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EPIDURAL ANESTHESIA OF C-SECTION IN PATIENT WITH CHIARI MALFORMATION AND EPILEPSY

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INTRODUCTION

Arnold-Chiari malformation is a group of congenital diseases characterised by the prolapse of hindbrain structures below the level of the foramen magnum. Pregnancy and delivery as well as an inadequate anesthesia conduction may worsen the disease course.

CASE DESCRIPTION

We present the case of successfully conducted epidural anesthesia in the patient with asymptomatic, surgically untreated, Chiari I type malformation with concomitant epilepsy. The informed consent from patient for publication was obtained.

Twenty nine-year-old woman, ASA II, was admitted to the clinic for planned caesarean section. Obstetrical status: first singleton pregnancy, breech presentation at 39 weeks of gestation. Her neurological history was complicated by focal epilepsy. The first epilepsy attack was registered in 2015. Magnetic resonance imaging (MRI) of the brain was performed that revealed Chiari I type malformation with cerebellum tonsils prolapsed through the foramen magnum for 7 mm without the signs of brain stem compression and syringomyelia. Antiepileptic treatment and conservative management of Chiari malformation with MRI control once per year were recommended. The patient refused from specific antiepileptic treatment. Epilepsy attacks repeated 2–3 times per year and lasted for 1–2 minutes without any consequences. There were no epilepsy attacks during the pregnancy.

Because of patient's refusal of vaginal delivery in breech presentation, caesarean section was planned. Preoperative examination included physical and laboratory examinations (complete blood count, urine analysis and coagulation test), as well as consultation of neurosurgeon. The patient's weight before pregnancy was 48.5 kg, at the time of admission – 64.3 kg. The patient's height was 160 cm, BMI – 25.1. Data of physical and laboratory examinations were unremarkable.

Although spinal anaesthesia is not contraindicated, epidural anaesthesia was chosen, as far as there is a potential risk of anaesthetic-related arachnoiditis, as well as symptomatic cerebrospinal fluid leak, during spinal anaesthesia [5].

Before the operation the patient was consulted by neurosurgeon and no contraindications for caesarean section and epidural anaesthesia were found.

On the operation day the patient's peripheral vein was catheterised, 1 g of ampicillin was injected intravenously one hour prior to the skin incision. After admission of the patient to the operation room non-invasive monitoring of blood pressure (every two minutes), heart rate, peripheral blood saturation and body temperature was established. In aseptic conditions epidural space catheterisation was performed in sitting position by Tuochy 18 gauge needle at the level of L_3–L_4 under the local skin anaesthesia with 3.0 ml of 1% lidocaine solution; epidural catheter was introduced cranially for 3 cm. Test dose – 1.5% lidocaine – 3 ml with epinephrine 5 мg ml-1. The main anaesthetic dose – 0.75% ropivacaine was divided into 3 portions of 5 ml injected with the 5 minutes interval after the evaluation of test dose. Complete sensor-motor block at the level of T6 was achieved 122 minutes after the main

anesthetic dose injection. At the beginning of the operation: BP – 108/68 mmHg, HR – 84 bpm. The baby was delivered on the first minute, Apgar score - 8. After umbilical cord cutting 5 units of oxytocin were injected intravenously. Since the course of operation was uncomplicated, the woman was then transported to the intensive care unit and in three hours she was transferred to the postpartum department and discharged after 5 days without seizures or any complications.

DISCUSSION

Arnold-Chiari malformation is a group of congenital diseases characterised by the prolapse of hindbrain structures below the level of the foramen magnum.

Type I is characterised by abnormal form of cerebellar tonsils that are displaced below the level of foramen magnum. This type of Chiari malformation is the most favorable one concerning the course [4].

Chiari malformation occurs in 0.1–0.5 percent of population [4].

In the majority of cases, the mode of delivery in this group of patients is caesarean section. Valsalva manoeuvre in the first period of labour may lead to significant deterioration of neurological symptoms. So, in the presence of symptoms of increased intracranial pressure, as well as significant syringomyelia (more than 75% of the diameter of the spinal cord at the same level) caesarian section is indicated. In the absence of clinical manifestations, as well as in pregnant women who had surgical decompression, operative vaginal delivery can be attempted. In our case, the cesarean section was performed because of patient's refusal from vaginal delivery attempt in breech presentation of the fetus.

Both general and epidural anaesthesia are possible in patients with or without previous surgical decompression [2, 3]. If there are signs of increased intracranial pressure and no surgical decompression was performed, general anaesthesia is an anaesthesia of choice [3]. When performing general anaesthesia, superficial level of anesthesia should be avoided, using narcotic analgesics before the extraction of the fetus and neonatologists should be informed about this.

Spinal anaesthesia is not contraindicated but there is a potential risk of anaesthetic-related arachnoiditis and symptomatic cerebrospinal fluid leak that may affect the course of Chiari malformation.

CONCLUSIONS

In our opinion, epidural anaesthesia is safe in patients with asymptomatic forms of Chiari malformation and may be used even if no surgical correction was performed. The decision about the method of anaesthesia should be made by anesthesiologist in collaboration with neurosurgeon and obstetrician. Seizure development on the third day after the operation, in our opinion, was not related to epidural anesthesia and Chiari malformation but was a manifestation of uncontrolled course of epilepsy, since the patient did not receive any antiepileptic drugs.

Since Chiari malformation is rather rare pathology, data about anesthesiological management of caesarean section in this group of patients are scarce, randomised controlled studies concerning the safety and advantages of different methods of aneasthesia in these patients are needed.

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