Teaching Neurolmage: Ictal Pouting Associated With Focal Cortical Dysplasia and Frontal Seizures on Stereotactic Depth Electrode EEG

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A 65-year-old man presented with chronic drug-resistant epilepsy. EEG-video monitoring showed seizures manifesting with ictal pouting or the “chapeau de gendarme” sign. MRI demonstrated focal cortical dysplasia in the right frontal lobe (Figure 1A). Stereotactic depth electrode EEG (stereoEEG) showed seizures originating within a cortical sulcus of the right caudal middle frontal gyrus (Figure 1, B–D, Figure 2). The patient became seizure-free after resection of the seizure onset zone and surrounding area of cortical dysplasia and remains so 9 months after surgery. Ictal pouting has been described as a sign of seizures originating in the frontal lobe, especially in the anterior cingulate or anterior insular cortices; areas uninvolved in our patient’s seizures. Awareness that other frontal lobe areas are part of a common network underlying ictal pouting may be important for interpretation of neuroimaging modalities such as ictal SPECT, PET and MEG, and for stereoEEG planning, especially in MRI negative cases.

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Figure legends:

Figure 1: Linear hyperintensity in right frontal lobe extending from cortical surface to frontal horn of right lateral ventricle

Post-surgical pathology confirmed area of focal cortical dysplasia type II (A). Right caudal middle frontal gyrus localization of depth electrode contact RPINS8, marking seizure onset zone-sagittal (B), axial (C) and coronal (D) planes.
Figure 2: VideoEEG findings
StereoEEG showing ictal onset (red arrow) as rhythmic low amplitude beta frequency activity maximal at contact RPINS8-right caudal middle frontal gyrus (cf. Figure 1, B–D), evolving in amplitude and frequency during seizure progression. Clinically, the patient showed ictal pouting or “chapeau de gendarme” (top inset) two seconds after seizure onset (blue arrow).