Effect of epidural analgesia and intravenous analgesia on serum CA125, VEGF-C and PGE2 in patients with hysteromyoma

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ABSTRACT

Objective: To investigate the effects of epidural analgesia and intravenous analgesia on serum Cancer 125 (antigen 125, CA125), vascular endothelial growth factor-C (Vascular endothelial growth factor-C, VEGF-C) and prostaglandin E2 (Prostaglandin VEGF-C) in patients with uterine fibroids. Methods: A total of 98 cases of uterine myoma treated in our hospital during September 2017 in September 2015 were selected and divided into 49 cases in the observation group and 49 cases in the control group according to the random table method. The two groups were all anaesthetized by subarachnoid block. The control group was controlled by self controlled intravenous analgesia, and the observation group was treated with epidural anesthesia. The operation time and the amount of intraoperative bleeding were compared between the two groups, and the changes of preoperative and postoperative 48 h VAS score, CA125, VEGF-C and PGE2 levels. Results: There was no statistical difference between the two groups of operation time and intraoperative bleeding. Two groups of postoperative 3 h, postoperative 24 h and 48 h VAS score decreased compared with preoperative; the observation group 3 h, 24 h and 48 h VAS scores were lower than those in the control group. Two groups of postoperative 48 h serum CA125, VEGF-C and PGE2 levels decreased; postoperative 48 h serum CA125, VEGF-C and PGE2 levels after operation in the observation group lower than in the control group. Conclusion: The effect of epidural analgesia on uterine myoma is obvious, and it can reduce the level of CA125, VEGF-C and PGE2, which is of great significance.

1. Introduction

Hysteromyoma is a common benign tumor of female reproductive tract, and its incidence is on the rise, which seriously affects women’s physical and mental health and quality of life[1]. Clinical investigation shows that more than 20% of women of childbearing age have uterine fibroids, and there are no obvious symptoms, and a few can appear longer period, increase in leucorrhea, increase in volume and lower abdominal mass[2]. At present, the specific pathogenesis of uterine fibroids has not been fully elucidated, and it is generally considered to be an estrogen-dependent tumor, which is related to estrogen, environmental factors and gene mutation[3]. Surgery is the main method for the treatment of uterine fibroids, but surgical trauma and postoperative pain are harmful stimulation, which can cause significant stress response in the body and affect the quality of life of patients[4,5]. The effective analgesic method and anesthetic method are of great significance. This study was to investigate serum in patients with uterine fibroids epidural analgesia Cancer antigen 125 (Cancer antigen 125, CA125), Vascular endothelial growth factor C (Vascular endothelial growth factor C, VEGF-C) and Prostaglandin E2 (Prostaglandin E2, PGE2). See the relevant report below.

2. Materials and methods

2.1 Clinical data

In September 2015, 98 patients with uterine fibroids admitted to the hospital during September, 2017 were selected. Inclusion criteria: preoperative gynecological B ultrasound and cervical fluid based cytological examination (TCT) proved to be uterine fibroids; The American association of anesthesiologists (ASA) grades I-II; To sign informed consent; It is approved by the ethics committee of the hospital. Exclusion criteria: the combination of other malignant
neoplasms; The patients with serious abnormality of lung, kidney and liver; The mentally ill; It is a taboo against narcotics. There were 49 cases in the observation group and 49 in the control group according to the random table method. The average body mass index (BMI) \((24.56 \pm 2.41)\) kg/m\(^2\) was observed in 49 patients aged 35 to 67 years old and average age \((50 \pm 3)\). Among the 49 patients in the control group, the average age was 37-64 years old and the mean age \((49 \pm 4)\), with an average BMI of \((24.38 \pm 2.27)\) kg/m\(^2\). The general information of the two groups is comparable.

