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Case Report

A Pleasant Sweet Gustatory Aura as the First Ictal Symptom of Focal Epilepsy: A Case Report

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Abstract

The cortical region whose activation by an epileptiform discharge gives rise to the first ictal signs and symptoms of a seizure is termed the symptomatogenic zone. Studies using electrical cortical stimulation have helped map the brain regions that underlie each semiological pattern. Gustatory auras have long been associated with focal epilepsy, but stereoelectroencephalographic studies indicate that they may be generated in opercular, insular, parietal, and mesiobasal temporal cortical regions, limiting their localizing value. We describe a patient with focal epilepsy in whom a pleasant, sweet gustatory aura was the first ictal symptom, and discuss the localizing value and limitations of this semiological feature. A 15-year-old boy with a background of late prematurity and double nuchal cord presented with a 9-month history of five stereotyped episodes. The habitual semiological sequence was as follows: pleasant, sweet gustatory aura + dizziness → impaired responsiveness + impaired awareness, accompanied by fixed gaze → +/- automatisms + diaphoresis + sialorrhea. This was followed by postictal confusion and headache. His neurological examination was unremarkable. Video-electroencephalography did not capture any habitual seizures but demonstrated interictal focal discharges over the left frontotemporal region. A 3-Tesla epilepsy-protocol magnetic resonance imaging study was normal. Lacosamide was initiated, and the patient has remained seizure-free during approximately 21 months of follow-up. Characterizing the signs and symptoms of a seizure in detail and in chronological order allows its correct classification and, in selected cases, narrows the plausible seizure network. This helps orient the choice of complementary investigations and the most suitable treatment, potentially contributing to improved patient outcomes.

Keywords: Epilepsy, aura, taste, gustatory hallucination, seizure semiology, localizing signs, case report

INTRODUCTION

Detailed assessment of seizure semiology is a non-invasive tool for formulating a localization hypothesis based on the chronological sequence of ictal signs and symptoms. The symptomatogenic zone is the cortical region whose activation produces the earliest clinical manifestation; it may lie close to, but does not necessarily coincide with, the seizure-onset or epileptogenic zone.[1,2] Although electrical stimulation studies have helped link specific semiological features to particular brain regions, they have also demonstrated that large areas of the cortex may be clinically silent, such that symptoms may emerge only after seizure propagation recruits eloquent networks. Some ictal features have relatively high localizing value, whereas others can be generated by several cortical regions.[1]

The updated 2025 International League Against Epilepsy (ILAE) seizure classification reinforces this approach. In its expanded version, seizures are described by listing the semiological features in chronological order, with arrows indicating the direction of seizure evolution. It also replaces the 2017 term "impaired awareness" with "impaired consciousness", operationally defined by assessing recall and responsiveness through verbal or motor tasks; a seizure is classified as one of impaired consciousness if either is impaired.[3] We adopt this terminology throughout the present report. Here we describe an adolescent in whom a pleasant, sweet gustatory aura was the presenting feature of focal epilepsy. Sweet gustatory sensations are recognized but appear to be uncommon, and the hedonic quality of gustatory auras has rarely been reported.[4-6]

CASE PRESENTATION

A 15-year-old boy with a history of late prematurity and a double nuchal cord was admitted after an episode, witnessed while he was awake, that his family described as unresponsiveness with fixed gaze, diaphoresis, and sialorrhea, lasting approximately one minute. This was followed by 30 minutes of confusion and then a headache.

He reported that, over the preceding 9 months, he had experienced about four comparable episodes, each preceded by a few seconds of a sweet taste in the mouth, accompanied by dizziness. On directed questioning, he characterized the dizziness as a non-specific light-headed sensation. The gustatory sensation was stereotyped across episodes, was unequivocally pleasant, and bore no relation to any taste actually present at the time; it was not accompanied by an olfactory hallucination. On two or three occasions, the episodes arose during class, and, on regaining consciousness, he found that he had written incoherent sentences in his notebook, with no recall of having done so. He identified no triggers.

