55° CONGRESSO SOCIETÀ ITALIANA DI NEUROLOGIA

Incidence, Associatios, and Mechanisms of unexplained Early Neurological Deterioration after Thrombectomy in Stroke Patients

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INTRODUCTION & AIMS

Early Neurological Deterioration (END) occur in 5-20% of ischemic stroke after endovascular thrombectomy (EVT). Multiple mechanisms may contribute to END; including hemorragic transformation, early ischemic recurrence, malignant edema, seizures, and complications related to EVT. However, in more than half of END cases, the specific mechanisms remained undefined, a phenomenon referred to as **unexplained END (unEND). The transition from benign oligemia** (asymptomatic hypoperfused tissue) **to ischemic penumbra** (symptomatic tissue) and, ultimately, infarction might drive unEND.

We aim to explore the incidence, associated variables, and underlying mechanisms of unEND.

METHOD

Population: Data are from the ESCAPE-NA1 trial, a randomized trial evaluating nerinted in EVT stroke patients.

Outcomes: END was defined as ≥4 points increase in the NIHSS score between baseline or 2-6 hours faster EVT (whichever was lowest) and 24-hour assessment. The primary outcome was unEND, defined as END without associated hemorrhagic or thrombotic/thromboembolic events.

Statistical analysis: Backward-stepwise multivariable logistic regression was used to identify baseline variable independently associated with unEND. In the CTP subgroup, regresion analyses adjusted for baseline covariates was used to assess the association between unEND and **"infarct extension beyond penumbra" (IEBP),** defined as a follow-up infarct volume larger by at least 10-mL than the initial critically hypoperfused tissue (Tmax>6 seconds volume).

RESULTS

Among 1063 patients included, 172 (16.2%) experienced END: 20 (11.6%) had an associated thrombotic/thromboembolic event, 27 (15.7%) had an associated hemorrhagic event, eight (4.7%) had both an associated thrombotic/thromboembolic and hemorrhagic event, and 117 (68.0%) had an unEND (**overall incidence of unEND=11.0%).**

Variables independently associated with unEND were anesthesia use (aOR 7.23 [95%CI= 4.63-11.30), age (aOR 1.02 [95%CI=1.01-1.04] per 1-year increase), and onset-to-reperfusion time (aOR 1.02 [95%CI=1.01-1.03] per 10-minute increase).

