

HYPERVENTILATION: AURA FOR ABSENCE SEIZURE?

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ABSTRACT

Hyperventilation can induces absence seizures and complex partial seizures. However, no previous reports have described patients diagnosed as having absence seizures with conjugate deviation induced by hyperventilation. We report the case of a young female who has features of absent seizure after every episodes of hyperventilation like aura. This case is presented not only because of its rarity clinically but also electrophysiologically after common phenomenon like hyperventilation in young female.

KEYWORDS: hyperventilation, aura, absence, seizure.

INTRODUCTION

Absence seizures are defined as sudden and brief lapses of consciousness without loss of postural control. In this seizure consciousness returns as suddenly as it was lost without postictal confusion. Rarely absence seizures are induced by the hyperventilation.^[1] No clinical manifestations other than absence seizures induced by the hyperventilation are not reported so far. Here we have reported an epileptogenetically interesting case of absence seizures induced by hyperventilation.

CASE REPORT

A 18 year old female medical student R.J. presented in medicine out patient department with history of brief loss of consciousness in her class room. At first, the frequency of episodes was once or twice in a week, but the frequency increased gradually. This episode happened whenever there is hyperventilation like feature due to anxiety or stress leading to medical consultation. The attacks lasted as long as several seconds and there seemed to be no particular activities except hyperventilation in her daily life that would induce them. There was no family history of epileptic or neurological disorders, and her developmental milestones were normal. She denied prolonged loss of consciousness. On examinations she was normal both physically and neurologically, and no abnormalities were found in blood or urine tests. On asking whether you can produce this attack, she said yes; and after hyperventilation seizure was clinically induced. After few episode of hyperventilation, she suffered from an absent seizure consisting of both conjugate deviation and neck rotation to the left followed by a moment of disturbance to her consciousness (during the first moments of the attack she

did not react to her name being called). Her MRI Brain and MR angiography showed no abnormal findings. Her EEG tests were normal before hyperventilation (fig-1), but on hyperventilation ictal EEG showed sharp waves in the right frontal, central, and parietal areas suggestive of absent seizure.(Fig. 2) We diagnosed her as having absent seizures and started on sodium valproate 300 mg twice a day. Since her treatment was started, she had not suffered from any further attacks.

DISCUSSION

In absence seizure there is brief loss of consciousness which is usually clinically inapparent but sometimes they are accompanied by motor signs such as rapid blinking of the eyelids, chewing movements, or shaking movements of the hands. They usually occur in childhood or early adolescence and are the main seizure type in 15–20% of children with epilepsy.^[1] In our case it was young adult. The ictal EEG of a typical absence seizure demonstrates generalized spike and wave complexes that are 3–4.5 Hz and lasts ≥ 3 seconds. The '3 second' rule is clinically reasonable and provides an objective EEG measure to detect absence seizures when clinical seizures are hard to identify.^{[2],[3]} Hyperventilation tends to provoke these electrographic discharges and even sometimes seizures and is routinely used when recording the EEG. Some reports have referred to the mechanism of activated slow waves caused by hyperventilation and it has been reported that CO₂ vasoreactivity in the temporal lobe during hyperventilation may be related to the mechanism of complex partial seizures.^[4] However, exact mechanism of epileptiform discharges on EEG induced by hyperventilation are unknown.^[4] Though it is well

known that absence seizures can be induced by hyperventilation, no previous reports have described patients diagnosed as having absence seizures with conjugate deviation. The present case is not only clinically but also electro physiologically suggestive of the inducement of epileptiform discharges by hyperventilation. Unfortunately, we only considered the relationship between clinical feature and EEG findings.

Further studies and researches are warranted to elucidate the pathophysiology of absence seizure with conjugate deviation of the eye especially after common phenomenon like hyperventilation in young female. General Physicians should be aware of this clinical absence seizure after hyperventilation which can be an aura for the same.



Figure -1; EEG before hyperventilation

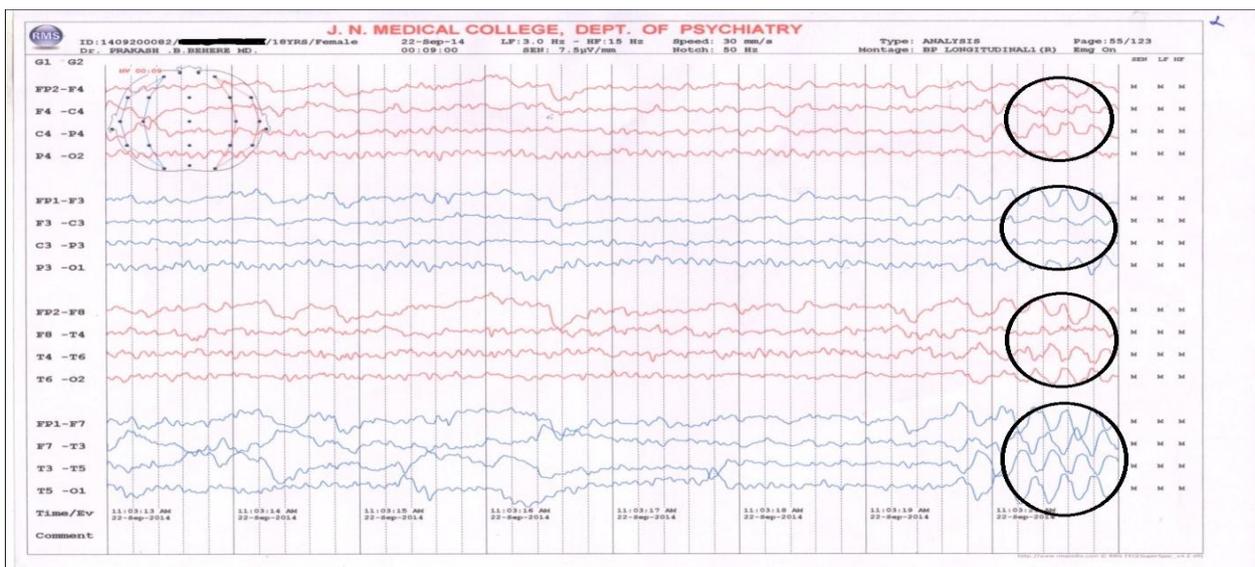


Figure -2; EEG on hyperventillation

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