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Clinical letter

Refractory status epilepticus during pregnancy resolved by cesarian section

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1. Introduction

Status epilepticus (SE) in pregnancy imposes a therapeutic challenge to the neurologist. While the mother is under high risk of mortality and cognitive sequelae, prolonged seizures and antiepileptic drugs (AED) are potentially harmful to developing embryos [1]. In some refractory cases, parturition can be the only therapeutic option. We present two cases of SE in pregnancy resolved by parturition.

2. Case reports

Patient one was a 25 year-old primigravida who is on 26th week of her gestation. She presented with epileptic seizures with impaired consciousness, head deviation to right and clonic movements predominantly on her right side. Her pregnancy was uncomplicated until the day of her admission. Her medical history was unremarkable. Her neurological examination was within normal limits. Her blood pressure (BP) was monitored and maximum recording was 142/96 mmHg. Proteinuria was not detected. On the third day of her admission she developed convulsive SE. 10 mg IV midazolam (MDZ) followed by 1500 mg levetiracetam infusion were not enough to abort her convulsions. She was transferred to the intensive care unit (ICU). Simultaneous infusion of MDZ (0.6 mg/kg/h) and propofol (1.7 mg/kg/h) was able to stop her convulsions. At this time, electroencephalogram (EEG) revealed non-convulsive status epilepticus with periodic epileptiform discharges localized in the left temporo-occipital region (Fig. 1). Magnetic resonance imaging (MRI) showed hyperintesity in the left temporo-occipital cortex compatible with posterior reversible encephalopathy syndrome (PRES) (Fig. 2). Although she only had a single elevated BP recording and no proteinuria, the cause of PRES was presumed to be preeclampsia since no other cause could be identified. Within the following days, propofol (up to 4 mg/kg/h), thiopental (up to 1.5 mg/kg/h), levetiracetam (up to 2000 mg/d), lacosamide (up to 600 mg/d), topiramate (up to 600 mg/d), methylprednisolone (1000 mg/d for 5 days) were added to her therapy regimen with no significant resolution in the EEG activity. At the 17th day of her SE and 28th week of her gestation, her liver function tests were elevated; placental blood flow was reversed. She underwent caesarian section. Two days after delivery, epileptiform activity in EEG completely resolved. Unfortunately, her clinical course was further complicated with two bouts of severe sepsis, critical illness neuro-myopathy and hypoxic-ischemic encephalopathy due to sudden cardiac arrest.

The baby was cyanotic on delivery. He underwent cardiopulmonary resuscitation and stayed in the intensive care unit for 60 days. He also suffered from periventricular hemorrhage. After being discharged, he continued having occasional respiratory difficulties. His neurological milestones were within normal limits.

Patient two was 21 years old with a history of epilepsy. She was on the 33rd week of her gestation. She presented to the emergency department with eyelid myoclonic absence SE after discontinuing her AEDs. Her seizures could not be stopped with valproic acid (1500 mg/d), levetiracetam (3000 mg/d) and topiramate (400 mg/d) treatment. Lacosomide (400 mg/d) provided partial decrease in seizure frequency. Her EEG showed continuous generalized 2.5–3 Hz spike-slow wave complexes. The patient underwent caesarian section. After delivery, her seizures and epileptiform activity in EEG was completely resolved. Her baby was healthy and did not have any neurological problems.

MRI did not reveal cerebral venous thrombosis in either of the patients. The results of antibody tests for vasculitidis involving central nervous system (ANA, anti-ds DNA, anti-cardiolipin antibodies, SS-A, SS-B, p-ANCA and c-ANCA) and for autoimmune limbic encephalitis (NMDA-R, AMPA, CASPR2, LGI1, GABA-R and GAD) were negative in both patients.

3. Discussion

SE in pregnancy is rare nevertheless life-threatening both to the mother and to the fetus. Some of the identified causes for SE in pregnancy are, AED withdrawal; cortical venous thrombosis; eclampsia; PRES; subarachnoid hemorrhage and autoimmune encephalitis [1,2]. The etiology of SE in patient 1 was PRES. PRES cases without elevated BP were reported previously [2]. The triggering factor in patient 2 was AED withdrawal.

