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Case Report

Transient hypoxia causing midline seizures in an adult- Case report

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ABSTRACT

Midline epileptiform discharges are reported very rarely in adult population. Most cases of midline seizures are reported in children. The significance of midline spikes in adults is poorly understood. This is an interesting case report of an adult patient, who had midline epileptiform discharges following transient hypoxia, which subsided with anti seizure medications and correction of hypoxia. There has not been a definite study on the importance of independent midline epileptiform discharges in adults so far.

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1. Introduction

Midline epileptiform abnormalities are usually associated with localization related epilepsy or various other etiologies.¹ Midline spikes can also be associated with heterogeneous types of focal and generalized seizures.² Most cases of midline seizures are reported in children.^{3,4} Independent foci of midline epileptiform discharges without any similar changes in other areas may be seen as a part of benign childhood seizures.⁴ The significance of midline spikes in adults is incompletely understood and poorly described. Midline epileptiform discharges are reported very rarely in adult population.⁵

2. Case Report

Fifty-seven years old patient presents with history of right sided pleuritic chest pain and breathlessness of three days duration. He was a known case of carcinoma tongue, systemic hypertension and diabetes on treatment. There was no history of stroke, seizures or neurodegenerative disease in the past.

On examination the patient was conscious and oriented but was tachypnoeic with labored breathing. He had no focal neurological deficits at the time of examination. The patient was evaluated and found to have right sided hydropneumothorax. In view of the hydropneumothorax, ICD insertion was done, and patient was started on appropriate antibiotics. Routine blood investigations were within normal limits. On the same day of admission, the patient developed fall in saturation and went into cardiac arrest. Cardiopulmonary Resuscitation (CPR) was done, and patient was immediately revived and connected to the ventilator. Following this the patient had fall in sensorium, which warranted an EEG to rule out non-convulsive seizures.

EEG was done according to internationally accepted 10-20 electrode placement system using portable EEG machine (Natus, Canada) and it showed electrographic seizures arising from midline electrode Cz (Figures 1 and 2). In addition, inter ictal epileptiform abnormalities were seen arising from midline area, occasionally showing field over bilateral Centro-parietal areas.

MRI was done on the same day to rule out any brain metastases or hypoxic changes. MRI showed T2 flair hyper

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intensities involving bilateral thalami and was suggestive of early hypoxic ischemic changes (Figure 3). In view of the EEG findings, the patient was started on anti-seizure drugs. Follow up EEG was done; and there were no epileptiform activities, except for diffuse slow waves. MRI with contrast also did not reveal any lesions.



Figure 3: MRI brain showed T2 FLAIR hyperintensities involving bilateral Thalami, suggestive of early hypoxic ischemic changes.

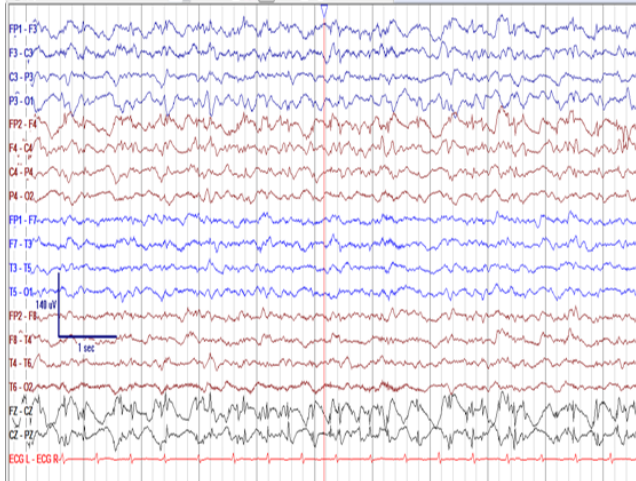


Figure 1: Bipolar longitudinal montage: Ictal onset consists of rhythmic spikes over midline area, with an evolution in frequency

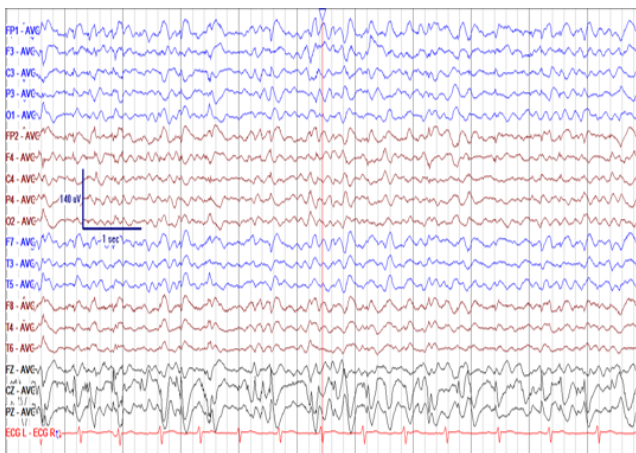


Figure 2: Common average reference montage showing the evolution of ictal rhythm.

3. Discussion

Kutluay et al studied around two thousand patients out of which thirty-five patients had midline spikes.⁴ In their study, ninety percentage of the patients were children. Sixty percent of them had focal seizures. Focal imaging abnormality was found in around half of the patients. They concluded that midline spikes denote focal epileptiform activity than fragments of generalized

discharges. Kapil Gurunathan et al reviewed EEG data from three hundred patients. They found that the incidence of midline/parasagittal epileptic spikes was less than 1%.⁶ Martina Vendrame studied children with midline spikes. In their study, most patients had complex partial seizures. Most children without epilepsy had developmental delay, attention deficit hyperactivity disorder, and pervasive developmental disorder.⁵ They came to the inference that isolated midline spikes may represent focal epileptiform activity but may also be found in normal children and in children with developmental and behavioral problems.

Out of over seven thousand EEGs reviewed by Yong et al, midline spikes were noted in about 17 patients out of which 14 had no known causes.⁷ Twelve patients (70.6%) had generalized tonic-clonic seizures and 5 had partial motor seizures. They suggested that midline spikes may be triggered by thalamocortical network in a generalized tonic-clonic seizure, or it may be from the parasagittal cortex in a focal motor seizure. In our case epileptiform abnormalities were confined only to midline electrodes.⁸

4. Conclusion

There have been a few studies describing midline epileptiform discharges in paediatric population, but very rare case reports in adults. Our patient had cardio respiratory arrest and transient hypoxia. Non-convulsive seizures are frequently seen in patients following hypoxic injury to the brain. In this patient EEG revealed midline epileptiform abnormalities, which is rarely seen in adults. The patient did

not have any focal structural abnormality or metastasis on imaging the brain. The possible explanation for the midline epileptiform discharges could be the transient hypoxia which he incurred. Further studies involving larger group of patients need to be done to understand this entity.

5. Source of Funding

None.


6. Conflict of Interest

None.

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