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EFFECT OF POSTOPERATIVE ANALGESIA METHOD ON INTRAABDOMINAL PRESSURE IN NEWBORNS AT RISK OF ABDOMINAL COMPARTMENT SYNDROME

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Background and Goal of the Study:
Intraabdominal pressure (IAP) is a steady state pressure in abdominal cavity. Normally it is about 5-7 mm Hg in adults and nearly 0 in children. Persistent IAP rise higher than 10 mm Hg in children is called intraabdominal hypertension (IAH), and its combination with organ dysfunction – abdominal compartment syndrome (ACS). ACS is associated with high mortality rate. We hypothesized that the postoperative analgesia methods provide influence on the IAP level throw the abdominal wall compliance and intestine function state.

Materials and Methods:
Twenty newborns aged 0-28 days with body weight of 1200-4300 g who had undergone surgery due to gastroschisis, omphalocele and necrotizing enterocolitis were enrolled in the study. Children were randomized into two groups depending on postoperative analgesia method. Children in experimental group (group E, n=10) had continuous epidural analgesia in postoperative period (Th9-Th10 level, bupivacaine 0.2%, 0.2 mg/kg*hour). In children of control group (group M, n=10) postoperative analgesia was performed with continuous intravenous morphine infusion (20 mcg/kg*hour). IAP (mm Hg) was measured 4 times per day postoperatively in all children through urinary catheter. We also detected the days of first bowel movement, start of enteral nutrition and first defecation. Unpaired t-tests were used to analyse the differences between groups and a P-value of <0.05 was considered statistically significant.

Results and Discussion:
Children of epidural group compared to controls had significantly 1.5-fold lower values of IAP (6.9±0.6 and 10.6±0,5 mm Hg, respectively, P <0.05). The children in epidural group presented earlier restoration of bowel function: the time of the first bowel movement (3,5±1.0 and 7,5±1,8 days, respectively, P <0.01), first defecation (4,5±1,5 and 9,5±0,5 days, respectively, P <0.01) was 2-fold shorter than in control group. The enteral nutrition was started on the day 5±0,9 in epidural group and on the day 9±0,7 in the morphine group (P <0.01). Epidural anesthesia enhances splanchnic circulation and promotes paretic ileus resolution. This leads to IAP decrease, ACS risk reduction and possibility of early enteral nutrition. Main study results are shown in Table:

	Group E	**Group M**
IAP (mm Hg)	6.9±0.6	10.6±0,5**
First bowel movement (day)	3,5±1.0	7,5±1,8*
Start of enteral nutrition (day)	4,5±1,5	9,5±0,5*
First defecation (day)	5±0,9	9±0,7*

*P <0.01, **P <0.05

Conclusion: Postoperative epidural analgesia in newborns after abdominal surgery leads to intraabdominal pressure decrease and earlier restoration of intestine function compared to systemic opioid analgesia.

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