

Research Article

Prevalence of Postpartum Anxiety and Depression after Intrapartum Oxytocin

Kejadian Ansietas dan Depresi Postpartum pada Pemberian Oksitosin Intrapartum

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Abstract

Objective: To know the prevalence of postpartum anxiety and depression in patients who received intrapartum oxytocin.

Method: Across-sectional observational study was conducted in Dr. Cipto Mangunkusumo hospital. Observation used Edinburgh Postnatal Depression scale and Beck Anxiety Inventory before delivery day, on the first and fourteenth day of postpartum.

Result: Of 112 patients, we found the prevalence of mild and moderate anxiety were 94.6% and 5.4%. There were no anxiety women before delivery and on the first day of postpartum. The prevalence of mild and moderate anxiety on the fourteenth day of postpartum were 83% and 16.9%. There was no severe anxiety found at those time. On the other hand, the prevalence of postpartum depression on the first and fourteenth day of postpartum were 31.3% and 32.1%. There was no association between exogenous oxytocin and postpartum anxiety also depression. In multivariate analysis, we found that women with low self image were more prone to postpartum anxiety (OR 0.16, 95% CI 0.06-0.46). Meanwhile, postpartum depression was associated significantly to self image (OR 0.17, 95% CI 0.07-0.83), low income (OR 10.35, 95% CI 1.72-62.45) and pregnancy plan (OR 0.17, 95% CI 0.06-0.53)

Conclusion: The patients who received intrapartum oxytocin are more prevalent to have mild anxiety. The prevalence of depression before delivery day, on the first and fourteenth day of postpartum are similar. In statistic, there is no relationship between intrapartum oxytocin administration and postpartum anxiety or depression.

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Keywords: anxiety, depression, oxytocin intrapartum, postpartum

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Abstrak

Tujuan: Mengetahui prevalensi kejadian kecemasan dan depresi pascamelahirkan pada pasien yang mendapat oksitosin intrapartum.

Metode: Studi observasi dengan desain potong lintang dilakukan di RSUPN Dr. Cipto Mangunkusumo. Observasi dengan menggunakan Edinburgh Postnatal Depression scale dan Beck Anxiety Inventory sebelum melahirkan, hari ke-1 dan 14 pascamelahirkan.

Hasil: Dari 112 pasien, prevalensi kecemasan ringan dan sedang sebesar 94,6% dan 5,4%. Tidak ada yang mengalami kecemasan sebelum melahirkan dan satu hari pascamelahirkan. Prevalensi kecemasan ringan dan sedang pada hari 14 pascamelahirkan sebesar 83% dan 16,9% dan tidak ada yang menjadi kecemasan berat. Sementara itu, prevalensi depresi pada hari ke-1 dan 14 pascamelahirkan sebesar 31,3% dan 32,1%. Tidak ada hubungan yang bermakna antara cara pemberian, dosis kumulatif dan lama pemberian oksitosin dengan kecemasan dan depresi pascamelahirkan pada hari ke-1 dan 14. Dari hasil analisis multivariat, hanya citra diri saja yang berpengaruh terhadap kejadian kecemasan pascamelahirkan (OR 0,16; IK 95% 0,06-0,46). Sementara itu, depresi pascamelahirkan berhubungan dengan citra diri (OR 0,17; IK 95% 0,01-0,83), penghasilan rendah (OR 10,35; IK 95% 1,72- 62,45) dan keinginan hamil (OR 0,17; IK 95% 0,06-0,53).

Kesimpulan: Pasien yang mendapat oksitosin intrapartum lebih sering mengalami kecemasan ringan. Kejadian depresi sebelum melahirkan, hari ke-1 maupun 14 pascamelahirkan memiliki prevalensi yang serupa. Secara statistik, tidak ada hubungan yang bermakna antara pemberian oksitosin intrapartum dengan kecemasan atau depresi pascamelahirkan.

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Kata kunci: depresi, intrapartum, kecemasan, oksitosin, pascamelahirkan

INTRODUCTION

Oxytocin is a neuropeptide known as the "maternal hormone" due to its activation during pregnancy and lactation. The role of oxytocin during pregnancy and lactation is to improve the function of the reproductive and maternal behavior.¹ Some studies found that oxytocin receptors were distributed in various areas in the brain² and associated with sexual behavior, maternal and social attitude. They could also response to the stressor.³ Oxytocin

has anxiolytic effect and may delay the hypothalamus-pituitary-axis responsiveness to adrenal (HPA). The effect is very dependent on the gender, species, duration of therapy, and the brain areas.

During prenatal and postpartum, women have more risk for anxiety and depression. The prevalence of anxiety on the postpartum period is increased compared to women in the general population. Postpartum anxiety and depression impact to maternal and child development.⁴

Various experimental studies about the role of oxytocin to anxiety and depression have been carried out on animals; however, there are only few studies conducted in human.^{5,6} One study showed that women getting exogenous oxytocin intravenously and intramuscularly at birth had the decreased of anxiety and increased of social function in the observation on the second day, second month, and sixth month postpartum.⁷ Unfortunately, there was still few studies finding the central effect of exogenous oxytocin, especially on the anxiolytic and depression effects. Therefore, this study was carried out to know the prevalence of postpartum anxiety and depression in patients who received intrapartum oxytocin and the relationship between exogenous oxytocin to postpartum anxiety and depression.