The proconvulsant effect of pregnancy is explained with multiple

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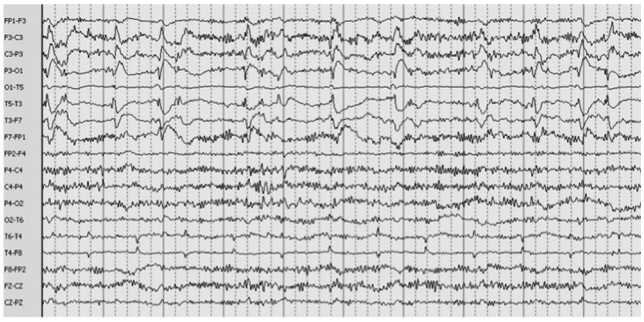

Fig. 1. EEG of the patient 1.

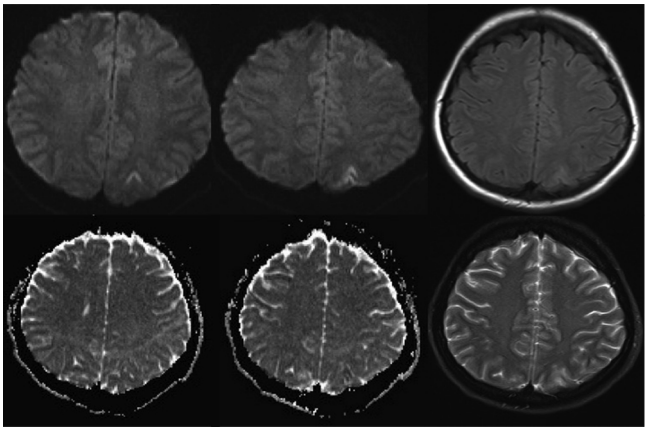

Fig. 2. MRI of the patient 1.

theories. Aberrant maternal immune adaptation to fetus may be the source of autoimmunity to brain tissues [1]. Increased neurokinin B; inflammatory cytokines; endothelins and tissue plasminogen activator are known to stimulate excitatory neuronal receptors, thereby causing seizures [3]. Seizures can also be exacerbated during pregnancy by AED noncompliance, AED pharmacokinetics, hormonal changes, psychological changes and behavioral changes [2].

Treatment of SE in pregnancy is a time-sensitive matter. SE is associated with high mortality rate and significant morbidity risk for the mother [1]. On the other hand, persistent convulsions can impede placental blood flow, while the AEDs used to treat seizure activity are potentially harmful to developing embryos [1]. Refractory SE (RSE) is defined as ongoing seizures despite first line AEDs. Termination of pregnancy has been reported to resolve RSE in some cases and is recommended since recurrent seizures can cause a significant risk to the fetus and mother [2,4]. The therapeutic effect of termination can be attributed to re-alteration of neuronal excitability, re-constitution of immunity and re-establishment of hormonal balance. The fact that RSE could only be abolished after delivery in our two patients further supports this model.

Although termination of the pregnancy is considered to be the rule in RSE cases [2] and it resolved the RSE in both of our patients, it is still a controversial issue. Especially, in 1st and 2nd trimester when the outcome of the fetus is critical, recommendation of termination imposes ethical and medicolegal problems. Unfortunately, there are no established standards on when termination should be recommended. In the cohort of RSE during pregnancy by Lu et,al. two patients underwent abortion in first trimester; 1 pregnancy was terminated at 28 weeks with poor fetal outcome; one twin pregnancy was carried to term with one healthy twin, while the other died in utero [1]. In both of our patients, we initially attempted to stop RSE with several AEDs. Only after being sure that these efforts were unsuccessful, we brought the termination option to the table and discussed it with the family.

In RSE cases, termination of pregnancy via delivery or abortion could be the only therapeutic option and should be delicately discussed with the family.

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Conflict of interest

None.

References

[1] Lu YT, Hsu CW, Tsai WC, Cheng MY, Shih FY, Fu TY, et al. Status epilepticus associated with pregnancy: a cohort study. Epilepsy Behav 2016;59:92–7.
[2] Rajiv KR, Radhakrishnan A. Status epilepticus in pregnancy: etiology, management, and clinical outcomes. Epilepsy Behav 2017;76(November):114–9.
[3] Wasseff S. Mechanisms of convulsions in eclampsia. Med Hypotheses 2009;72(January (1)):49–51.
[4] Jeong HS, Oh ES, Lee JH, Kim JM. Refractory status epilepticus spontaneously resolved by parturition. J Epilepsy Res 2011;1:29–31.