2.2 Method

Two groups of patients in 30 min before anesthesia muscle note 1 mg/kg stability and 0.01 mg/kg atropine, home after opening peripheral vein, regular monitoring patients blood oxygen saturation, breathing rate, heart rate and blood pressure and other vital signs. Two groups of patients with subarachnoid block anesthesia, specific as follows: first L1-2 epidural puncture, puncture success after 3 cm to the patient’s head, and to fix the catheter, and injection of 3 mL of 2% lidocaine, observe 5 min, if no abnormalities, the line of L3-4 subarachnoid block, after being puncture success into 3 mL 0.5% heavier than because the proportion of mixed liquid, plane and adjust the level of anesthesia plane to T6 test anesthesia, surgery. During the operation, midazolam was given 2-4 mg of sedation, and in accordance with surgical and anaesthesia requirements, 5-20 mL 2% lidocaine could be administered to maintain anesthesia during operation. Control group: give self-control intravenous analgesia, 2 ug/kg sufentanil + saline to 100 mL, 5 mL to load, delivery speed setting of 2 mL/h, time locking for 15 min, self-control dose for each 0.5 mL. Observation group: mixture for epidural analgesia, 0.2% ROM pp paid 100 mL, finish operation when the epidural catheter to give 5 mL 0.2% ROM pp because load, continuous analgesia pump and continuous pumping 2 mL/h, time locking for 15 min, self-control to dose every 0.5 mL.

2.3 Observation indexes

(1) Observe the operation time and intraoperative hemorrhage of the two groups; (2) to observe the pain condition of the two groups before and after the operation, and the pain visual simulation score method (VAS) was used to evaluate the score from 0 to 10, and the higher the score, the more severe the pain; (3) 48 h observed two groups of preoperative and postoperative serum CA125, VEGF-C and PGE2 levels change, respectively in patients with preoperative and postoperative 48 h acquisition peripheral venous blood, to 15 cm centrifugal radius, speed 3 000 r/min, the centrifugal 10 min, the separation of serum, under 70 °C under test.

2.4 Statistical methods

Statistical software SPSS 22.0 was used for analysis, and \(P<0.05\) was considered statistically significant. For the counting data, the test method is the \(\chi^2\) test, and the method is the percentage; For the measurement data, the test method is t test, and the method is mean plus or minus standard deviation.

3. Results

3.1 Comparisons of intraoperative time and intraoperative blood loss between the two groups

See table 1. There was no statistical difference between the two groups in operation time and intraoperative blood loss \((P>0.05)\).

3.2 Comparisons of VAS scores between the two groups before and after surgery

Are shown in Table 2. There was no significant difference in VAS scores between the two groups \((t=0.326, P\ BB 0.05)\). The scores of the two groups were lower than that before surgery \((P<0.05)\).

### Table 1.
Comparison of two groups of operation time and intraoperative bleeding.

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Operation time (min)</th>
<th>Intraoperative bleeding (mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>observation</td>
<td>49</td>
<td>91.32±5.46</td>
<td>67.39±5.41</td>
</tr>
<tr>
<td>control</td>
<td>49</td>
<td>90.17±6.23</td>
<td>66.83±6.18</td>
</tr>
<tr>
<td>(t)</td>
<td></td>
<td>0.972</td>
<td>0.477</td>
</tr>
<tr>
<td>(P)</td>
<td></td>
<td>&gt;0.05</td>
<td>&gt;0.05</td>
</tr>
</tbody>
</table>

### Table 2.
Comparison of the changes of VAS scores between two groups preoperative and after postoperative (score).

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Preoperative</th>
<th>Postoperative 3 h</th>
<th>Postoperative 24 h</th>
<th>Postoperative 48 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>observation</td>
<td>49</td>
<td>1.47±0.35</td>
<td>0.43±0.36</td>
<td>2.31±0.47</td>
<td></td>
</tr>
<tr>
<td>control</td>
<td>49</td>
<td>1.43±0.36</td>
<td>0.43±0.36</td>
<td>3.47±0.62</td>
<td></td>
</tr>
<tr>
<td>(t)</td>
<td></td>
<td>0.558</td>
<td>5.275</td>
<td>8.374</td>
<td></td>
</tr>
<tr>
<td>(P)</td>
<td></td>
<td>&gt;0.05</td>
<td>&lt;0.05</td>
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</table>

Note: *presentation and preoperative comparison, \(P<0.05\).
Therefore, effective anesthesia and analgesic methods are of great significance. The operation can cause different levels of pain and stress response. Present, surgery is an effective method to treat uterine fibroids, but small number of cases in serious condition only possible infertility, as family history and the history of inflammation of department of gynaecology such as a risk factor for uterine fibroids. Because fibroids grow slowly, clinical symptoms mild or no symptoms, a small number of cases in serious condition only possible infertility, menstrual disorders and acute abdomen, so sick early neglected may cause infertility or other complications of the disease. Uterine fibroids are commonly seen in women between 30 and 50 years old, with smooth muscle and connective tissue. Embryonic epithelial cells, which are closely related to uterine fibroids, pelvic inflammatory diseases and endometrial polyps 

Table 3. The changes of serum CA125, VEGF-C and PGE2 levels in the two groups preoperative and after postoperative 48 h.

