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Acute Stress and Depression 3 Days after Vaginal Delivery – Observational, Comparative Study

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A B S T R A C T

During the first month postpartum, 85% of women experience some form of mood disorders. The most common are: postpartum blues, non-psychotic postpartum depression, puerperal psychosis. Delivery of a child can be traumatic for some women. Several authors have found that women could get symptoms of one form of posttraumatic stress disorder (PTSD) after childbirth. However, etiology of established postpartum disorders is still unknown. The aim of this study is to detect symptoms of acute stress reaction and acute depressive state as a consequence of peripartal complications, as early as three days postpartum using Impact of Events Scale revised (IES-R) and the Edinburgh Postnatal Depression Scale (EPDS) questionnaires and to demonstrate their potential usage for the early detection of vulnerable mothers with greater risk to develop any of postpartum psychiatric disorder, including PTSD. For that purpose 103 subjects, without previous medical history of psychiatric illness, were included in the investigation. Long duration of delivery (≥12 h), very painful delivery, complication and illness of mother during and after delivery as a consequence of delivery, preterm delivery (before week 36) and/or illness of the child (as a consequence of delivery or congenital) are considered to be risk factors for acute stress reaction and acute depressive state after delivery. Sixty one out of 103 investigated mothers had one or more researched peripartal complications. A statistically significant difference has been found between the control (n=42) and the peripartal complications (n=61) groups in both the mean IES-R (4.67 ± 5.43 and 13.50 ± 14.12, respectively, p<0.01) as well as in the mean EPDS (3.85 ± 2.76 and 7.03 ± 3.90, respectively, p<0.01) scores. Additionally, while there were 4 cases of acute stress reactions and 3 cases of acute depressive state in the peripartal complications group there were no cases of these states in the control group. Based on our findings we conclude that using IES-R and EPDS questionnaires as early as three days after delivery could provide an early detection of previously healthy mothers with greater risk for development of postpartum psychiatric disorders.

***Key words**: delivery, postpartum, post-traumatic stress disorder, depression*

Introduction

During the first month postpartum, 85% of women experience some form of mood disorders. Generally, postpartum psychiatric illness is divided in three categories: 1) postpartum blues (prevalence of 30–85% within the first week), 2) non-psychotic postpartum depression (prevalence of 10–15% within first two weeks to three months) and 3) puerperal psychosis (prevalence of 0.1–0.2% within two to four weeks).[1] Beside these established diagnostic categories, several authors have found that women could get symptoms of a form of posttraumatic stress disorder (PTSD) after childbirth[2–12], and Reynolds JL named this type of PTSD »traumatic birth experience.«[9]

Delivery of a child is potentially traumatizing experience because of some common features such as an extreme pain and a sense of loss of control.[9] Long-term consequences of these common features are still unknown.[2] Additionally, other features, such as threatened by death or serious injury, feeling of fear and helplessness or a threat to the physical integrity of oneself or others and/or disorganized or agitated behavior (associated with mother or child injuries or illness that occurred during or after the delivery) that occur sometimes during and after delivery, could be associated with a criterion of PTSD according to diagnostic and statistical manual for mental disorders (DSM-IV).[19] According to the criterion A,

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PTSD is diagnosed if a person has been exposed to a traumatic event that includes experiencing, witnessing, or being confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of oneself or others as well as the person's response that involves intense fear, helplessness, or horror. That is often associated with mother or child injuries and this may be expressed in children instead by disorganized or agitated behavior.

However, the exact etiology of established postpartum disorders is still unknown.[1] Significant psychological, psychosocial and physiological changes occur in puerperium. History of previous psychiatric illness, hormonal factors, and psychosocial factors has been investigated as a possible etiological cause for postpartum psychiatric illness. It has been found that young age of the mother (adolescent pregnancy) is a risk factor for postpartum depression. It has also been found that stressful life events during pregnancy and near to the time of delivery appear to increase likelihood of postpartum depressive illness. Etiology of the most devastating psychiatric disorder after childbirth – puerperal psychosis is hard to identify. Some reports suggest that primiparous women are more vulnerable to postpartum psychosis. Other findings suggest that various obstetrical complications (e.g. prolonged labor, stillbirth) may increase likelihood of postpartum psychosis[1]

Also, very little is known about the exact hormonal changes responsible for etiology of abovementioned psychiatric disorders.

