



Clinical analysis of the effect of preemptive analgesia with parecoxib sodium on the corresponding index in cesarean section

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ABSTRACT

Objective: To explore the application of parecoxib preemptive analgesia effect on maternal inflammatory factor, substance P and the stress index in cesarean section. **Methods:** A total of 84 cases of cesarean section in our hospital from April 2015 to February 2017 were selected and randomly divided into the observation group and the control group with 42 cases each. The observation group received parecoxib sodium before anesthesia induction to 30 min, and control group was given normal saline, respectively. The venous blood samples were collected at the end of the operation, 30 min, 4 h, 8 h and 12 h after operation respectively. The inflammatory factors, P substances and stress indexes were compared between the two groups before and after operation. **Results:** Substance P in the two groups increased at the end of 30 min after operation, and reached a high peak at 4 h after operation, and then decreased gradually. E (epinephrine) and NE (norepinephrine) reached peak values at 30 min after surgery and then decreased gradually. After the operation, the 30 min, 4 h, postoperative 8 h and postoperative 12 h, P, E and NE indexes in the observation group were lower than those in the control group at the same time point, and the difference was statistically significant. **Conclusion:** The clinical effect of parecoxib sodium preemptive analgesia in cesarean section is better. It can effectively reduce inflammatory reaction, relieve pain, relieve stress reaction and promote postoperative recovery. It is recommended to be widely used in clinic.

1. Introduction

The postoperative pain is mostly acute nociceptive pain. The body is prone to many physiological and pathological changes, which affect the postoperative recovery^[1,2]. There is a difference between postoperative pain and general postoperative pain. Apart from the local inflammatory pain in the incision, there is also a contraction pain in the uterus during the recovery. If the pain cannot be effectively controlled, it can easily affect the secretion of milk. Preemptive analgesia refers to the use of related measures to prevent pain, sensory afferent and central nervous sensitization before nociceptive stimulation, and then to alleviate the pain effect. Parecoxib sodium is a new non-steroidal drug^[3]. In recent years, it has been widely used in the field of surgical analgesia. Its Antipyretic, analgesic and

anti-inflammatory effects have been unanimously recognized by clinical workers. In this paper, the application effect of parecoxib sodium preemptive analgesia in cesarean section was analyzed.

2. Data and methods

2.1. Clinical data

A total of 84 cases of cesarean section in our hospital from April 2015 to February 2017 were selected and randomly divided into the observation group and the control group with 42 cases each. The observation group received parecoxib sodium before anesthesia induction to 30 min, and control group was given normal saline, respectively. The observation group was 22-40 years old, 28 primipara, 14 pregnant women, 37-41 weeks pregnant, and weight 43-59 kg. The control group was 23-41 years old, 30 primipara, 12 pregnant women, 37-40 weeks pregnant, and weight 45-63 kg. No statistically significant difference was found in the age, gestational

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age, weight and the number of women who had undergone primary care ($P>0.05$). Inclusion criteria: (1) in line with the maternal cesarean section index; (2) older than 20 years old; C.ASA (American Society of anesthesiologists I-II); the study of D. mothers and their families to participate voluntarily, and signed informed consent. Exclusion criteria: (3) with heart, lung, kidney and other organs in acute and chronic disease; B. non-steroidal drug allergy; lead C. with various causes of chronic pain diseases and long-term use of analgesic drugs history; D. spirit, neuropathy, cannot smooth communication and coordination treatment.

2.2. Therapeutic method

All patients were set up venous access at preoperative 1H, ECG monitoring, continuous monitoring of maternal heart rate, blood pressure, PaO₂ and so on. On the basis of the observation group before anesthesia induction to 30 min parecoxib sodium (Pfizer Inc, H20130155) 40 mg + 0.9%NaCl 2 mL intravenous injection; the control group was given intravenous injection of 0.9%NaCl 2 mL. The two groups were at the end of surgery after removal of epidural catheters, given routine intravenous analgesia (100 g sufentanil +10 mg dezocine + 4 mg + 100 mL 0.9%NaCl, PCIA Oberoi) background dose is 2 mL per hour, each time 15 min PCA 0.5mL.

