Acta Clin Croat 2021; 60:399-405
doi: 10.20471/acc.2021.60.03.09

Original Scientific Paper

PAIN AND ANXIETY EXPERIENCE IN THE CHOICE OF EPIDURAL ANALGESIA IN DELIVERY

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SUMMARY – The experience of labor pain is a complex process that represents the interaction of the nociceptive stimulus within the physiologic process with a series of psychological factors. The aim of this study was to investigate the relation between the choice of epidural analgesia as a form of pain management and psychological state of woman in labor; moreover, whether the women in labor with a higher level of anxiety have a more intensive experience of pain during labor and therefore decide on epidural analgesia. Pain was evaluated by the visual analog scale, while the sensory and affective pain components were evaluated by the McGill Pain Questionnaire, and anxiety as a trait was measured with the State-Trait Anxiety Inventory-form X. Women in labor with a higher level of anxiety had a significantly increased affective component of pain, but did not significantly more frequently decide on labor with epidural analgesia. The women having chosen epidural analgesia experienced more intense pain during delivery before epidural analgesia, with the sensory component of pain being less pronounced in the women in labor without epidural analgesia, while there was no difference in the affective component of pain.

Key words: *Epidural analgesia; Delivery; Pain; Anxiety*

Introduction

Labor pain is considered the most intense painful experience in a woman's life that is characterized by inter-individual variability[1]. Pain is a subjective experience with pronounced individual variability, where with the same painful stimulation every woman has a different clinical response[2]. Many psychological factors may affect the experience of labor alone or in correlation with genetic variability. Numerous studies have been conducted that link postpartum depression and anxiety with the experience of labor pain.

Previous researches suggest that women who have not yet given birth have greater expression of the sensory component of pain during the early phase of labor as compared to multiparas[3]. They also have more intense experience of pain during the pelvic phase of delivery as a result of sudden stimulation of the nociceptor surrounding the vaginal vault, vulva and perineum[4], and faster descent of the fetus[5,6].

Labor pain falls into the category of severe pain, the scale of pain is ranked very high, but despite that, its memory is decreasing over time[7]. However, memory of labor pain is short-lived, even in delivery in which women have experienced severe pain, 90% of the mothers have found satisfaction three months after childbirth[8]. This short-term memory may be associated with a positive outcome that is often occurring at the end of delivery. Easing labor pain is complex and often challenging without regional analgesia. Effective pain treatment in labor plays a relatively small part in the satisfaction of a woman's delivery[9].

Epidural analgesia is the gold standard in pain management during labor; it is the optimal option for

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Received April 15, 2019, accepted August 7, 2019

the management of pain during labor in relation to all other options[9]. Thus, in almost 90% of women optimal analgesia is achieved with epidural analgesia without increasing the risk of delivery termination with cesarean section[9]. During labor, many women often experience fear and anxiety. The prevalence of fear during pregnancy ranges from 10% to 50% depending on the definition and degree of fear[10,11], although the definition of peripartum anxiety is complex. In many everyday situations, normal (physiologic) anxiety exists and it is not pathologic. For example, the state of anxiety appears to some extent in most people in important decision-making situations, at the workplace, in test situations, etc. A certain level of anxiety is a normal reaction in situations that we perceive as threats or endangering. It is an evolutionary adaptive state, as it encourages people to be vigilant, alert, to think and plan, making the person prepare for a potentially dangerous or stressful situation[12]. The sensory experience of pain cannot be separated from the emotional one. Studies have shown that the emotional state of anxiety lowers tolerance to pain and can also enhance pain experience. It is considered that anxiety can reduce the threshold of tolerance to pain, and at the same time significantly increases pain experience[13].

The aim of this study was to find out the degree to which a certain level of anxiety could affect the labor pain experience or whether anxiety would affect the choice of analgesia.

Subjects and Methods

Participants

The study included 124 postpartum women divided into two groups of women having delivered with and without epidural analgesia. The basic criterion according to which respondents were chosen was vaginal delivery and personal choice of woman, i.e. whether she chose labor with epidural analgesia or not. The study did not include women with medical indication for epidural analgesia, as medical indications may exclude the woman's choice and possibly influence research results. Women who had previous psychiatric diagnosis were also excluded from the study.

