Laughter - A Manifestation of Seizure: A Case Report and Review

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A case with the rare manifestation of laughter as a clinical feature of seizure in a 13-year-old boy is reported.

One year before presentation, he first had a sudden loss of consciousness. He slumped and fell down, with eyes closed and some frothing at the mouth, but had no injury or incontinence. In subsequent episodes, he would laugh before losing consciousness and had no later recollection. On many occasions later, he had laughter when he seemed out of contact with others but did not lose consciousness though he had a short while of staring and complaint of headache. On examination, there were no focal neurological signs nor any abnormalities on systemic evaluation. He had normal mood except for concerns about his illness. After EEG report suggestive of left temporal lobe epilepsy with secondary generalization, he was treated with carbamazepine.

A review and discussion of literature on gelastic seizure follows the case report.

Key words: gelastic seizure, laughter, temporal lobe epilepsy

The current 1989 International League Against Epilepsy (ILAE) syndrome classification of epilepsy acknowledges epileptic seizure categories with psychic and other psychological symptoms such as mood disturbance.[5] Among the spectrum of the seizures, complex partial seizu-res are the most puzzling ones. Gelastic seizures are minor seizures, relatively uncommon, reported in patients with psychomotor epilepsy[8] and manifest as a sudden, unprovoked outburst of emotion, usually laughter or crying.[4]

Gelastic seizures usually last a few seconds to a minute when occurring as isolated events, but they may be a part of a general seizure lasting longer.[3] They may or may not be associated with loss of consciousness and memory of the event. A variety of etiological factors have been reported,[4] though they are usually associated with a hamartoma of the tuber cinereum of hypothalamus.[13] EEG and neuroimaging studies are the main diagnostic aids besides a careful history. Though EEG findings are inconsistent, abnormalities in the temporal or frontal regions have often been reported. [4, 11]

A case with laughter associated with seizure has been presented here for its rare presentation.

Case Report

A 13 year old male, 8th grade student from a semi-urban setting of eastern Nepal, presented to a psychiatric service with episodes of laughing when he was out of contact with others.

In the previous year, he had multiple episodes when he would laugh for about 2- 3 minutes. During such episodes, he could not be stopped or influenced by other people. He would appear different with an expressionless face despite laughing. He would not sense impending attacks by any signal. These attacks had been witnessed during a variety of situations- in classroom, play grounds, home, with friends, family members, neighbors and alone, any time of day and night. After such laughter, he would stare for a while and then slowly would recognize people around him. On a few occasions, he would fall down to the ground after laughter. The frequence of these episodes gradually increased to 2-3 times a day. After he regained consciousness, he would have heaviness of his head of mild to moderate severity for about 20- 60 minutes, not associated with nausea and any aggravating or relieving factors. Gradually in the later part of the illness duration,

he would sense that he had gone through an attack on the basis of headache and the report of a witness.

His first episode was when he was in a classroom and suddenly became unconscious. His body slumped and he fell to the ground, eyes remaining closed, some frothing from inside the mouth. There was no tongue bite or other injury or incontinence. The episode lasted for about 5 minutes of unconsciousness. In subsequent episodes, he would laugh before staring vacantly or losing consciousness.

He reported that he did not remember why he laughed, but remembered only what others said about the behavior. On examination, no focal neurological signs were found nor any systemic abnormalities. His mood was stable except that he was worried about his illness. No abnormalities were appreciated in speech, thought or in any higher mental functions: consciousness, orientation, memory (except for those episodes), judgment and insight.

There was no history of significant neurological, mental and other general medical conditions nor head injury or substance use problem in his past. None of the blood relatives were reported to have suffered from similar or other neurological, mental or significant medical illness (diabetes, hypertension). He was average in his developmental milestones and in his school performances. His EEG showed the features suggestive of 'left temporal lobe epilepsy with secondary generalization'. MRI scan of head, complete blood count (CBC), electrolytes and liver function tests (LFTs) were within normal limits.

His symptoms continued even with 600 mg of sodium valproate. With the receipt of EEG report, this was changed to carbamazepine. Though the frequency of the episodes significantly decreased to once in a month with 500 mg, the dose was later increased to 600 mg a day in divided doses.