2.3 Curative effect analysis

The blood samples were collected from all patients before operation, after operation, 30 min, 4 h, 8 h and 12 h after operation. Substance P was determined by radioimmunoassay[6], and E and NE were determined by high performance liquid chromatography (electrochemical) [6,7].

2.4 Statistical method

All the data were statistically processed by SPSS 17.0. The results of measurement data between groups were Mean \pm SD, and the t test was used. The difference was statistically significant with $P<0.05$.

Table 1.
Comparison of P substances in two groups after operation (pg/mL).

Group	n	Time	P substance
Observation group	42	Before surgery	90.59 \pm 7.26
		Postoperative 30 min	97.86 \pm 8.37*
		Postoperative 4 h	126.72 \pm 14.46*
		Postoperative 8 h	124.90 \pm 12.07*
		Postoperative 12 h	111.89 \pm 8.72*
Control group	42	Before surgery	90.67 \pm 8.02
		Postoperative 30 min	138.13 \pm 7.79
		Postoperative 4 h	149.25 \pm 7.06
		Postoperative 8 h	140.37 \pm 9.07
		Postoperative 12 h	123.59 \pm 8.13

Note: the control group after treatment, * $P<0.05$.

3. Results

3.1. Substance P comparison between the two groups after operation

There was no significant difference between the two groups in preoperative P substances ($P>0.5$). It began to increase at 30 min after operation and reached a high peak after 4 h and the 8 h decreased gradually after operation. After the operation, the 30 min, 4 h, postoperative 8 h and postoperative 12 h, P indexes in the observation group were lower than those in the control group at the same time point. The difference was statistically significant ($P<0.05$), as shown in Table 1.

3.2 Comparison of stress indexes between two groups after operation

The difference of E and NE between the two groups before operation was not statistically significant ($P>0.05$). They began to reach a high peak at 30 min after operation and decreased after 4 h. After the operation, the 30 min, 4 h, postoperative 8 h and postoperative 12 h, E and NE indexes in the observation group were lower than those in the control group at the same time point. The difference was statistically significant ($P<0.05$), as shown in table 2.

4. Discussion

In recent years, more and more women choose to have cesarean section. The pain caused by incision pain and contraction of uterus caused severe influence on the recovery of the parturient. It was the pain memory of some parturients, and the peak value of pain mostly occurred within 24 h after operation. If the effect of postoperative analgesia is not good and because of fear of pain, the mother refuses to get out of bed as soon as possible and then prolongs

Table 2.

Comparison of stress indexes between two groups after operation (pmol/mL).

Group	n	Time	E	NE
Observation group	42	Before surgery	236.5±113.7	1 299.6±517.4
		Postoperative 30 min	531.7±119.6 [*]	1 793.6±440.3 [*]
		Postoperative 4 h	417.8±130.0 [*]	1 435.6±370.7 [*]
		Postoperative 8 h	299.5±129.8 [*]	1 320.4±420.5 [*]
		Postoperative 12 h	239.6±128.6 [*]	1 300.5±329.7 [*]
Control group	42	Before surgery	234.9±121.6	1 296.7±578.6
		Postoperative 30 min	917.0±179.8	2 325.1±450.3
		Postoperative 4 h	783.6±114.9	1 890.4±427.6
		Postoperative 8 h	330.5±129.1	1 642.5±460.2
		Postoperative 12 h	260.8±120.5	1 412.9±449.3

Note: the control group after treatment, ^{*}P<0.05.

the recovery period. In addition, most postpartum women suffer from stress, nervousness, fear and other bad emotions, inhibiting prolactin secretion[8-10], affecting normal breast-feeding. At the same time, postoperative pain can induce severe stress reaction, activate inflammatory factors and cause a variety of pathological and physiological changes.