<table>
<thead>
<tr>
<th>Group</th>
<th>Time</th>
<th>n</th>
<th>CA125 (IU/mL)</th>
<th>VEGF-C (pg/mL)</th>
<th>PGE2 (pg/mL)</th>
</tr>
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<tr>
<td>Observation group</td>
<td>Preoperative</td>
<td>49</td>
<td>83.21±16.52</td>
<td>325.41±34.28</td>
<td>298.92±24.87</td>
</tr>
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<td></td>
<td>Postoperative 48 h</td>
<td>49</td>
<td>45.23±12.41*</td>
<td>219.94±28.71*</td>
<td>223.14±19.84*</td>
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<tr>
<td>Control group</td>
<td>Preoperative</td>
<td>49</td>
<td>82.90±14.76</td>
<td>324.09±32.56</td>
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<td>Postoperative 48 h</td>
<td>49</td>
<td>62.37±10.29**</td>
<td>278.31±26.72**</td>
<td>261.39±15.32**</td>
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</table>

Note: * and ** respectively with the same group preoperative and postoperative 48 h in the control group, P<0.05.

after 3 h and 48 h after surgery. In the observation group, the scores of 3 h, 24 h and 48 h were lower than the control group (P<0.05).

3.3 Comparison of serum CA125, vegf-c and PGE2 levels between the two groups before and after surgery.

See table 3. The levels of serum CA125, vegf-c and PGE2 in the two groups were not statistically significant (t=0.098, 0.195, 0.665, P BBB 0.05). The levels of serum CA125, vegf-c and PGE2 in the two groups were lower than those before operation (observation group: t=12.867, 16.511, 16.674, control group: t=7.987, 7.608, 8.425, P<0.05). The levels of serum CA125, VEGF-C and PGE2 were lower than those in the control group (t=7.442, 10.418, 10.682, P<0.05).

4. Discussion

Uterine fibroids are commonly seen in women between 30 and 50 years old, with smooth muscle and connective tissue. With the deepening of the epidemic epidemiological studies, found that the environmental factors, psychosocial factors, diet, family history, family history and the history of inflammation of department of gynaecology such as a risk factor for uterine fibroids. Because fibroids grow slowly, clinical symptoms mild or no symptoms, a small number of cases in serious condition only possible infertility, menstrual disorders and acute abdomen, so sick early neglected may cause infertility or other complications of the disease. With the epidemic epidemiological studies, found that the environmental factors, psychosocial factors, diet, family history, family history and the history of inflammation of department of gynaecology such as a risk factor for uterine fibroids.

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Vascular endothelial growth factor (VEGF) is a major regulator of tumor angiogenesis, metastasis and invasion, and plays an important role in tumor biological behavior. VEGF is a core cytokine for tumor angiogenesis, which is closely related to tumor proliferation and tumor angiogenesis. Vegf-c is a member of the VEGF family, and its level rise plays an important role in the occurrence, development and postoperative recurrence of uterine fibroids [14]. Prostaglandin E2 is one of the mainly exist in the reproductive system adjustment factor, especially the prostaglandin E2 in the body regulating effects of a variety of physiological functions, and participate in various metabolic activity. Some scholars have confirmed that prostaglandin E2 can promote the tumor angiogenesis and inhibit apoptosis and induce cell proliferation [15]. CA125 is mainly produced by embryonic epithelial cells, which are closely related to uterine fibroids, pelvic inflammatory diseases and endometrial polyps [16]. In this study, the serum CA125, vegf-c and PGE2 levels were lower than those in the control group, suggesting that epidural analgesia can reduce serum CA125, vegf-c and PGE2 levels.

To sum up, the effect of epidural analgesia on uterine fibroids is obvious, and it can reduce the level of CA125, vegf-c and PGE2, which is of great significance.

Reference