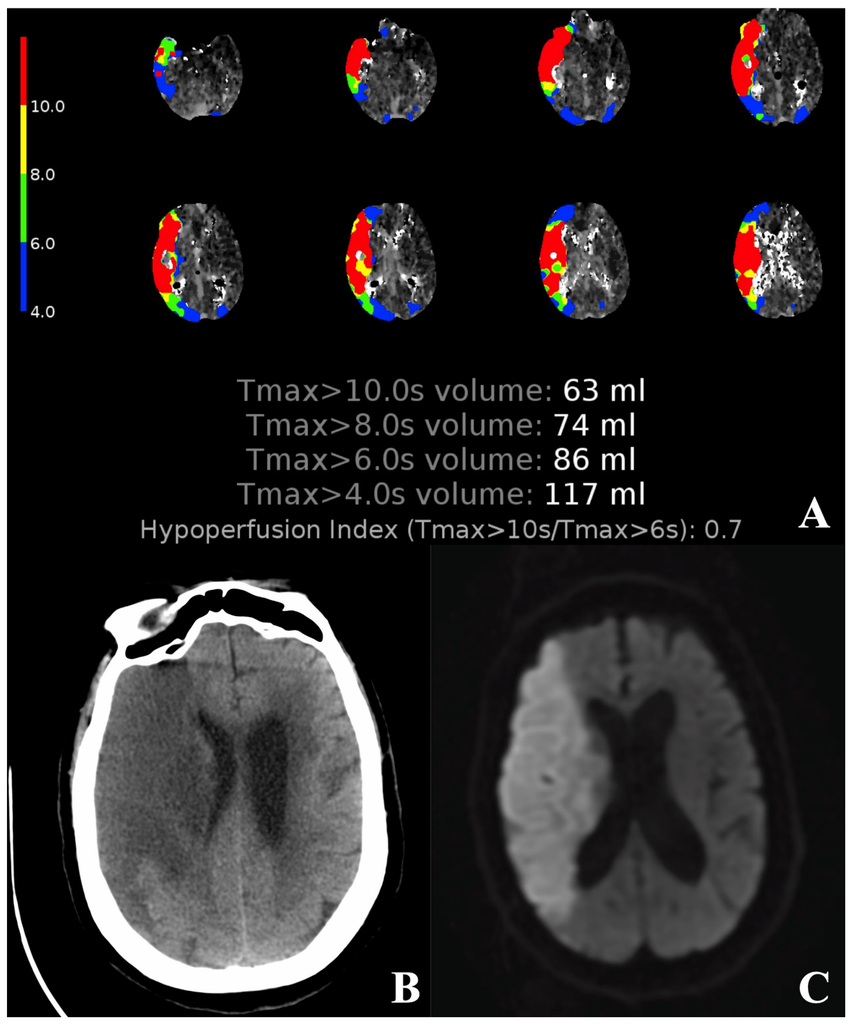

Figure 1. Exemplary case of unEND with IEBP.

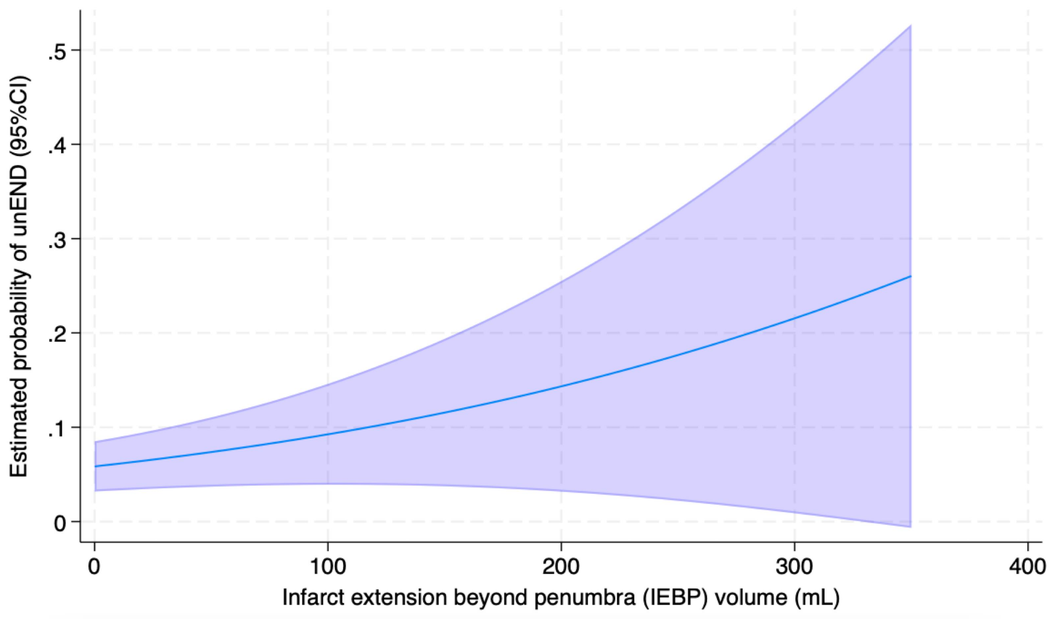

Figure 2. Association between IEBP and unEND in the CTP subgroup.

In the **CTP subgroup** (n=411), unEND was associated with the presence of IEBP (OR 6.81 [95%CI=2.58-18.01]) and larger IEBP volume (OR 1.07 [95%CI=1.01-1.13] per 10-mL increase).

CONCLUSIONS

Unexplained END occurred in **approximately 10%** of large vessel occlusion thrombectomy patients and was associated with older age, longer onset-to-reperfusion time, and anesthesia use.

unEND may be driven by the transformation of benign oligemia (asymptomatic tissue) to ischemic penumbra and, ultimately, infarction (i.e., **vulnerable oligoemia**)

FUNDING

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