Instruments

The visual analog scale (VAS) was used to investigate the intensity of experienced pain. The State-Trait Anxiety Inventory-form X (STAI-X) questionnaire[14] was used to measure anxiety as a trait. For assessment of the quality of pain experience, the Short-Form McGill Pain Questionnaire (SF-MPQ) was used[15].

Procedure

The women filled-out the questionnaires on their own one hour after delivery, which is still considered an acute phase or a fresh event during their stay in delivery room. The research was conducted at the Department of Gynecology and Obstetrics, Sestre milosrdnice University Hospital Centre.

Ethics

This study was conducted in accordance with the internationally recognized guidelines of the Declaration of Helsinki Ethical Principles for Medical Research Involving Human Subjects (2008 version) of the World Medical Association, and the International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use (ICH) Guidelines for Good Clinical Practice (CPMP/ICH/135/95) for the purpose of protecting the identity of research participants. All respondents signed the consent form for voluntary participation in the research.

Statistics

Numerical variables were presented with descriptive statistics (mean (M), standard deviation (SD), median, minimum and maximum), and categorical variables were expressed as absolute and relative frequencies. The χ^2-test was used to test differences in categorical variables. Distribution of measured variables fit normal distribution, so parametric statistics was used (t-test to test difference between two groups, ANOVA for testing difference among three groups according to anxiety category, and Pearson correlation coefficient to calculate correlations among examined variables).

Statistical Package for the Social Sciences, version 20.0 (SPSS Inc., Chicago, IL, USA) was used on data analyses.

Results

The survey comprised 124 women aged 20-39 years. From this sample, 55 (44.3%) women had epi-

Table 1. Descriptive statistics on study group demographic and clinical variables

		Epidural analgesia	
		No	Yes
Age (yrs)	M	30.04	30.54
	SD	3.90	3.62
SBP	M	116.79	116.00
	SD	9.87	11.07
DBP	M	71.34	70.27
	SD	8.55	7.96
Pulse	M	75.84	77.47
	SD	7.63	7.61
BMI	M	27.55	27.43
	SD	3.98	3.15

SBP = systolic blood pressure; DBP = diastolic blood pressure; BMI = body mass index; M = mean; SD = standard deviation

dural analgesia and 69 (55.6%) did not. Table 1 shows descriptive data on demographic and clinical features of the study group.

There was no between-group difference according to age and clinical characteristics.

There was a statistically significant difference in the intensity of pain measured by VAS, with a significantly greater pain prior to delivery in the group who had requested epidural analgesia and selected pain management labor (t=-2.639; df=122; p<0.01) (Table 2).

The SF-MPQ revealed a statistically significant difference in the lower mean score in the sensory pain dimension in the group that required epidural analgesia (t=2.074; df=121; p<0.05), while there was no

Table 2. Descriptive statistics on psychological variables of anxiety and pain experience and significance of differences between study groups according to selected labor pain management

		Epidural analgesia		p
		Yes	No	
VAS	M	8.36	7.71	
	SD	1.483	1.273	0.009**
	Median	8	8	
	Minimum	3	3	
	Maximum	10	10	
SF-MPQ total	M	18.13	21.49	
	SD	10.272	9.237	0.059
	Median	21.00	24.00	
	Minimum	0	1.00	
	Maximum	36.00	37.00	
SF-MPQ sensory	M	13.84	16.50	
	SD	7.608	6.625	0.040*
	Median	15.00	18.00	
	Minimum	0	1.00	
	Maximum	25.00	28.00	
SF-MPQ affective	M	4.29	4.99	
	SD	3.143	3.335	0.241
	Median	5.00	5.00	
	Minimum	0	0	
	Maximum	12.00	12.00	
Anxiety (STAI-X)	M	37.18	39.29	
	SD	8.190	7.389	0.135
	Median	36.00	38.00	
	Minimum	23.00	26.00	
	Maximum	64.00	58.00	

VAS = visual analog scale; SF-MPQ = Short-Form McGill Pain Questionnaire; STAI-X = State-Trait Anxiety Inventory-form X; M = mean; SD = standard deviation; *difference significant at 0.05 level (2-tailed); **difference significant at 0.01 level (2-tailed)