The neurological examination on admission was normal. Following the expanded version of the 2025 ILAE seizure classification,[3] the events were classified as focal impaired consciousness seizures with observable manifestations. The habitual semiological sequence was: pleasant sweet gustatory aura + dizziness → impaired responsiveness + impaired awareness, accompanied by fixed gaze → +/- automatisms + diaphoresis + sialorrhea. This was followed by postictal confusion and headache. Prolonged video-electroencephalographic monitoring was performed. No habitual clinical events occurred during the recording; however, interictal focal discharges over the left frontotemporal region were identified (Figures 1 and 2). No home recording of any habitual event was available from the family or caregivers for review by the treating physicians.

A 3-Tesla epilepsy-protocol magnetic resonance imaging study was requested as part of the work-up and was normal, showing no evidence of hippocampal sclerosis, malformation of cortical identified, or any other potentially epileptogenic lesion.

Lacosamide was initiated as antiseizure monotherapy without adverse effects, and over approximately 21 months of follow-up the patient has remained seizure-free.

MAIN POINTS

- Gustatory aura may be an initial manifestation of focal epilepsy. Sweet sensations are recognized but uncommon; the explicitly pleasant hedonic quality and its occurrence as the first ictal symptom are the distinctive features of this case.
- A detailed chronological description of ictal signs and symptoms, using the expanded version of the 2025 International League Against Epilepsy seizure classification, is essential for accurate seizure classification and for generating a localization hypothesis.
- Gustatory auras have limited localizing value: stereoelectroencephalographic evidence implicates the parietal and rolandic operculum, the insula and mesiotemporal structures.
- Although gustatory aura alone has limited localizing value, its association with impaired consciousness, fixed gaze, automatisms, diaphoresis, and sialorrhea supports involvement of temporal lobe networks.
- Recognition of subtle auras can guide diagnostic evaluation and early initiation of appropriate antiseizure treatment.

DISCUSSION

Auras are defined as subjective experiences that usually constitute the earliest recognized clinical manifestation of a seizure.[7] Their phenomenology reflects activation of the symptomatogenic zone and may contribute to a localization hypothesis; however, because symptoms may appear only after propagation, this area may be remote from the seizure-onset zone.[7]

Some auras are specific. An abdominal aura, felt as a rising epigastric sensation or abdominal discomfort, localizes to the temporal lobe with a probability of 74%, rising to 98% when it progresses to an automotor seizure.[1] Gustatory and olfactory hallucinations have traditionally been regarded as relatively specific to temporal lobe epilepsy also, although, as discussed below, electrophysiological evidence suggests that they may arise from a broader cortical territory.[1,4]

A gustatory aura characteristically begins abruptly and lasts under a minute.[4,5] It bears no resemblance to any taste actually present at the time, although it may be preceded or accompanied by an olfactory hallucination matching the perceived flavour.[4,5] Reported tastes are most often unpleasant—metallic, rusty, bitter or salty—while sweet sensations are recognized but appear uncommon.[4,5] The hedonic quality is not usually specified. Gschwind and Picard[6] reported a "delicious taste" as an associated symptom in a patient with an "ecstatic" seizure, but it was not the initial semiological feature and its anatomical origin was not established. The distinctive feature of the present case is, therefore, the explicitly pleasant, sweet sensation occurring stereotypically as the first ictal symptom.