However, some complications during delivery, such as long delivery time, subjective feeling of unbearable pain and dissociation as a result of pain, medical intervention during labor and medical condition as a consequence of labor, preterm delivery of a child as well as medical condition of the newborn child are associated with acute stress reaction and acute depressive state[2–12], that potentially lead to postpartum psychiatric disorders, including »traumatic birth experience«.[1,9]

The application of anesthetic medications on the patient's demand, an extensive education of medical personnel especially midwives[13] in obstetric hospitals with regards to this issue, the use of investigated questionnaires routinely after childbirths, and the availability of psychiatric consultation in every obstetric clinic could have preventive roles in the development of acute stress reaction, PTSD, acute depressive state and depression. This way, further complications and consequences for mother and child[14] could be prevented. Furthermore, if not prevented, an acute stress reaction can become chronic and can lead to various chronic somatic complications, which can severely influence the mother's overall health.[15–18] Because of all the negative consequences of mentioned psychiatric disorders, it would be crucial to find a way of early detection of their symptoms, which could cause early medical action and prevention of disease development. Symptoms of acute stress reaction and acute depressive state are diagnosed using Impact of Events Scale revised and (IES-R)[20] and Edinburgh Postnatal Depression Scale (EPDS)[21] scores, respectively.

The aim of this study is to detect symptoms of acute stress reaction and acute depressive state as a consequence of peripartal complications, as early as three days postpartum using IES-R and EPDS questionnaires that could be potentially used for the early detection of vulnerable mothers with greater risk to develop any of postpartum psychiatric disorders, including PTSD.

Participants and Methods

Participants

The study was performed at the Department of Gynecology and Obstetrics, Zagreb University Hospital Center. During four weeks 110 potential participants – women who had a vaginal delivery – were recruited for the study. Since we investigated the elements of acute stress and acute depressive state three days after delivery using the IES-R[20] and the EPDS[21], both scales were integrated into 5 pages questionnaire developed for the purpose of this study. The questionnaire was given to the potential participants by a medical doctor to be filled in by the volunteers themselves. The subjects gave informed consent and the study was approved by the institutional review board.

Criteria for participants to be included in the study involved women being literate, three days after vaginal delivery, willing to fulfill the questionnaire. Exclusion criteria included previous diagnosis of psychical illness, illiteracy and Cesarean section.

Since two out of 110 women were illiterate, three refused to participate in the study and two did not understand the questions in the questionnaire and therefore were not able to fill in the questionnaire themselves, they were excluded from the study.

Finally, 103 women were included in the study and, according to the results of the questionnaire, were divided in two groups; control group, with no complications during and/or after delivery (n=42) and the peripartal complications group (n=61) with one or more of the following complications during and/or after delivery: 1) long duration of delivery (≥14 h from admission to labor units for primiparous women, ≥12 h for multiparous women[22], 2) very painful delivery, 3) dissociation as a consequence of delivery (connected with pain experience), 4) complications and illness of mother during and after delivery as a consequence of delivery, 5) medical intervention during delivery (except cesarean section – those women were excluded from investigations because of ethical reasons and hospital rules, and an infusion of oxytocin or/and episiotomy was consider to be the standard procedure in Croatian hospitals – and women are very well prepared for such a procedure), 6) preterm delivery (before week 36 and 7) illness of child (as consequence of delivery or congenital).

