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Case Report Open Access

Triphasic Waves in EEG, an Atypical Finding in a Subacute Sclerosing Panencephalitis (SSPE) Adult Patient

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Abstract

Subacute sclerosing panencephalitis (SSPE) is a known rare cause of progressive myoclonic encephalitis of childhood and young adults due to a persistent measles virus infection. It is usually characterised by myoclonic jerks, cognitive decline , typical EEG findings that clinches its diagnosis and further supported by a high CSF and serum measles antibody titre.

Keywords: Triphasic Waves; EEG; SSPE

Introduction

SSPE is an inflammatory condition of the brain due a persistent mutant measles virus infection [1]. It affects 5-15 years of age but the oldest reported is 49 [2]. Patients with SSPE are usually infected with measles virus in the early age [3]. It is a fulminant condition leading to death within 5 years but short survival of few months is seen in 10 % [4].

Myoclonus, seizure, cognitive decline, behavioural problem, pyramidal and extrapyramidal features are common clinical signs reported [5-7]. The diagnosis of SSPE is made when three out of five criteria given by Dyken are fulfilled which involved clinical, EEG, CSF analysis, anti-measles titre and brain biopsy [8-10].

Periodic repetitive complexes at a regular interval are characteristic but many variants are reported. We hereby report a case of adult onset SSPE with atypical EEG findings of triphasic waves.

Case Report

We report a 20 year old girl admitted with cognitive decline and abnormal body movement for more than 16 month now bed ridden for last 3 month. On admission patient was conscious following command moving all four limbs. Myoclonic jerk involving limbs at a regular interval were noted .General physical examination was unremarkable. Detailed ophthalmological examination showed a normal fundus with no changes in the retina and optic nerve head. The kidney routine blood test, anti thyroperoxidase antibody, serum ammonia was normal. Viral markers were negative.

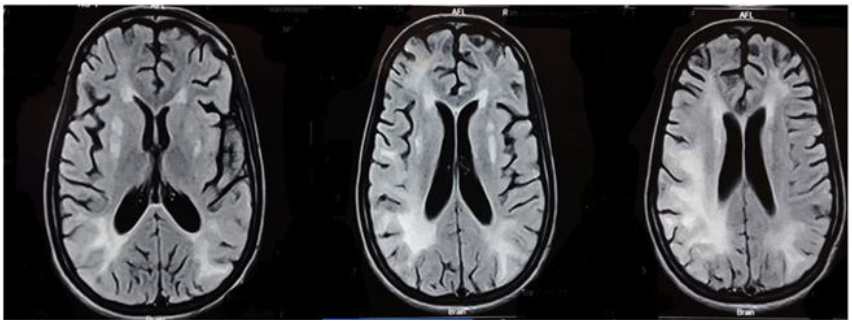

Figure 1: Axial FLAIR images shows bilateral asymmetrical high signal intensity in sub-cortical and deep while matter involving parietal occipital lobes with basal ganglia involvement

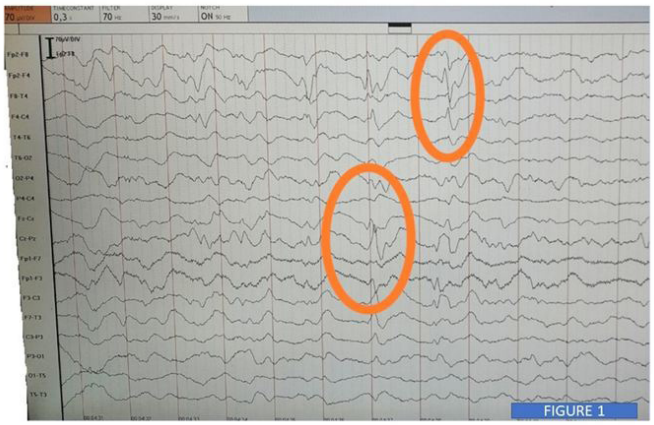

Figure 2: EEG of patient showing tri-phasic waves against a slowed background

CSF analysis shows normal protein and sugar level with <5 cell in background (lymphocyte). Anti-measles antibody, CSF to serum ratio was 1:8 which was suggestive of SSPE. Neuroimaging of the brain showed bilateral ill-defined asymmetrical white matter hyper intensity (Figure 1). EEG reveal slowing of background of theta to delta with triphasic wave noted intermittently in (Figure 2). Patient was managed conservatively but then later succumbs to her illness after one month.

Periodic complexes which are bilaterally symmetrical, synchronous, high voltage (200-500mv) bursts which repeat at a fairly regular 4-10 second intervals and have 1:1 relationship with myoclonic jerks is the described EEG finding of SSPE [7,8].

In the early stage, EEG shows normal study or nonspecific slow wave. Three types of EEG pattern are reported. Type-I EEG consist of periodic complex as described. Type-II EEG consists of periodic giant delta waves inter-mixed with rapid spikes as fast activity with a slow background. Type-Ill EEG pattern is where long spike-wave discharges interrupted by giant delta waves. Type III EEG has the worst outcome [11,12]. Many atypical findings like rhythmic delta or spike wave activity over the frontal regions are reported. The interval in between the periodic discharge further shortens with the progression of the disease [7-9].

Triphasic waves (TWs) are distinct but nonspecific electroencephalographic (EEG) pattern described as "blunted spike and wave". They are found in metabolic encephalopathy, toxic or hypoxic causes [13].

Triphasic waves are rarely reported in SSPE but definitely mention in a few studies [14]. Hypoxic or unknown metabolic pathology could be the reason for these waves and usually seen in the end stage of the illness where anoxic brain injury may set in.

Conclusion

Triphasic waves although rare can be seen in end stage of SSPE.

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