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The effect of spinal block for labor analgesia in parturient in Iran

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Abstract

This study seeks to determine the effect of spinal block on some maternal outcome. Participants in this study were 200 parturient presenting for vaginal delivery in two groups, which was selected by continued method, from Social Security hospital in Hamedan, Iran, with a gestational age between 38–42 weeks. Anesthetist inserted 10-microgram sofantanil and 1cc morphine sulfat via L3-4 interspaced. There were meaningful statistical evidences between oxytocin use in 2 groups and no other meaningful statistical differences between first and second stage of delivery, cesarean section and Vacuum extraction. The use of this analgesia in the other center, at larger scales and comparison between spinal block with the other methods is recommended.

Keywords: spinal block, labor analgesia, parturient

1. Introduction

Among local analgesia methods, spinal block has been applied for years. The advantages of this method compared to epidural analgesia are starting analgesia in a shorter period of time, having a higher quality of analgesia, lower dosage of drug for analgesia, and the high rate of success (Cunningham et al 2009). The application of spinal block has some disadvantages, including headache, drop in blood pressure, and transient backaches (Hyderally, 2002). In spite of the growing rate of Analgesic Labour in American and European countries, its statistics is too low, accounting for about 15% (Mirzaazadeh, 2004). As the decrease in the rate of cesarean to a certain degree was accepted and approved by world health organization (WHO), that is, about 10-15 percent, is an aim followed by all countries and international organizations, and considering the growth in the rate of elective cesarean in recent years (Hassanzahraie et al, 2006), the present study aims at opening a new horizon about natural labour before parturient mothers through decrease in pain. This study focuses comparatively on the effect of spinal block on delivery stages, use of vacuum, cesarean section, and use of oxytocin in intervention and comparison groups.

2. Method

This study which is a part of larger survey, is the clinical random trial type along with the comparison group. The samples under study include 200 parturient women with pregnancy age between 38 to 42 weeks and a living single fetus representing the head of the fetuses that were divided into two groups, that is, intervention group (receiving spinal block) and comparison group (without spinal block). The selection of samples was conducted using continuous sampling method. If mothers tended to receive spinal insensitivity for
analgesic labour, they were included in intervention group and otherwise, they were included in comparison group. The criteria for the acceptance of units under study were: the possibility of natural labour in the samples, the existence of labour pain and the demand for decreasing pain through spinal block of the subjects with lesion in the injection region, clotting disorder, frequent decrease in blood pressure at the time of study, and their exclusion from the intervention in the past.

Initially the first section of information form was completed by interviewer. It consisted of age, weight, height, the number of pregnancies, and labours. After spending the delayed phase of the first stage of labour, in 4-5 cm dilatation (entrance to active phase), and after receiving venous infusion containing 1000 cc ringer serum, the blood pressure and the number of pulses of mother were assessed and recorded. Then the mother lay on one side and the bed was adjusted at a low angle in such a way that the head lay slightly higher than body. Then 10 micrograms of sufentanyl and 1 cc of morphine sulfate was injected by anesthetist between the 3rd and 4th cords to produce spinal block. The mother lay in above-said position for 5 minutes. Twenty minutes after injection, and then every 15 min, the blood pressure and the number of pulses were assessed. The pressure below 10 or 30% decrease in pressure compared to the base (original) pressure was considered a decrease in pressure. The duration of the active phase of the first stage of labour was recorded. In labour room the full time of the second phase of laborer was recorded by a chronometer. In the comparison group, nothing was manipulated and the interviewer completed the first section of the information form, the demographic characteristics of the samples, through questions. The means for data collection was a form arranged according to the objectives of the study accompanied by a chronometer. The information form included some individual and social characteristics such as maternal age, weight, height, the number of pregnancies and labour, information on the length of the first and second phase of labour, the rate of application of vacuum, and the side effects of spinal block on mother and infant were analyzed after study. In this study, the content validity was used to determine the scientific validity of the tool. The scientific confidence of the tool was determined through retest method on a random sample of 10 people. In the analysis of the data for arranging, the table of abundance absolute distribution and some percentage of descriptive statistics was used. To study the effect of spinal block on the duration of the first and second phase of labour Chi-squared and T-test were used.

3. Results:

The independent variable in this study was spinal block and dependent variable consisted of the duration of the first and second phase of labour, the rate of vacuum application, cesarean section, and use of oxytocin. Table 1 has been arranged to describe the samples.

Table 1. Parturient demographic details and labour characteristics in two groups

<table>
<thead>
<tr>
<th>Maternal demographic factors</th>
<th>intervention</th>
<th>comparison</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal age(years)</td>
<td>25.8±5.5</td>
<td>26.2±5.4</td>
<td>P&gt;0.05</td>
</tr>
<tr>
<td>Weight(kg)</td>
<td>72.8±9.41</td>
<td>70.7±10.9</td>
<td>P&gt;0.05</td>
</tr>
<tr>
<td>Height(cm)</td>
<td>158.36±3</td>
<td>161.5±5.4</td>
<td>P&gt;0.05</td>
</tr>
<tr>
<td>Parity(number)</td>
<td>2±.±.9</td>
<td>2±.±.9</td>
<td>P&gt;0.05</td>
</tr>
<tr>
<td>Past Delivery (number)</td>
<td>.±.±.±.±.</td>
<td>.±.±.±.±.</td>
<td>P&gt;0.05</td>
</tr>
</tbody>
</table>

Table 2 shows the duration of the first and second phase of labour, and the rate of use of vacuum in two groups, that is, the interventional and comparison groups.