Methods

Three days after delivery, the mean scores of participants in control and study group were calculated for symptoms of acute stress reaction and depression symptomatology, using IES-R and EPDS methods, respectively. The IES-R is a 22-item self-report measure that assesses subjective distress caused by traumatic events and is related directly to 14 out of 17 DSM-IV symptoms of PTSD[19,20,23]. It is a revised version of the older, the 15-item, IES version[24] and contains 7 additional items related to hyperarousal symptoms of PTSD, which were not included in the original IES. The subjects have been asked to identify a specific stressful life event and then indicate how much they were distressed or bothered during the past seven days by each »difficulty« listed. Items are rated on a 5-point scale ranging from 0 (»not at all«) to 4 (»extremely«). The IES-R yields a total score ranging from 0 to 88[20]. The range of scores of the IES-R was divided according to the findings that IES-R scores correlated to the corresponding scores of Clinician-Administered PTSD Scale (CAPS) in a group of 104 patients with diagnosed PTSD[25]. Cut-off points of IES-R between 24 and 33 have shown both sensitivity and specificity over 70%.[25] According to this finding we divided the range of IES-R into the groups as follows: without symptoms (score = 0), clinically non-significant symptoms (score = 1–23), clinically significant symptoms (score = 24–32) and acute stress reaction (score = 33–88). The EPDS is a 10-item postpartum depression screening questionnaire that is completed by mothers and then scored by clinicians.[21] The scale can be completed in about 5 minutes and has a simple method of scoring. The EPDS is created to discover possible postpartum depression, but a careful clinical assessment should be carried out to confirm the diagnosis. Authors of EPDS suggested that women with scores above threshold of 12/13 were most likely to be suffering from depressive illness of varying severity. Also, since the EPDS is not a substitute for this clinical assessment, a score just below the cut-off does not indicate the absence of depression, especially if a health professional has other reasons to consider this diagnosis. Authors' data also suggest that a threshold of 9/10 might be appropriate if the scale was considered for routine use by primary care workers.[21] According to this, the scores of the EPDS were divided into the following groups: without symptoms (score = 0), clinically non-significant symptoms (score = 1–9), clinically significant symptoms (score = 10–12) and acute depressive state (score = 13–30)[21]. The correlation of changes in the IES-R and the EPDS scores was also investigated.

Statistical Methods

Quantitative data are tested by the Mann-Whitney test (two groups of subjects) and by the Kruskal-Wallis test (more than two groups of subjects). Qualitative variables are tested by the Fisher Exact test[26,27]. The results are shown in tables and graphs. The distribution of subjects with regards to individual variables and groups is shown. An estimation of parameters for variables in the sample according to groups of subjects is shown.

Results

Demographics

There was no statistically significant difference in both mean age (29.21 ± 6.30 *vs.* 28.98 ± 4.88, respectively) and educational level (70.9% had finished secondary school) of the women between control and the peripartal complications groups ($p=1$). No women without education participated in the investigation since they were illiterate and could not fill in the questionnaire. While 39 investigated women were primiparous, 64 women included in investigation were mulitparous women. There

TABLE 1
DIFFERENCE OF MEAN SCORES OF IES-R AND EPDS BETWEEN THE CONTROL AND STUDY GROUPS

Score of IES-R						
Group	N	Median	Mean	SD	Minimum	Maximum
Peripartal complications group	61	9.00	13.51	14.12	0.00	66.00
Control group	42	3.50	4.67	5.43	0.00	26.00
p-value		$p<0.001$				
Total	103	6.00	9.90	12.17	0.00	66.00
Score of EPDS						
Group	N	Median	Mean	SD	Minimum	Maximum
Peripartal complications group	61	7.00	7.03	3.90	0.00	17.00
Control group	42	3.00	3.86	2.76	0.00	11.00
p-value		$p<0.001$				
Together	103	5.00	5.74	3.81	0.00	17.00

IES-R – Impact of Events Scale – Revised, EPDS – Edinburgh Postnatal Depression Scale, N – number, SD – standard deviation, p values were calculated using the Mann-Whitney test

was a statistical significance in the number of primiparous and multipareous women between control (11 primipareous and 31 multiparous) and the peripartal complications (28 primiparous and 33 multiparous) groups (p=0.043).

Difference in mean scores of IES-R and EPDS between the investigated groups

The mean total scores of both IES-R and EPDS were calculated for both control (n=42) and study (n=61) group (Table 1). The mean total scores of IES-R were 4.67 ± 5.43 and 13.51 ± 14.12 for control and study group, respectively. The mean total scores of EPDS for control and the study group were 3.86 ± 2.76 and 7.03 ± 3.90, respectively. In both analyses, using Mann-Whitney test, the difference was statistically significant (p< 0.001).