Gustatory hallucinations were characterized in detail by Hausser-Hauw and Bancaud,[5] who identified them in 30 (4%) of 718 patients investigated with stereoelectroencephalography and analysed 20 cases in depth. Brief, isolated taste hallucinations were elicited principally by stimulation of the parietal and rolandic operculum, whereas stimulation of the hippocampus and amygdala produced electrically induced seizures in which a gustatory hallucination formed one component of a broader ictal sequence. The associated features differed by site of origin: parietal seizures were accompanied by staring, facial clonic movements, eye deviation and sialorrhea, whereas temporal seizures were accompanied by oral movements, autonomic changes, purposeless movements and abdominal symptoms.[5]

The insula and adjacent opercula are important alternative components of the gustatory network. Insular seizures are classically associated with pharyngo-laryngeal, visceral, somatosensory or motor symptoms, but invasive studies demonstrate substantial overlap with temporal seizure semiology.[2,8] In the largest stimulation series, taste was evoked in 15 of 550 stimulations producing a clinical response (2.7%), exclusively in the mid-dorsal insula, particularly the posterior short gyrus.[9] An activation-likelihood meta-analysis of 15 functional neuroimaging studies similarly identified convergent taste-related activation in the insula and opercula, as well as the anterior cingulate.[10] Gustatory phenomena are nevertheless neither specific to nor consistently present in of insulo-opercular seizures. In a comparative series they were combined with olfactory symptoms and occurred in 8 of 46 patients with insulo-opercular epilepsy (17.4%) and 3 of 46 with surgically confirmed mesial temporal epilepsy (6.5%).[11]



Figure 1. Left frontotemporal sharp-and-slow-wave complex. Scalp EEG displayed in a longitudinal bipolar montage, with electrodes positioned according to the international 10-20 system. Recording parameters were sensitivity 15 μV/mm, high-frequency filter 70 Hz, time constant 0.1 s, and calibration 50 μV. The red box indicates the sharp-and-slow-wave complex in the left frontotemporal region
EEG: Electroencephalography

