ends up offering the worst of both worlds: *inconclusive data dressed as authority*.

Recommendation: Rejected from serious scientific discourse. Acceptable only as a preliminary registry report **if stripped of all pretense of inference**.

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Mariajoseph FP, Lai LT, Praeger A, Moore J, Chandra RV, Asadi H, Fawzy P, de Villiers L, Goldschlager T, Gan C, Zhou K, Chiu AHY, Kim B, Miteff F, Bañez RMF, Pavlin-Premrl D, Chong W, Fang R, Mahady K, Dunkerton S, Steinfort B, Picker B, Slater LA. Nationwide multicenter experience of contrast-induced encephalopathy following neurointervention: clinical course and outcomes. J Neurointerv Surg. 2025 Jun 12:jnis-2025-023533. doi: 10.1136/jnis-2025-023533. Epub ahead of print. PMID: 40506217.