IES-R and EPDS score association with respective peripartal complications

Further analysis of IES-R and EPDS scores included the more detailed analysis for specific complications. Regarding the respective complications, prolonged delivery time (n=6) and the subjective feeling of unbearable pain (n=10), as single complications, are associated with the highest IES-R mean scores statistically different compared to control scores (13.5 ± 10.25, p=0.011 and 13.3 ± 7.49, p=0.001, respectively, Table 2). On the other hand, the medical condition of the newborns (n=5) was associated with the highest EDPS mean score (8.8 ± 5.31, p=0.02), followed by the subjective feeling of unbearable pain (7.4 ± 2.95, p=0.002) and medical condition as a consequence of labor (7.4 ± 3.58, p=0.03). It is worth mentioning that the most significant results in both tests were obtained from the scores associated with the feeling of unbearable pain.

In addition, mothers (n=23) with 2 or more selected complications had the highest IES-R mean score (17.6 ± 18.41, p=0.001). Interestingly, an acute stress reaction (score equal and above 33)[6,7] was found in one out of five mothers in the group »medical condition as a consequence of labor«, and in three out of 23 mothers from the group with »2 and more of the above mentioned complications«. On the other hand, acute depressive symptoms (score of EPDS equal and above 13) were found in one out of five mothers in the group »medical condition of newborn child and in two out of 23 mothers from the group with 2 or more complications. It is worth mentioning that in both cases a medical condition of the newborn child was present as one of the complications.

Interestingly, a preterm delivery of a child, if present as a single complication (n=3), caused mean scores lower, although not significantly, than those in the control group (n=42) in both the IES-R (2.33 ± 4.04 *vs.* 4.67 ± 5.43) and the EPDS (3.67 ± 0.58 *vs.* 3.86 ± 2.76) tests.

Severity of symptoms and correlation between IES-R and EPDS scores

Analysis of a proportion of participants from control *vs.* study group considering severity of symptoms of

TABLE 2
IES-R SCORE IN SUBGROUPS OF MOTHERS WITH RESPECTIVE PERIPARTAL COMPLICATIONS

Peripartal complication	Prolonged labor time	Pain, subjectively described as very hard – unbearable	Dissociation as a consequence of pain	Medical intervention during labor	Medical condition as a consequence of labor	Preterm delivery of the child	Medical condition of the newborn child	2 and more of the above mentioned complications	Control
N	6	10	6	3	5	3	5	23	42
				IES-R Score					
Median	13.00	12.50	5.00	9.00	7.00	0.00	4.00	12.00	3.50
Mean	13.50	13.30	10.33	9.33	12.20	2.33	9.40	17.61	4.67
SD	10,25	7.50	12.19	1.53	16.39	4.04	12.72	18.41	5.43
Minimum	2.00	3.00	0.00	8.00	0.00	0.00	2.00	0.00	0.00
Maximum	31.00	26.00	26.00	11.00	40.00	7.00	32.00	66.00	26.00
p value	0.011	0.001	0.458	0.079	0.337	0.343	0.329	0.001	
				EPDS Score					
Median	6.00	8.00	7.00	5.00	7.00	4.00	7.00	7.00	3.00
Mean	6.67	7.40	6.00	5.67	7.40	3.67	8.80	7.39	3.86
SD	3.20	2.95	4.20	5.03	3.58	0.58	5.31	4.34	2.76
Minimum	3.00	2.00	0.00	1.00	4.00	3.00	4.00	0.00	0.00
Maximum	11.00	12.00	11.00	11.00	12.00	4.00	17.00	17.00	11.00
p value	0.048	0.002	0.198	0.521	0.030	0.854	0.020	0.001	

IES-R – Impact of Events Scale – Revised, EPDS – Edinburg Postnatal Depression Scale, SD – standard deviation

