

Case Report

Plurietiologic Possibilities and Difficulties of Seizures Management in Pregnancy

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ABSTRACT: Background - Pre-existing pathology, the development of acute new one strictly dependent of the pregnancy or an independent acute or chronic medical problems generate a highly complex disease that requires a nuanced interpretation of the pregnant women in an attempt to identify the most favorable solutions for evaluation and treatment. **Case report** - 26-28 weeks pregnant women, 23 years old, known epilepsy, HIV encephalitis and pulmonary TB in inconsistent treatment with prolonged seizure status. Emergency air evacuation from a third degree medical center to regional center (first level) under general anesthesia. After 24 hours, conscious, without focal signs. Favorable ongoing pregnancy. **Conclusions** - Considering the medical history, we analyzed several possibly triggering and maintenance of the crisis elements so that clarification of them constituted the main challenges. Finding an imaging examination solution with minimal harming effect on the fetus was a key decision points. Tocography and excluding eclampsia as the etiology were the main reasons to refrain from practicing cesarean section and magnesium sulphate administration. Paralytic agents use, in particular succinylcholine was a decisional key point, considering the variation in serum cholinesterase activity in peripartum period. The phenytoin administration was also a difficult choice because of the risk of bradycardia to the fetus. No any adverse event as effects of the crisis and medical intervention on the mother reported to the newborn during the first 8 months of life, but cerebral palsy continues to concern before 24 months.

KEYWORDS: seizures, pregnancy, tocography, cesarean section, eclampsia

Introduction

Emergency management of pregnancy is always a challenge because of the risk of fetal damage induced by generating condition, medications, procedures and physiological changes that pregnancy induces to the maternal body.

Pre-existing pathology, the development of acute new one strictly dependent of the pregnancy or an independent acute or chronic medical problems generate a highly complex disease that requires a nuanced interpretation in an attempt to identify the most favorable solutions for evaluation and treatment [1].

Case report

We present a 23 years old woman case known epilepsy treated with carbamazepine and phenobarbitalum, 26-28 weeks pregnant brought by the ordinary ambulance to a level III medical center in epileptic status since 1 hour. The patient was out with HIV encephalitis and pulmonary TB in inconsistent treatment. BP 96/68mmHg. HR - 134/min. Normal blood glucose level and ECG, negative toxicological report. Fetal HR 100-115/min. Normal uterine tone.

After repeated diazepam administration with no significant response in crisis suppression, the patient was air evacuated (HEMS resuscitation team) to the regional medical center (general anesthesia, endotracheal intubation, mechanical ventilation / volume IPPV cycled) with IV. benzodiazepine dose supplementation and IV. Phenytoin administration - 15mg/kg.



a.



b.

Fig.1a,b - Air evacuation to County University Hospital Craiova

Initial crush induction sequence (succinylcholine) sustained by deep sedation (fentanyl, etomidate, diazepam). Under general anesthesia (maintained over 6 hours by the anesthesiologist) has cupped seizures but maintained tachycardia. At 7 hours, she has been extubated without further medical events.

At 24 hours conscious, without focal signs or subsequent seizures. Favorable ongoing pregnancy.

After 5 weeks – natural delivery of a 1936 grams, male newborn. No any signs of abnormal brain electrical activity or seizures to the baby related to the mother medical problems during the first 8 months of life, but considering the severe event and therapy cerebral palsy remains under suspicion until 24 months.

Discussions

The main key decision points were the etiology of seizure status, differentiation eclampsia, brain imaging investigation options, anticonvulsant and anesthetics medications, and the decision to perform caesarean section. Each of these assumptions could have an impact on subsequent management decisions regarding caesarean section of necessity, type and level of anesthesia, child monitoring:

The etiology of seizure status. We have considered several possibilities possibly triggering and maintenance of the crisis: eclampsia, epilepsy, HIV encephalitis outbreak, septic or other opportunist, or any intracranial process (including posttraumatic related to previous seizures), hypoglycemia, intoxication, overdose or withdrawal of anticonvulsant medication. Since toxicological examination was negative, with high probability one of the causes triggering or at least favoring, was constituted by suppressing their medication.