Table 3. Descriptive statistics on pain intensity and experience per group according to anxiety level

		Anxiety		
		Low	Mild	High
VAS	M	7.80	8.00	8.13
	SD	0.86	1.51	1.29
	Median	8	8	8
	Minimum	6	3	5
	Maximum	9	10	10
SF-MPQ_total	M	15.43	20.15	22.13
	SD	9.49	9.47	10.79
	Median	16	21	26
	Minimum	1.00	0	0
	Maximum	31.00	37.00	35.00
SF-MPQ_sensory	M	12.43	15.64	15.83
	SD	7.56	6.96	7.65
	Median	12	17	19
	Minimum	1.00	0	0
	Maximum	24.00	28.00	28.00
SF-MPQ_affective	M	3.00	4.51	6.30
	SD	2.39	3.10	3.69
	Median	3	5	7
	Minimum	0	0	0
	Maximum	7.00	12.00	12.00

VAS = visual analog scale; SF-MPQ = Short-Form McGill Pain Questionnaire; M = mean; SD = standard deviation

Table 4. Correlations among age, anxiety and pain measures in two groups of women

	Epidural analgesia	Age	VAS	Anxiety (STAI-X)	SF-MPQ_total	SF-MPQ_sensory
VAS	Yes	0.091	-			
	No	-0.081	-			
Anxiety (STAI-X)	Yes	0.096	0.151	-		
	No	0.005	0.055	-		
SF-MPQ_total	Yes	-0.287*	-0.080	0.039	-	
	No	-0.101	0.157	0.263*	-	
SF-MPQ_sensory	Yes	-0.316*	-0.079	0.028	0.974**	-
	No	-0.101	0.119	0.134	0.943**	-
SF-MPQ_affective	Yes	-0.247	-0.104	0.042	0.875**	0.764**
	No	-0.038	0.173	0.367**	0.859**	0.662**

VAS = visual analog scale; SF-MPQ = Short-Form McGill Pain Questionnaire; STAI-X = State-Trait Anxiety Inventory-form X; *correlation significant at 0.05 level (2-tailed); **correlation significant at 0.01 level (2-tailed)

significant difference in the mean score of affective dimensions of pain (Table 2).

Furthermore, the respondents were divided into three groups according to total level of anxiety and whether the intensity of pain, overall pain experience and individual pain dimensions were different. These results are shown in Table 3. Although it is apparent from Table 3 that the mean pain level and all aspects of pain experience increased with the increase in the anxiety category, a statistically significant difference was only found in the dimension of affective pain (F=5.173; df=2; p=0.007).

Post hoc analysis showed that women with high anxiety had significantly more pronounced affective pain compared to those with low anxiety.

Further correlation analysis was performed by groups separately. Results for both groups are shown in Table 4.

Different correlations of the studied constructs were obtained depending on the group. In the group of women seeking epidural analgesia, there was a low but statistically significant negative correlation of age with the overall score on the pain experience questionnaire. Further insight into the correlation between age and dimensions of pain experience yielded a significant negative correlation between age and sensory dimension of pain but not affective dimension. Older women reported a lower sensory pain on average. There was no significant association in the group of women without epidural analgesia.

Anxiety was significantly associated with the overall score on the pain experience questionnaire in the group of women without epidural analgesia, and this correlation resulted from a significant association between anxiety and affective dimension of pain. Greater anxiety was associated with a higher score on the affective dimension of pain experience.

There was no significant association between anxiety and pain experience in the group with epidural analgesia. Anxiety (as a trait) was not significantly associated with age or intensity of pain (VAS) in either group.

Discussion

Labor pain is multidimensional and multifactorial; it is the interaction of the sensory component of pain with the clearly present affective component of pain, along with a range of environmental factors in terms of cultural perception of pain, age, gender, degree of education, and hereditary factors. Nociceptive pain is qualitative as opposed to the affective component of pain, which is emotional pain experience. The perception of pain results in brain processes whereby the nociceptive stimulus is processed with a number of already mentioned factors and individual pain perception is formed specifically for each individual with a different response to the nociceptive stimulus as the development of various pain components. Some individuals will have the psychological ability of better understanding of pain, and with it they can handle and control pain more easily.