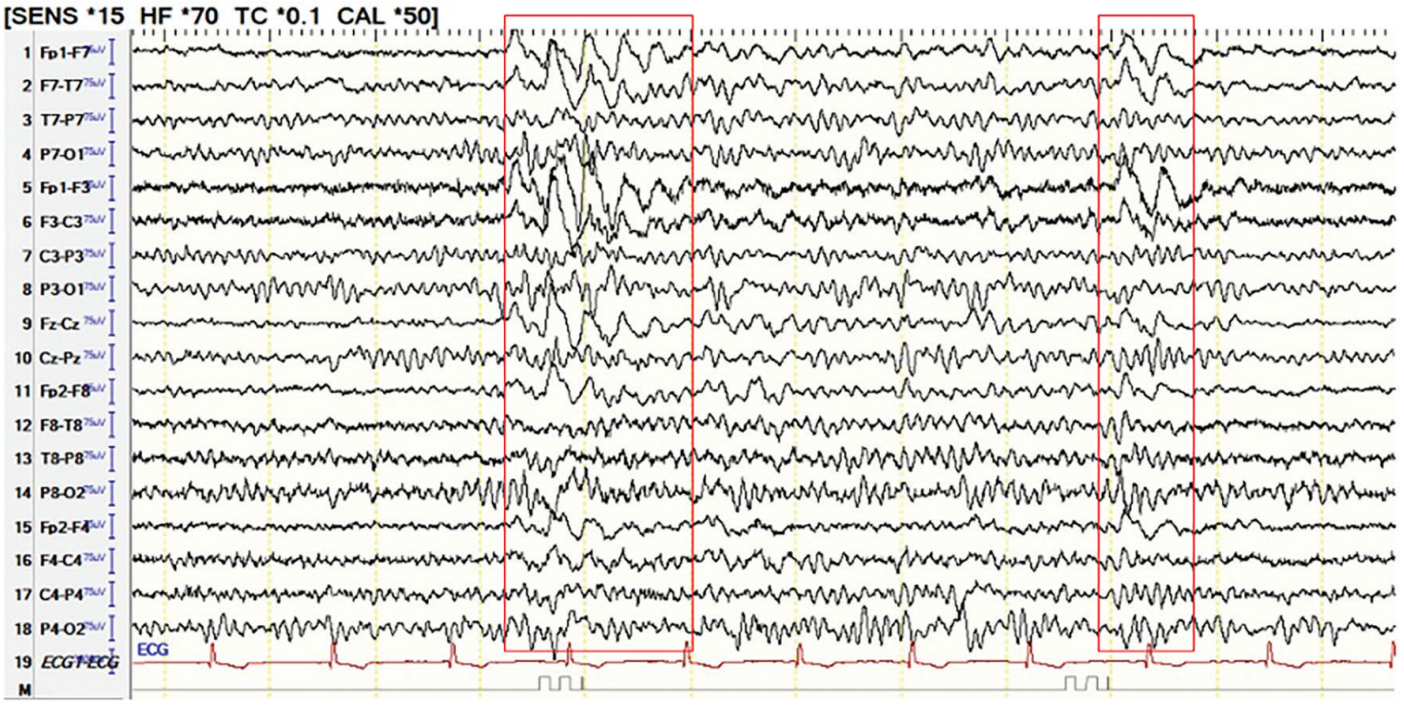


Figure 2. Recurrent left frontotemporal slow waves. Scalp EEG displayed in the same longitudinal bipolar montage and under the same recording conditions as **Figure 1.** The red boxes indicate recurrent slow waves maximal over the left frontotemporal region
EEG: Electroencephalography

These findings support a distributed gustatory symptomatogenic network.

In this patient, the pleasant gustatory aura identifies activation of the gustatory symptomatogenic zone but does not establish the seizure-onset zone. The subsequent impairment of consciousness, probable writing automatism and autonomic manifestations, together with left frontotemporal interictal epileptiform discharges, support temporal network involvement.[1,12] Within temporal lobe epilepsy, a recent meta-analysis found that an olfactory/gustatory aura favored mesial over lateral onset; however, the certainty of evidence was low, and this comparison does not distinguish temporal from insular-opercular onset.[13] The findings could therefore reflect either temporal seizure onset with early recruitment of an insular-opercular gustatory network or an insular-opercular onset mimicking temporal lobe epilepsy; the available non-invasive data cannot distinguish between these possibilities.[14] The normal magnetic resonance imaging and the absence of a recorded habitual seizure on ictal electroencephalography further limit precise localization of the seizure-onset zone.

Anatomical localization in magnetic resonance imaging-negative cases relies on concordant electroclinical findings and, when clinically indicated, additional functional or invasive evidence. In the present case, further investigations have not been pursued given the adequate seizure control achieved with monotherapy.[15]

CONCLUSION

Analyzing the symptoms and signs that constitute a seizure in a detailed, chronological order, as the updated 2025 ILAE classification recommends, enables its accurate classification and, in some instances, narrows the plausible seizure network, and this information guides the choice of complementary tests and the most appropriate treatment, potentially contributing to improved patient outcomes.

A pleasant, sweet gustatory aura may be the presenting feature of focal epilepsy, appearing in stereotyped fashion at seizure onset and generally giving way to further symptoms as the discharge engages the associated cortical network. In the present patient, the overall semiology, together with left frontotemporal interictal focal discharges, supports probable temporal lobe involvement; the normal magnetic resonance imaging study and the absence of an ictal recording mean, however, that an insular-opercular contribution to the symptomatogenic network cannot be excluded. This case underscores the value of describing ictal manifestations while recognizing the limitations of semiology for anatomical localization.

Ethics

Informed Consent: The patient's parent consented to the publication of this article.

Footnotes

Authorship Contributions

Surgical and Medical Practices: J.L.R-G., S.L.A., Concept: I.L-R., M.J.C., Design: I.L-R., M.J.C., N.M.C., J.L.R-G., S.L.A., Data Collection or Processing: I.L-R., M.J.C., N.M.C., Analysis or Interpretation: I.L-R., M.J.C., N.M.C., J.L.R-G., S.L.A., Literature Search: I.L-R., M.J.C., N.M.C., Writing: I.L-R., M.J.C., N.M.C., J.L.R-G., S.L.A.

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