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Epileptic Disorders

LETTER TO THE EDITOR

Response to: Does reliability benefit from superior visualization of epileptiform discharges on inferior temporal electrodes?

To the Editor,

We thank Dr. Kleine for his thoughtful letter regarding our study and for highlighting both the anatomical rationale and the recognized clinical relevance of inferior-temporal electrodes. We welcome the opportunity to clarify specific numerical points and to provide the inter-reviewer agreement data he requested. Our study was intentionally designed as a prospective, blinded, within-subject technical validation comparing the IFCN-recommended 25-electrode (IFCN-25) array with the conventional 19-channel 10–20 International System (10–20 IS) in consecutive adult EEGs. Importantly, it was not framed as a diagnostic or superiority trial: no external gold standard was applied, and both montages were treated methodologically as equivalent acquisition systems. The primary endpoint was patient-level detection of any abnormality (IEDs or focal slow activity) under blinded real-world conditions. In this reply, we address exclusively the point raised by Dr. Kleine concerning inter-reviewer agreement for temporal-lobe IEDs, providing the 2 × 2 tables and κ values requested. These analyses represent a clear subset of the broader dataset already published and are provided here for transparency.

1 | ON THE REPORTED "≈12%" GAIN

The ≈12% cited in the title and text of our paper refers specifically to the relative yield increase for temporal lobe IEDs when using IFCN-25 compared with 10–20 IS. In Table 2 of our article,[1] temporal IED-positive EEGs increased from 63 (10–20 IS) to 71 and 72 for the two reviewers, corresponding to relative gains of +8/63 = 12.7% and + 9/63 = 14.3%. By contrast, the absolute risk difference (ARD) of +4.26 [1.32–7.21] and + 4.65 [1.61–7.69] reported in the paper refers to the composite endpoint (IED ± SA, all regions) across all 258 EEGs. The illustrative number needed to test (NNT) follows NNT = 1/ARD (≈1/.045 = 22; 1/.0465 = 21.5). These figures relate to the detection of any EEG abnormality when comparing the two montages under blinded conditions. As IEDs are electroencephalographic findings rather than a diagnosis, the NNT is intended solely as an index of detection yield within the parameters of this study. The distinction thus lies in the denominators:

- the ≈12% figure expresses the relative yield for temporal-lobe IEDs (subset analysis);
- the ≈4.5% ARD reflects the absolute patient-level gain for any abnormality (primary endpoint).

Once distinguished, these values are internally consistent and provide complementary perspectives within the same dataset.

2 | ON INTER-REVIEWER AGREEMENT FOR TEMPORAL-LOBE IEDS

As extending spatial sampling inevitably alters what each reviewer can observe, our primary analyses focused on within-reviewer, across-montage comparisons. For completeness, we now provide the inter-reviewer agreement for the endpoint "temporal lobe IED present." Agreement was in the almost-perfect range for both montages and was numerically higher with IFCN-25, consistent with clearer visualization of anterior and basal temporal activity (Table 1). These findings indicate that the inferior-temporal chain does not increase reviewer discordance and may modestly enhance reproducibility for temporal-lobe IED detection.

3 | ON CROSS-STUDY NNT COMPARISONS

While such figures can be heuristically illustrative, they are not directly comparable to our blinded technical

TABLE 1 Inter-reviewer agreement (R1 × R2) for the endpoint "temporal lobe interictal epileptiform discharge present" (IED) across 258 EEGs.

Montage	R1 IED+/R2 IED+	R1 IED+/R2 IED−	R1 IED−/R2 IED+	R1 IED−/R2 IED−	κ (95% CI)
IFCN-25 (25 channels)	70	2	1	185	.97 (.94–1.00)
10–20 IS (19 channels)	57	6	6	189	.87 (.80–.94)

Note: Each cell reports the number of EEGs classified as temporal-IED positive or negative by both reviewers under each montage. Cohen's κ quantifies inter-reviewer concordance with 95% confidence intervals.

validation. Populations, recording paradigms (routine, ambulatory, 24 h), and analytic endpoints differ, so cross-context NNTs lack inferential validity for reframing our results. In our work, NNT was provided solely as a descriptive efficiency index—how many IFCN-25 EEGs are required to capture one additional study harboring any abnormality (IED or focal SA)—rather than as a measure of diagnostic accuracy or clinical benefit.

4 | BROADER CONTEXT

The questions concerning diagnostic confidence, false positives, downstream outcomes, and potential "harms" of over-reading are important, but they require dedicated longitudinal studies with follow-up, imaging correlation, and potentially automated analysis. Our study had a narrower and deliberately technical remit, aimed at addressing a specific evidence gap: despite long-standing anatomical rationale for the inferior-temporal chain, quantitative, blinded, patient-level validation of abnormality detection versus 10–20 IS had been lacking. The additional analysis presented here reinforces a key conclusion: adding six inferior-temporal electrodes enhances detection and improves inter-reviewer reproducibility of temporal IEDs, without evidence of increased false positives or greater discordance. This low-cost modification mitigates a recognized spatial blind spot and strengthens the technical reliability of EEG interpretation. Our methodological stance was neutral by design, providing robust technical evidence without extending conclusions to clinical or therapeutic domains.

We thank the Editor for the opportunity to elaborate. Exchanges of this nature strengthen methodological transparency and help clarify the boundaries between technical validation and diagnostic application.

DISCLOSURES

None.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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REFERENCE

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