Extreme Delta Brush in Anti N-Methyl-D-Aspartate Encephalitis

Neeraj Balaini, Manoj Goyal, Ritu Shree[1], Vivek Lal

Department of Neurology, Postgraduate Institute of Medical Education and Research, Chandigarh, [1]Department of Neurology, All India Institute of Medical Education and Research, Rishikesh, Uttarakhand, India

Anti-N-methyl-D-aspartate receptor (anti-NMDAR) antibody-mediated encephalitis presents in young females with psychiatric disturbances, dyskinesias, and seizures. Prompt recognition and treatment can prevent morbidity and mortality. Antibody testing is not available readily in all parts of the world. Even if testing is available, report comes after 3–4 days, so a precious time window for treatment is lost. During this time, electroencephalogram (EEG) may help in diagnosis. A 21-year-old female presented to us with abnormal behavior, excessive laughing, and change in dressing habits for 2-week duration; generalized tonic–clonic seizures 2 episodes in the last 10 days; and not responding to external stimuli for 2 days. On examination, her vitals were stable, and she was in comatose state and extending her limbs to painful stimulus. She had perioral dyskinesias and bilateral extensor planters. Her hemogram, renal function test, and liver function tests were normal. Her contrast-enhanced magnetic resonance imaging brain was normal; cerebrospinal fluid examination showed mild pleocytosis. EEG was done which showed "extreme delta brush" pattern.

Extreme delta brush is a unique pattern seen in NMDAR autoimmune encephalitis although not specific for this condition.[1] On background of delta activity, superimposed extreme beta activity is seen which is called extreme delta brush pattern, especially seen in frontal leads [Figure 1]. Such extreme beta activity can be found in patients given benzodiazepines or barbiturates. Anti-NMDA antibodies are shown to modulate NMDAR-associated currents in brain and perhaps that leads to these unique EEG findings.[2] It is present in 30% of patients with NMDAR encephalitis.[3] If extreme delta brush pattern is present in appropriate clinical settings and after reasonably excluding infectious or metabolic causes, treatment for autoimmune encephalitis can be started without waiting for antibody report and saving the patient from serious morbidities. Anti-NMDA antibody was positive in our patient. Screening for malignancy/ovarian teratoma was negative in our patient. She was given intravenous methylprednisolone and plasmapheresis followed by rituximab and she recovered gradually.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

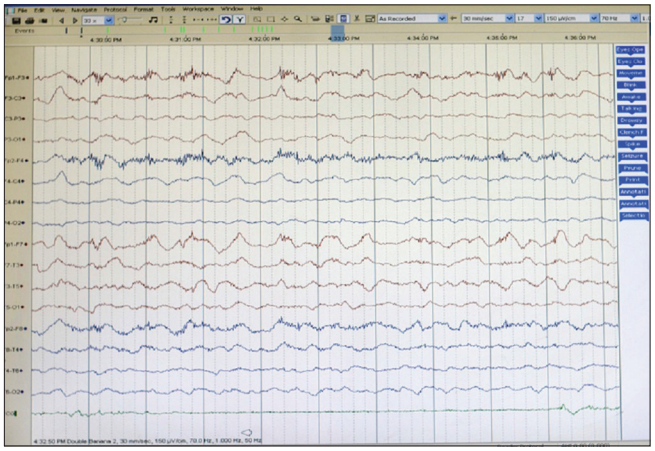

Figure 1: Extreme delta brush: Rhythmic delta activity (1–3 Hz) with superimposed beta (20–30 Hz) activity riding on each delta wave. This pattern is notable in bilateral frontal leads in the above electroencephalogram

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Conflicts of interest

There are no conflicts of interest.

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Address for correspondence: Dr. Vivek Lal, Department of Neurology, Postgraduate Institute of Medical Education and Research, Chandigarh - 160 012, India.
E-mail: vivekl44@yahoo.com

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