Discussion

Sudden laughter has been described in literature as a manifestation of an epileptic seizure, though it is not as common emotion as fear. Laughing seizure was first described by Trousseau in 1877[17] and seizures with emotions 'with a cheerful character' were observed by Gowers in 1881.[10] Daly and Mulder coined the term 'gelastic epilepsy' in 1957, with gelastic being derived from the Greek word "gelos" meaning laughter, to highlight this character of seizure.[6] Since then, ictal laughing or gelastic seizure has been described in different epileptic conditions. To the present author's knowledge, there has been a paucity of medical literature from Nepal though rarely such cases are encountered.[15]

Later in 1971, Gascon and Lombroso suggested the criteria for the diagnosis of gelastic epilepsy: recurrent stereotypy; absence of external precipitants; presence of other manifestations of seizure; presence of EEG epileptiform discharges; and absence of the conditions in which pathological laughter might occur.[7] The case presented here fairly displays the criteria of recurrent stereotypy, other features of seizure, EEG finding, and absence of known precipitants for seizure and laughter. The literature mentions some patients who have the experience of both gelastic and crying seizures, termed "dacrystic" or "quiritarian" seizures.[14]

Clinical manifestation of gelastic seizure largely depends on the underlying pathology.[3] Laughter usually lasts shorter than a minute when it occurs as an isolated event. But it is often prolonged if it is a part of more complex seizure disorder, and occasional cases of gelastic status epilepticus have also been reported.[9] It has been documented as a manifestation of several other seizure types as well such as: partial seizures with motor symptoms, myoclonic seizures, generalized convulsive seizures and petit mal absences.[12] The index case had laughter of variable durations lasting from seconds to 2- 3 minutes. His laughter was associated with other features of seizure, like staring and loss of consciousness.

Gelastic seizures of hypothalamic hamartoma usually start before age 5 years and preceed other types of seizure that might appear later. In contrast, seizures of frontal or temporal or even parietal lobe[16] origin start after the age of 5 years and emerge along with or follow other seizure types. Gelastic seizures of hypothalamic hamartoma often appear several times daily and appear benign in infancy and during school-age years, but usually become more complicated with the development of other seizure types and cognitive deterioration. This is in contrast to less frequently appearing gelastic seizures of other localizations.[3] Starting at age 12 years, this case initially had seizure episodes in the intervals of 1- 2 months or so to occur up to 2- 3 times a day in 1 year duration of illness. The boy was reading in the 8th grade with good performace.

The motor expression of laughter and the feeling of amusement have been reported to be separable functions assigned to some particular brain parts. Gelastic seizure of hypothalamic hamartoma usually does not have components of mirth or altered level of consciousness and that of focalities mainly temporal focus may manifest with mirth during the seizure and or altered consciousness.[2] The presented case was unconscious and was amnestic about his behaviour and feeling during the episodes.

Despite much effort to understand the mechanism of gelastic seizure, its relationship with a presumed epileptogenic focus is still far from clear. From a practical point of view, video-EEG (preferably with sphenoidal electrodes) and MRI with high resolution technique, in addition to meticulous history is of great importance to diagnose and reveal the source of gelastic seizures.[3] As clinically appreciated and discussed up to this point, also the EEG of this case suggested 'left temporal lobe epilepsy with secondary generalization'. The MRI scan of head was normal.

The gelastic seizures of hypothalamic hamartoma are usually complicated later with addition of generalized seizures, seizure intractability and cognitive deterioration

in school-age. The prognosis of gelastic seizures originating from frontal, temporal or other brain regions depends on the underlying pathology, usually with a better outcome as in this case than in cases of hypothalamic origin. An appropriate antiepileptic drug should be selected from the spectrum of antiepileptics since gelastic seizures at times may be resistent to many of them.The choice depends on factors such as seizure type, safety, tolerability, ease of use, potential interactions, and efficacy in coexisting nonepileptic coditions.[1] Sodium valproate was later changed to carbamazepine after the review of this reference case and the doses were also optimized in subsequent visits. Several surgical options are available if hypothalamic hamartoma is the underlying pathology for gelastic seizures.

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