Differentiation eclampsia. Under normal uterine tone, normal blood count (platelet count $211 \times 10^6/l$), no proteinuria confirmed, normal liver and renal function, LDH and creatinine and coagulation status, no haemolysis, normal and D dimers level, BP progress and tocography s - decided that determinism is conceivable excluding eclampsia[2]. That was the reason of do not attempt magnesium sulphate administration even if, a probability of eclamptic development assumed, very low gestational age and possible delivery needs considered in short horizon of time. In worst-case scenario of imposed hurry delivery, the fetal cerebral risks in this situation were appreciated as very high but the probability of

this development of the situation was appreciated as being low. In the same time the cumulative effect of bradycardia induced by magnesium sulphate on the fetus would be reasonable to refrain of that and keep it as a backup solution in eventuality of repeated seizures [3].

Brain imaging investigation. The options were related to performing brain CT (abdominal protection) or MRI (more acceptable to the fetus), considered mandatory to exclude certain items that require special intervention (as brain hemorrhagic event). S - Decided and performed MRI even if CT perhaps more reliant in view of acute minor bleeding. No acute pathological elements showed.

Anticonvulsant and anesthetics medications. Concern was generated by using of succinylcholine, followed by rocuronium (serum cholinesterase activity decreases 30% during pregnancy and remains depressed postpartum [4] and subsequently the need of phenytoin administration. However, is not evidenced prolonged recovery in term-pregnant patients related succinylcholine [5] but cardiac effects on the fetus are not well known. There were no reported any dysrhythmias or bradycardia to the fetus following conjugate administration of this drug to the mother.



Fig.2. Abdominal echography – ED Craiova – normal ongoing pregnancy

The decision to perform caesarean section was related to potential fetal distress caused by prolonged hypoxia, induction and maintenance of long term general anesthesia and phenytoin administration [2] Being small gestational age, management to ensure acceptable adaptation and aggression already exercised on the fetus - considered that keeping it into the „natural incubator”, army expectative, tocography and mother observation is more profitable to improve prognosis.

Given to the patient history is never easy to determine the cause of the current crisis and

decide further management, it may be necessary invasive investigations, over which the decision must be nuanced and custom. In the same time, the age of the pregnancy could induce confusion with eclampsia, and the specific management was sensible different. Using antihypertensive therapy administration and volume replacement in attempt of pressure and under perfusion of the placental bed control (which determine uterine ischemia and worsening of the fetus outcome) could induce interstitial pulmonary oedema [6] or rising intracranial pressure especially if preexisting damages, but eclampsia is an acute life-threatening complication of pregnancy and rapid identification and therapeutic decision (including assuming cesarean section) is crucial.

The existence of brain damage and a previous seizure induced background assumption as at least maintenance factors of the crisis but the imaging examination decision was a difficult one, in attempt to choose the minimal harming effect on the fetus and an acceptable sensitivity and accuracy of the result.

Concerns about the cumulative effects of phenytoin on succinylcholine on fetal heart rate and rhythm - no confirmed, no any bradycardia or other cardiac dysrhythmia was reported and waiting on decision of cesarean section was beneficial.

Conclusions

Although it supported increasing the frequency and duration of epilepsy seizures during pregnancy, treatment neglect condition requires exclusion documented as another cerebral etiology (HIV, trauma, toxic context, acute hemorrhagic event) and particularly eclampsia.

Crush induction decision imposed in the context of a very prolonged, severe seizures, air evacuation and anticipating an extended brain imaging investigation. Mivacurium could be an alternative to succinylcholine, but succinylcholine was an option that has not generated any adverse elements from mother to fetus.

Phenytoin administration was mandatory to stop seizures and has not caused either bradycardia or other cumulative adverse effects to the fetus

Refrain from opening delivery was a favorable decision to the fetus, allowing growth

to continue, although it may be controversial given mother's medication type and dosage administered [7].

Severe flightiness could rather be a trigger-to-trigger brain suffering (and hence to seizures in children) than the continuation of anticonvulsant treatment with maximum load.

Complex pathologic and evolutionary context imposes upon the practitioner in emergency medicine at the systematic evaluation of both the mother and fetus to systematic approach and maximal emergency management providing to ensure and improvement vital functions, to prevent of secondary brain injury and several systemic side effects problems (induced by hypoxia, agitation, hyperthermia) and a multidisciplinary decision for the benefit of well weighed both, even if the risk of maternal plurimedicalisation apparently exhibits risky on the fetus.

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