Pain in delivery is acute pain that lasts shortly, so it is not expected that an affective component of pain will develop, which usually develops in chronic pain. On the other hand, delivery is an event full of strong emotional charge. However, many factors can significantly influence the presence or intensity of the expression of the affective component of labor pain that can significantly remodulate the path of labor pain and affect the perceived intensity of the nociceptive stimulus. These factors are poor or traumatic experience with previous deliveries, poor experiences during last delivery, concern for the child if problems with the child occurred during labor and if the child ended up in the intensive care unit, severe social situation, and the issues related to single mothers.

In our research, we found that in the case of women with high trait anxiety, the affective component of pain was statistically higher as compared to women with low and mild anxiety. The fact is that in the groups of women with low and mild anxiety, there was no statistically significant difference in the mean score of the affective component of pain. These results are in line with the initial premise of the research, as well as with the literature reports so far.

In their study, Lang *et al*. showed that anxious sensitivity would greatly affect the experience of labor pain and it will, to a great extent, affect the sensory and affective components of pain. Anxious sensitivity affects the experience of labor pain and, as some previous studies have reported, it can lead to chronic pain development[16].

Considering difference between the women seeking epidural analgesia and those that did not seek it, no statistically significant difference was found between

these groups considering the level of trait anxiety. In the case of women seeking epidural analgesia, there was a more pronounced pain intensity before epidural analgesia, compared to women who did not seek epidural analgesia. In those who did not seek epidural analgesia, the mean intensity of the sensory component of pain was greater compared to those who had delivery with epidural analgesia.

Some researchers report on the women with anxiety and depressive disorder to be more inclined to the use of epidural analgesia during delivery[17,18]. This research showed that women with a higher level of anxiety did not decide in a significantly larger number to have delivery with epidural analgesia, which could partly be explained by the fact that it was a population of women burdened with the potential fear of complications. Fear of complications is partly a consequence of the woman's condition, inadequate information on the benefits and disadvantages and potential complications of epidural analgesia, as well as the social attitude characteristic for this geographical region.

Conclusions

Although expected, we did not find significant correlation of the trait anxiety level, intensity and experience of pain with seeking for epidural analgesia. The level of trait anxiety was not significantly related to sensory pain experience or severity of pain before delivery. These findings cannot be extrapolated to other situations because this situation is an experience of acute pain in a specific event such as delivery. In addition, these results indicate that results of studies conducted in a different context (for example, investigating pathologic pain) cannot be extrapolated to the labor pain context.

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Sažetak

DOŽIVLJAJ BOLI I ANKSIOZNOST U ODNOSU NA ODABIR EPIDURALNE ANALGEZIJE U PORODAJU

L. Fumić Dunkić i *G. Vuletić*

Doživljaj boli u porođaju je složen proces koji predstavlja interakciju nociceptivnog stimulansa u okviru fiziološkog procesa s nizom psiholoških čimbenika. U ovom istraživanju se ispitivala povezanost između izbora epiduralne analgezije kao oblika obezboljivanja porođaja i psihičkog stanja rodilje, odnosno imaju li rodilje većeg stupnja anksioznosti intenzivniji doživljaj boli tijekom porođaja te se shodno tome odlučuju na porođaj s epiduralnom analgezijom. Bol je procjenjivana vizualnom analognom ljestvicom (VAS), a pojedine komponente boli, senzorna i afektivna komponenta boli, mjerene su upitnikom *McGill Pain Quesstionnaire*, dok je anksioznost kao osobina mjerena instrumentom *State-Trait Anxiety Inventory-form X*. Rodilje višega stupnja anksioznosti su u značajnijoj mjeri imale izraženiju anksioznu komponentu boli, ali se nisu u većoj mjeri odlučivale na porođaj s epiduralnom analgezijom. Rodilje koje su izabrale porođaj s epiduralnom analgezijom su intenzivnije doživljavale bol tijekom porođaja prije epiduralne analgezije i kod njih je senzorna komponenta boli u manjoj mjeri prisutna u odnosu na rodilje koje su rađale bez epiduralne analgezije, dok kod afektivne komponente boli nije bilo razlike.

Ključne riječi: *Epiduralna analgezija; Porođaj; Bol; Anksioznost*