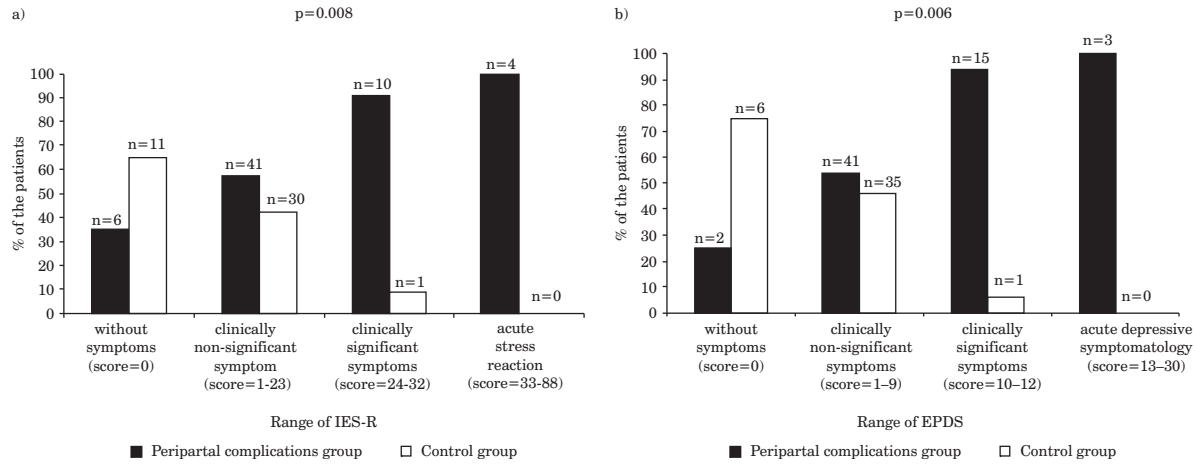

Fig. 1. Significant difference in a) IES-R Fisher's Exact Test p= 0.008 and b) EPDS scores Fisher's Exact Test p=0.006 between the groups according to the severity of symptoms. IES-R – Impact of Events Scale Revised, EPDS – Edinburg Postnatal Depression Scale.

acute stress reaction (IES-R score), showed a statistically significant difference between groups (p=0.008) (Figure 1a) with obvious clinical implications. While only one woman in the control group had clinically significant symptoms, 14 women in the peripartal complications group had the score of IES-R above 24. In addition, while there were no cases of acute stress reaction in the control group, there were four cases of acute stress reactions in the study group. (Figure 1a). Similarly, a statistically significant difference with obvious clinical implications between a proportion of subjects from investigated group considering severity of symptoms of depression was also found (p=0.006) (Figure 1b) While only one woman in the control group had clinically significant symptoms, 18 women in the peripartal complications group had the score of EPDS score above 10. Also, while there were no cases of acute depressive state in control group but, there were three cases of acute depressive state in the study group. These results have shown obvious clinically significant difference between investigated groups. Finally, a statistically significant correlation (p<0.001) between total IES-R and total EPDS scores have been found with factor of correlation (r = 0.548, Figure 2)

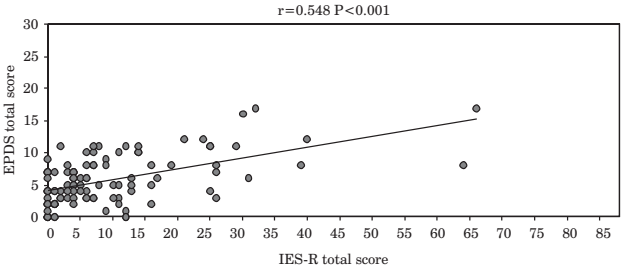

Fig. 2. Statistically significant correlation between total IES-R and total EPDS scores (r=0.548, p<0.001) IES-R – Impact of Events Scale Revised, EPDS – Edinburg Postnatal Depression Scale

Discussion

It has been established previously that certain complications during delivery could lead to acute stress reaction as well as depression[2–12], both of which potentially lead to development of other postpartum psychiatric illness[1]. Some of these complications, such as long delivery time, subjective feeling of unbearable pain and dissociation as a result of pain, medical intervention during labor and medical condition as a consequence of labor, preterm delivery of a child as well as medical condition of the newborn child, have been studied here. Our study has shown that detection of symptoms of both acute stress reaction and acute depressive state is possible as early as three days after vaginal delivery of a child. In addition, this study proved a correlation between studied complications and both IES-R and EPDS scores. Also, it has shown that women with two or more complications show even higher IES-R scores, indicating additive effect of each complication to the development of acute stress reaction. This was not the case with EPDS scores. However, it has been shown that medical condition of a newborn child was one of complications for both women with the highest EPDS scores within the group with two and more complications. Finally, correlation between IES-R and EPDS scores has been found.