Table 2. First and second stages of delivery, Vacuum extraction, and the use of oxytocin

<table>
<thead>
<tr>
<th>Delivery</th>
<th>intervention</th>
<th>comparison</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration of delivery(min)</td>
<td>104.4±30.6</td>
<td>121.8±70.85</td>
<td>t=1.74(P&lt;0.07)</td>
</tr>
<tr>
<td>Stage 2</td>
<td>27.4±9.1</td>
<td>27.4±26.7</td>
<td>t=1.52(P&lt;0.12)</td>
</tr>
<tr>
<td>Vacuum extraction (n (%))</td>
<td>17(17)</td>
<td>6(6)</td>
<td>Y² =9.09(P&lt;0.01)</td>
</tr>
<tr>
<td>Use of oxytocin (n(%))</td>
<td>95(97/9)</td>
<td>48(48)</td>
<td>Y² =9.7(P&lt;0.001)</td>
</tr>
</tbody>
</table>
As table 2 reveals the result of independent T-test concerning the duration of active phase and also the second phase of labour and there is no meaningful relationship between them. Also, the results show that Vacuum was used almost in one-fifth of subjects in intervention group. In addition, in comparison group only 6 percent of subjects needed vacuum for labour. Chi-squared showed a meaningful relationship for the use of vacuum during labour between two groups. In around half of samples in intervention group was used from oxytocin, whereas oxytocin was used only in 5% of comparison group. At total percentage of use of oxytocin and Vacuum was higher in intervention than comparison group. In intervention group was done caesarian on 2 samples due to delivery unprogressive which was not meaningful.

4. Discussion

This study aims at revealing the effect of spinal block on some maternal results. The results of study found that with use of spinal block the long of active phase not changes. A study on 209 mothers in Finland led to similar results, too(Viitanen et al, 2005). In an other study on 459 nulliparous, it was revealed that receiving local analgesia caused a one-hour increase in the duration of active phase of labour, whose reason is probably the type of epidural analgesia(Alexander et al, 2002). According to a study on 252 women, the duration of the second phase had increased in local anesthesia whose reason could probably be the type of local anesthesia, epidural(Hansen et al, 2002). In this study use of spinal block were not causes a change on average long of the second stage. This can be a good reason for satisfaction most of mothers from this kind of anesthesia. Average of long of the second stage in the study was 27/4 in intervention and comparison group. Williams et al mention this stage 20 and 50 minutes for primipara and multiparous. In a study in Iran the average was 40/2 minutes and was demonstrated that painless delivery with use of En2nox has not effect on second stage (Iravani, 2008). In another study long of the second stage was equal in Epidural, En2nox, and control groups (Ji et al, 2002).

Vacuum was used for 17 mothers in intervention group and only for 6 mothers in comparison group. The difference was meaningful (p=0.01). Williams believes that spinal insensibility probably causes decrease in the reflex of desire to exert force and at the same time, it may disorder contraction of abdomen muscles(Cunningham et al, 2009). In another study on 2703 woman was found that tool-using labour is more common in women receiving local analgesia(Sharma et al, 2004). Our findings concerning the side effects showed that the effects due to spinal block in labour were often mild and needed no treatment. In the same way, based on 19 published studies and the data from the fetus and maternal networks found that itch was the most common side effect after spinal block(Bloom et al, 2004). In present study complete explain and enough training to mothers in help of second stage management for expulsion of fetus can be a reason for no long this stage and less use of Vacuum. In present study, use of spinal block not affected on delivery type. In intervention group cesarean was did on 2 samples with was not meaningful. In a study in Iran rate of cesarean was less in use of En2nox than control group, but the different was non meaningful (Iravani, 2008). In a study on 2116 women was found similar results (Leighton& Halpern, 2002). In related with use of oxytocin the findings showed a 97/9% use in intervention group and 48% in comparison group which the different was meaningful. In Parkland hospital through 1995 to 2002 on 2703 nullipara pregnant was used from oxytocin about 50% (Conningham et al, 2009).

In the present study 11 cases of fetus bradycardia were observed, that is, 11%. Most cases occurred in the second phase of the labour, that is, when the dilation of cervix was complete, whose probable reason is the pressure on the head of the fetus or on the umbilical. A limited number of decrease in the pulses of the fetus was observed while labour and it improved with the change in mother situation. The society of gynecologists and midwifery of America considers the decrease in the blood pressure of the mother as one of the reasons of fetus bradycardia(Cunningham et al, 2009). Other side effects at present study based on their occurrence were nausea, decrease in blood pressure, leg weakness, chill, and the need for increasing the effect of analgesia. In a study similar results were reported(Vittanen et al, 2005). Hyderally reported the rate of decrease in maternal pressure after spinal block 10 to 40 percent (Hyderally, 2002). Concerning the rate of maternal satisfaction with spinal block and the reasons for lack of satisfaction in intervention and comparison group, 95 percent of cases were satisfactory and 5 percent of cases were dissatisfactory. Present study reveals that spinal block is an efficient method for analgesia and maternal satisfaction due to its quick
effect. In a study in Finland, similar results were reported (Hyderally, 2002). A study in Iran showed that pregnant women achieve some positive and negative experience that influences their degree of satisfaction with analgesia (Hassanzahraie & et al, 2006). As a whole, it could be said that the objective of analgesic labour using local analgesia methods, is the satisfaction of pregnant women, physicians and decrease in the rate of elective cesarean, and a good experience of labour. The researcher suggests that other studies be conducted on the comparison of spinal and epidural analgesia, and local analgesia with other methods of analgesic labour, the study of other reasons for the lack of satisfaction with analgesia, the comparison of different rates of analgesia and similar studies.

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References