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WAVEFORM WINDOW #31

Anti-NMDAR Encephalitis and "Extreme Delta Brush"

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INTRODUCTION

Anti-N-methyl-D-aspartate receptor (NMDAR) encephalitis is becoming an increasingly recognized etiology that was previously described as unexplained encephalopathy and encephalitis (VanHaerents et al. 2014). The disease state initially presents with headaches, slight behavioral changes, fever, and dyskinesias. In a period of 24–72 hours, the state of the patient deteriorates to include: seizures (76%), paranoia and psychosis, catatonia, and eventual loss of consciousness leading to coma and mechanical ventilation. Neurotelemetry is warranted in this specific patient population, which typically demonstrates "extreme delta brush" (EDB) in 30% of patients with NMDAR encephalitis. The EDB pattern becomes evident as the illness progresses, however the specificity of the pattern is not yet known. If the presence of EDB is found, one should suspect NMDAR encephalitis (Schmitt et al., 2012).

CASE REPORT

The patient is an 18-year-old female with no prior significant medical history. Two weeks prior to admission, the patient had a reported "panic attack" over a recent break-up with her boyfriend. In addition to this incident, she reported taking "street drugs" and practicing "witchcraft." She was out of town, driving home, and called her mom to let her know she was lost. As her mother was also driving home, she saw her daughter pass her in the opposite direction. She immediately called her

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daughter, and during the call, the daughter said she was on a specific road, which her mother knew did not exist. Eventually, the patient made it home safely. That night, her mother stated that her daughter made some strange comments, however, at the time, she did not think much of it. After the patient went to bed, her mother awoke to her daughter screaming religious statements; she then fell against a wall in her room. The daughter then questioned her mother as to why she had knives and was threatening to kill her.

At this point, the mother called 911. By the time emergency medical services (EMS) arrived, the patient had run away from the house and they could not locate her. She came back to the house later, and when EMS questioned her, she stated she had gone for a drive to the beach, which was not true. The EMS suspected the patient was under the influence of alcohol or other drugs and took her to the local hospital. During the ambulance ride, the patient was screaming and acting in a hyper-religious state. After admission, the patient suffered her first seizure, became unresponsive, and was intubated.

EEG FINDINGS

Multiple tests were ordered, including a routine EEG, which showed encephalopathy with epileptogenic activity. The patient was not improving and was transferred to a higher level medical facility. After transfer, the patient was placed on neurotelemetry, which showed EDB (Figure 1).

CONCLUSION

The patient was later diagnosed with NMDAR encephalitis and no masses were found on computed tomography scan of the head. Abdominal ultrasound found a teratoma dermoid cyst, which has also been described in women with NMDAR encephalitis (Florance et al., 2009). The treatment of NMDAR encephalitis includes first- and second-line immunotherapy drugs, which have a 75% success rate, with good recovery. Unfortunately for this patient, as of the time of writing, she has been in a comatose state for 2 months with little to no progress.

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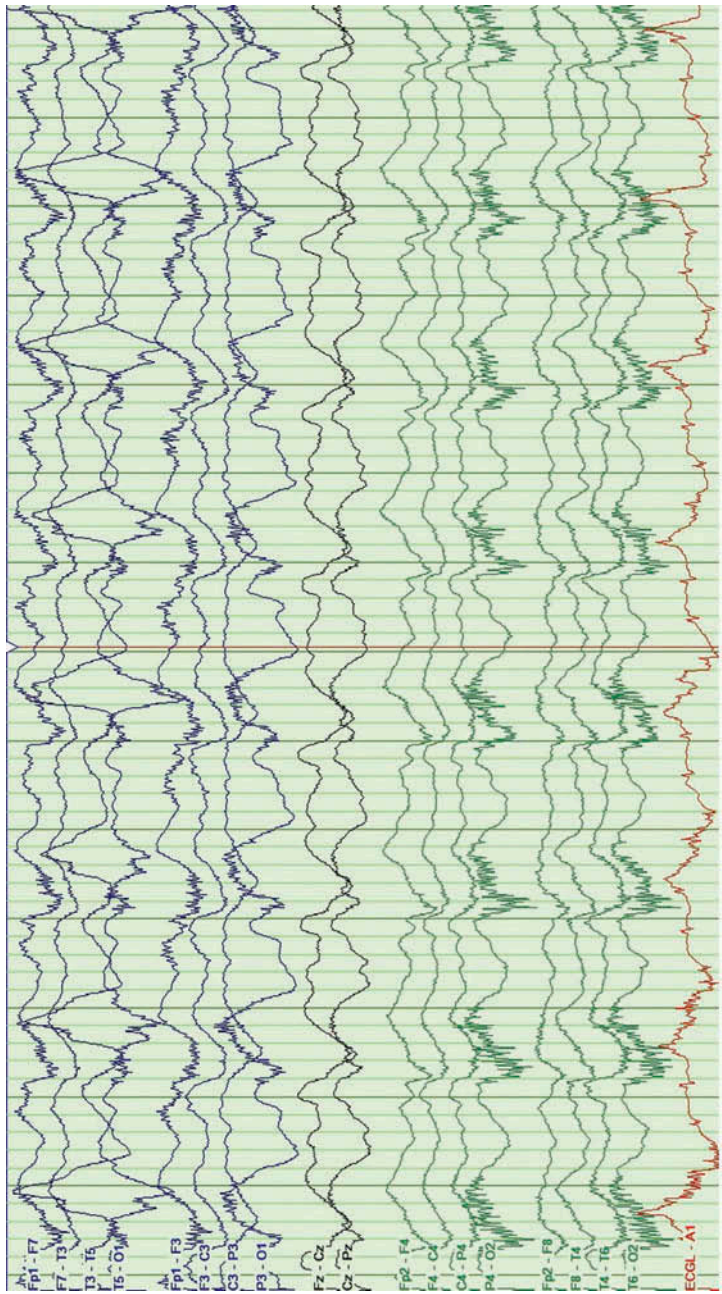

FIG. 1. Notice the "extreme delta brush" in the frontal polar and parietal-occipital channels. The sensitivity is 7 μV/mm and the EEG was recorded approximately 10–11 days after the patient was observed to have odd behaviors.