We have found that childbirth pain cause the most significantly higher both IES-R (p=0.001) and EPDS (p=0.002) mean scores compared to control group as early as three days postpartum. In the other study of the influence of childbirth pain to development of PTSD it has been shown that women distressed by the childbirth pain would have higher risk to develop posttraumatic stress symptoms.[3] IES-R and EPDS scores in that study were performed six weeks after birth. Next highly significantly different parameter found with both IES-R (p= 0.011) and EPDS (p=0.048) was prolonged labor time. This result is not unexpected, since we have found a significant difference between the number of primiparous women in control and the study group (p=0.043). Also, it

has been shown previously that the expected time of delivery of primiparous women is longer[22] and they are more prone to develop complications.[27]

Beside the complications that have shown significant difference from control group by both tests, two complications, medical condition as a consequence of labor and medical condition of the newborn child, are found to be significantly different compared to control group ($p=0.03$ and 0.02, respectively) only using EPSD questionnaire, indicating possible depression. Our results are in concordance with the previous study in which the medical condition of the newborn child has been investigated and it has been show that both mothers of premature infants and mothers of term infants hospitalized in a neonatal intensive care unit reported significantly more symptoms of posttraumatic stress than mothers of healthy term infants ($p<0.01$).[6] The severity of infant complications, gestational age, and length of the stay accounted for the variance in reports of posttraumatic stress symptoms by 35%. Finally, the highest mean score for IES-R, which was highly statistically significant ($p=0.001$), was obtained in women with two or more complications, indicating an additive effect of complications and increasing possibility of development of serious psychological diseases, including PTSD, with increasing number of complications. This result is concomitant with the previous results[12] showing a higher correlation of PTSD manifestation when more than one complication is present.

In addition, both perinatal dissociative reactions and perinatal negative emotional reactions have been found to be predictors of PTSD symptoms.[8] However, 140 women in that study were monitored from the first week after delivery to three months postpartum. 21.4% reported a traumatic childbirth experience and three women (2.1%) met the criteria for PTSD.[8] We have not found a dissociation as a consequence of pain as an isolated complication to significantly differ in mean score of IES-R ($p=0.458$). This could be a consequence of a time of the inverstigation that was only three days postpartum. However, it does not exclude a possibility that these scores would be higher at some later point, especially because there was at least one women in that group that had a score of IES-R of 26 and one woman had a score of EPDS of 12 (clinically significant results). Therefore, a development of more severe forms of psychological disease could be a multistage process that involves symptoms of both acute stress reaction and acute depressive state appearing at different time during the process. The fact that a correlation between symptoms of acute stress reaction and acute depressive state has been shown in our study is in concordance with that hypothesis. The other possibility is that different complications during childbirth in previously healthy mother could cause different outcomes, either acute stress, PTSD, and even psychosis or baby blues and depression.

In addition of measuring IES-R and EPDS scores, we also investigated severity of symptoms. Our results have confirmed a correlation between studied complications and symptoms of both acute stress reaction and depression.

In our study, elements of PTSD (acute stress reaction and depression symptoms) associated with provocative events have been found as early as 3 days postpartum. The limitation of this study is the fact that custom time for IES-R testing is at least one week after the traumatic experience, and the time necessary for PTSD development is usually at least 2 weeks. However, in 1995, four cases with a symptom profile suggestive of PTSD beginning within 48 hours after the childbirth were described[2]. That could, at least partially, explain the fact that a significant difference between the investigated groups in our study has been found.