At the beginning of producing trauma; it induced release and expression of PGE2 (prostaglandin E2) and COX-2 (cyclooxygenase-2) and reduced the pain threshold. After injury, the tissues release inflammatory mediators, and the thalamus and cerebral cortex receive peripheral receptor stimulation to produce pain[11-14]. Therefore, effective perioperative analgesia for cesarean section can provide safer and comfortable conditions for the rehabilitation of women. Which can reduce pain and maintain the stability of the environment. Most of the current application of clinical anesthesia for pain relief in the perioperative period of stress and inflammatory reaction, the use of the drugs such as propofol and sufentanil anesthesia has been recognized, but the long-term clinical found that the dose increase may inhibit respiration, drowsiness and other complications, and even cause serious impact on cognitive function[15-17]. At present, our hospital takes preemptive analgesia with parecoxib sodium as the first choice. The drug is a selective inhibitor of COX-2. It can prevent the synthesis and release of PGS (prostaglandin). Rapid hydrolysis occurred after intravenous injection to form celecoxib, which blocked the synthesis of PGS by AA (arachidonic acid)[18]. Then it can improve pain threshold, relieve pain, inhibit the activation and proliferation of inflammatory cells and reduce the incidence of inflammatory reaction.

Clinical data show that postoperative wound repair is closely related to a variety of cytokines and inflammatory mediators, while releasing large amounts of lysosomes and toxic microorganisms, resulting in local tissue damage. But report statistics said, P substances has been reported to play a key role in tissue damage[19]. When the organism is in the physiological state, the anti-inflammatory and proinflammatory factors are maintained in a relatively fragile equilibrium environment. When the trauma occurs, it breaks the balance and promotes the proliferation of inflammatory

cells. Therefore, stimulating injury and proinflammatory factors are reciprocal feedback relationships. Many data indicate that IL-6 and TNF- α can express in the early stage of trauma, and they are the most sensitive markers of tissue damage[20-22]. Parecoxib sodium can effectively inhibit the release of inflammatory factors and alleviate tissue damage after cesarean section, and the results are consistent with the above data. When trauma occurs, primary sensory nerve terminals are impaired, C and A fibers release a pain information neurotransmitter, substance P. A large number of substance P in the spinal cord affects nociceptive transmission. At the same time, the nociceptor around the wound are activated, and then release the substance P. While more nociceptor is activated, forming a vicious cycle and affecting the wound healing. Which is not conducive to postpartum recovery. It also reported that substance P could also promote the metabolism of arachidonic acid in Peanut[23]. The above results show that substance P began to increase at 30 min after operation and reached a high peak after 4 h and the 8 h decreased gradually after operation. After the operation, the 30 min, 4 h, postoperative 8 h and postoperative 12 h, P substance indexes in the observation group were lower than those in the control group at the same time point. Which show that the application effect of parecoxib preemptive analgesia is obvious, and it can effectively alleviate postpartum pain, relieve the pain. It also can in a certain extent improve the tension, anxiety and fear because of pain and other negative emotions, and accelerate the postoperative recovery.

In the perioperative period of cesarean section, the organism is damaged and caused inflammatory reaction and stress stimulation, which can make peripheral and central nervous sensitization. Through a series of reactions, it produces pain and especially serious impact on the pain of ion channels. It also greatly influences the regulating function of glial cell and protein kinase. Catechol and amino produced catecholamines when occurred enzymatic action in the position of sympathetic nerve and adrenal medulla, which contains E and NE. While E and NE level is an important index for clinical surgical stress, and expressed by the sympathetic adrenal system. It usually rises rapidly after a few seconds of trauma. The higher the concentration in plasma, the more stress stimulation. The

above results showed that N and NE of two groups began to reach a high peak at 30 min after operation and then decreased gradually after 4 h. Which is consistent with the data. After the operation, the 30 min, 4 h, postoperative 8 h and postoperative 12 h, E and NE indexes in the observation group were lower than those in the control group at the same time point. It shows that the application of parecoxib sodium preemptive analgesia can effectively block the damage to the body caused by the operation and significantly reduce the postoperative stress reaction.

In summary, the application clinical effect of parecoxib sodium preemptive analgesia in cesarean section is good. It can effectively reduce inflammatory reaction, relieve pain, relieve stress reaction and promote postoperative recovery. It is recommended to be widely used in clinic.

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