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Case Report

Paroxysmal belching: Epileptic or nonepileptic?

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ABSTRACT

The prevalence and localizing value of ictal belching are yet unknown. We present the case of a patient with medically refractory focal epilepsy with simple and complex partial seizures, as well as generalized seizures. One presumed seizure type comprised frequent episodes of repetitive belching. Video-EEG monitoring during these attacks showed no ictal changes. The belching episodes were inducible and terminable through suggestion. The diagnosis of excessive supragastric belching, a previously described psychogenic condition, was made.

1. Introduction

Gastrointestinal symptoms such as abdominal pain, vomiting, retching, diarrhea, and spitting are known to occur as ictal phenomena during partial seizures, mostly of temporal or insular origin [1]. Recognizing such autonomic signs is crucial to identifying partial seizures and can help in localizing the epileptogenic focus [1]. Ictal eructation is an automatism only twice reported so far: Cole described a patient with episodes of isolated eructations accompanied by bilateral theta activity prominent in the left frontotemporal area [2]; more recently, Mestre et al. detailed eructations as part of more complex psychomotor partial seizures [3]. An important differential diagnosis is paroxysmal belching of nonepileptic origin, which can be somatic or psychogenic [4–6]. The former would usually present with underlying gastroenterological conditions [5]. The following case illustrates the necessary considerations when a patient with confirmed epilepsy has refractory episodes of repetitive belching.

2. Case study

A 65-year-old female patient presented to our epilepsy unit with medically refractory epilepsy. An encephalitic syndrome of unknown etiology 30 years earlier had been assumed to have caused the symptomatic epilepsy. No documentation of the initial disease manifestation could be obtained. Repeated EEG showed bilateral temporal sharp waves and sharp slow waves, and MRI revealed left hippocampal atrophy. The patient had simple and complex partial seizures, as well as generalized seizures. Her antiepileptic medication comprised levetiracetam (3 g/d), pregabalin (300 mg/d), and clonazepam (0.5 mg/d). She was currently free of generalized and complex partial seizures yet suffered daily attacks of irrepressible belching accompanied by a feeling of goosebumps, which were severely embarrassing for her and led to social isolation and stigmatization. The duration of these attacks varied between several seconds and up to half an hour. For the last three decades, these paroxysms had been considered simple partial autonomic seizures with eructation and piloerection yet were unresponsive to antiepileptic treatment. The patient reported that these attacks were triggered by various sensory experiences such as the sound of a waterfall, the sound of rain or wind, the sight of bright lights or reflective surfaces, and tactile stimuli like wearing a hat or having EEG electrodes attached. Numerous gastroenterological consultations including gastroscopy and colonoscopy had revealed two polyps in the colon and mild diverticulosis yet no underlying condition to account for the belching.

Video-EEG monitoring was performed for three days. Interictal epileptiform activity was seen, in line with the diagnosis of epilepsy. Several episodes of serial eructations were recorded. Some attacks were habitual without a clear trigger. Others were elicited using one of the reported triggers (the sound of turning on a water faucet, see Video 1) as well as suggestive seizure induction with unknown stimuli such as a stroboscope light. A feeling of goosebumps was reported, yet no piloerection was evident on close inspection. None of these episodes was accompanied by epileptic discharges in the EEG or other epileptic or autonomic phenomena.

The normal ictal EEG and the inducibility of the typical behavior by suggestive techniques prompted us to reconsider the diagnosis of simple partial seizures. We diagnosed the patient with excessive

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supragastric belching. We referred her to psychotherapy; no changes were made in the antiepileptic medication.

3. Discussion

Excessive supragastric belching denotes a rare psychogenic disorder of unknown origin that is well-documented in recent gastroenterological literature [5]. Patients exhibit episodes of repetitive eructation whereby air is sucked or injected into the esophagus without reaching the stomach and expelled immediately as an audible belch [5]. The frequency of eructation in patients with excessive supragastric belching can be more than doubled by attention-modulating suggestion and again halved by distraction [7]. This effect is reminiscent of psychogenic nonepileptic seizures, which can often be induced and terminated by suggestion [8]. Anecdotally, uncontrollable belching has been treated by hypnotic suggestion [9]. Repetitive belching has also been observed in psychiatric patients with obsessive compulsive disorder [4] and bulimia nervosa [7], further establishing it as a psychological phenomenon.

Although the patient reported an accompanying feeling of goosebumps, on skin inspection, no piloerection in the affected area was observable during the episodes. Ictal piloerection is a rare form of autonomic seizure, possibly associated with autoimmune encephalitis [10]. Since the patient was not screened for neural antibodies, autonomic reflex seizures with normal scalp EEG remain a possibility. This unexplored possibility constitutes a significant limitation of this study. In this regard, a follow-up after psychotherapy would also have contributed to our diagnostic certainty.

Ictal belching has been reported as an isolated seizure type accompanied by bilateral theta activity [2] and as part of a psychomotor seizure [3]. As our case and reports from the gastroenterological literature suggest, repetitive belching can also be of psychogenic nature. The differentiation is best accomplished using video-EEG recording combined with suggestive provocation techniques.

Supplementary data to this article can be found online at http://dx.doi.org/10.1016/j.ebcr.2015.12.002.

Conflict of interest

The authors have no financial relationships to disclose with regard to this article.

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