Since the investigation was carried out 3 days after the delivery, due to ethical reasons and hospital rules, we did not investigate women with cesarean section. Also, although it has been previously found that two days after delivery the median score of the IES[28] was significantly higher in the group of women with emergency cesarean section in the group of women ($n=70$) with elective cesarean delivery[28], emergency cesarean section as a complication of planned vaginal delivery was also not investigated in this study.

In conclusion, our study has clearly shown that following complications: long duration of delivery (≥12 h), very painful delivery, complications and illness of the mother during and after delivery as a consequence of delivery, preterm delivery (before week 36) in combination with illness of the child (as a consequence of delivery or congenital), are related to the occurrence of acute stress and/or acute depressive state that can be detected as early as 3 days after vaginal delivery. Therefore, using IES-R and EPDS questionnaires three days after delivery could provide the early detection of mothers with greater risk for development of postpartum psychiatric disorders, including postpartum PTSD. This will need further investigation in correlation of acute findings with further development of psychical illness.

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AKUTNI STRES I DEPRESIJA 3 DANA NAKON VAGINALNOG PORODA – OPSERVACIJSKA, KOMPARATIVNA STUDIJA

S A Ž E T A K

Tijekom prvog mjeseca poslije poroda, 85% žena doživi neku vrstu poremećaja raspoloženja. Najčešći poremećaji koji se javljaju su pospartalna tuga, ne-psihotična postpartalna depresija te puerperalna psihoza. Za neke žene porođaj može biti traumatično iskustvo. Nekoliko autora, u svojim je istraživanjima potvrdilo i prisustvo nekih oblika posttraumatskog stresnog poremećaja (PTSP) u žena nakon poroda. No, etiologija poznatih pospartalnih poremećaja još uvijek je nepoznata. Cilj ove studije je otkrivanje simptoma akutne stresne reakcije i akutnog depresivnog stanja uzrokovanih peripartalnim komplikacijama tri dana poslije poroda uz pomoć revidirane Skale utjecaja događaja (Impact of Events Scale revised, IES-R) te Skale za otkrivanje depresije nakon poroda (Edinburgh Postnatal Depression Scale, EPDS),te dokazati da se navedeni upitnici mogu potencijalno koristiti za ranu detekciju majki s većim rizikom za razvoj bilo kojeg poznatog psihičkog poremećaja nakon poroda, uključujući i PTSP. U istraživanje su bile uključene 103 ispitanice bez prethodne anamneze psihičkih oboljenja. Komplikacije uvrštene u istraživanje su: dugi porođaj (≥12 h), vrlo bolan porođaj, komplikacije ili bolesti majke tijekom i poslije poroda kao posljedica samog poroda, prijevremeni porod (prije 36. tjedna) i/ili bolest djeteta (kao posljedica poroda ili prirođena). Šezdesetijedna od 103 ispitanih majki imala je jednu ili više od istraživanih komplikacija. Ustanovljena je statistički značajna razlika ($p<0,01$) srednje vrijednosti IES-R između kontrolne grupe ($n=42$) $4,67 \pm 5,43$ i grupe s peripartalnim komplikacijama ($n=61$) $13,50 \pm 14,12$. Također je ustanovljena statistički značajna razlika ($p<0,01$) srednje vrijednosti EPDS između kontrolne grupe ($n=42$) $3,85 \pm 2,76$ i grupe s komplikacijama ($n=61$) $7,03 \pm 3,90$. Također, pronađena je statistički značajna razlika u težini simptoma između kontrolne i ispitivane grupe u rezultatima oba testa ($p=0,008$ za IES-R te 0,006 za EPDS test). Dok su pronađena četiri slučaja akutne stresne reakcije te tri slučaja akutnog depresivnog stanja u grupi s komplikacijama, nije pronađen niti jedan slučaj tih stanja u kontrolnoj grupi. Temeljem dobivenih rezultata možemo zaključiti da bi korištenje testova IES-R te EPDS, već tri dana nakon poroda, moglo koristiti za rano otkrivanje predhodno zdravih majki s povećanim rizikom za razvoj postpartalnih psihijatrijskih poremećaja.