METHODS

This observational study was a cross-sectional design on the aterm pregnant patients planned to vaginal birth and received oxytocin during labor in Tangerang and Fatmawati General Hospital from December 2013 to May 2014. The subjects who fulfilled the inclusion criteria and agreed to participate in the study were asked to fill out questionnaires before and after delivery (on the first and fourteenth day of postpartum). The questionnaire was consisted of Beck Anxiety Inventory and the Edinburgh Postnatal Depression Scale (EPDS), which had been validated and proven their reliability in assessing anxiety and depression. The ethical committee from Faculty of Medicine University of Indonesia had approved the study protocol. We conducted a descriptive categorical data analysis to look at the prevalence of postpartum anxiety and depression in both study groups at three times measurement. Statistical analysis was performed with Mann-Whitney test to see the relationship between oxytocin and postpartum anxiety also depression. Multivariate analysis with stepwise logistic regression analysis method was done to control the confounding variables of age, parity, unplanned or unwanted pregnancy, socioeconomic status, self-image, problems in the household, as well as the emotional and social support from her husband and family.

RESULTS

There were 112 subjects in this study. The age of them was ranged from 16 to 44 years old with a

median value of 29.5 years old. The majority of subjects (80.4%) had secondary level, 52.7% was multipara and 78.6% had moderate self-image and didn't plan for this pregnancy. The delivery process accompanied by her husband was 73 subjects (65.2%) (Table 1).

Table 1. Characteristics of Subjects

Characteristics	Total n (%)
Age, Median (years old)	29.5 (16-44)
Age group, n (%)	
<20 years old	5 (4.5)
20-30 years old	56 (50)
31-40 years old	46 (41.1)
>40 years old	5 (4.5)
Education status, n (%)	
Low	19 (17)
Moderate	90 (80.4)
High	3 (2.7)
Economic status, n (%)	
Low	10 (9.1)
Moderate	94 (84.6)
High	8 (7.2)
Total number of pregnancies, n (%)	
Primipara	40 (35.7)
Multipara	59 (52.7)
Grande multipara	13 (11.6)
Pregnancy plan	
Yes	87 (77.7)
No	25 (22.3)
Self-image	
Low	24 (21.4)
Moderate	88 (78.6)
Any conflict in family	
Yes	8 (7.1)
No	104 (92.9)
Wanted pregnancy	
Yes	101 (90.2)
No	11 (9.8)
Any husband companion during labor	
Yes	73 (65.2)
No	39 (34.8)
Oxytocin	
IV-IM	81 (72.3)
IM	31 (27.7)

Cumulative dose of oxytocin	
10 U	30 (26.8)
15 U	16 (14.)
20 U	1 (0.9)
>20 U	65 (58)
Duration of administration, median (range) (hours)	
	6.5 (1-27)

In this study, the prevalence of mild and moderate anxiety in patients who received intrapartum oxytocin were 94.6% and 5.4%. None experienced severe anxiety prenatal and on the first day of postpartum. After 14 days of postpartum, patients having moderate anxiety increased to 16.3% and no subjects suffered from severe anxiety. In subjects receiving oxytocin intravenously and intramuscularly, the prevalence of mild and moderate anxiety at admission were 93.8% and 6.2%. Meanwhile, the prevalence on the fourteenth day of postpartum were 85.1% and 14.8%. In subjects getting

oxytocin intramuscularly only, the prevalence of mild and moderate anxiety at admission were 96.7% and 0.9%; and after 14 days of postpartum, the prevalence became 77.4% and 22.7%.

In this study, we found that the prevalence of depression at admission, 1 day and 14 days after delivery in patients receiving intrapartum oxytocin were 29.5%, 31.3% and 32.1% respectively. In subjects who received oxytocin intravenously and intramuscularly, the prevalence of postpartum depression at admission, 1 day and 14 days after delivery were 27.1%, 33% and 34.5%, respectively. In subjects getting oxytocin intramuscularly, the prevalence of postpartum depression before delivery day, on the first and fourteenth day of postpartum were 35.4%, 25.8% and 25.8%, respectively.

We found no relationship between the mode of administration (IV and IM or IM only), cumulative dose and length of administration and postpartum anxiety on the first and fourteenth day of postpartum (Table 2 and 3).

Table 2. Relationship between Mode of Administration, Cumulative Dose, and Duration of Administration of Intrapartum Oxytocin on Postpartum Anxiety.

	Day-1 postpartum			Day-14 postpartum		
	Mild anxiety	Moderate anxiety	p	Mild anxiety	Moderate anxiety	p
Mode of administration						
Intravenous and intramuscular oxytocin (%)	96.3	3.7	0.21*	85.2	14.8	0.33**
Intramuscular oxytocin only (%)	90.3	9.6		77.4	22.6	
Oxytocin cumulative dose (IU)	30 (10-50)	20 (10-35)	0.46**	30 (10-45)	15 (10-50)	0.32**
Duration of administration (hours)	6.5 (1-27)	12 (6-18)	0.26**	6.5 (1-18)	7.25 (6-27)	0.51**

*Fisher; **Chi-square

Table 3. Relationship between Mode of Administration, Cumulative Dose, and Duration of Administration of Intrapartum Oxytocin on Postpartum Depression.

	Day-1 postpartum			Day-14 postpartum		
	No depression	Depression	p	No depression	Depression	p
Mode of administration						
Intravenous and intramuscular oxytocin (%)	54	27	0.44*	53	28	0.37*
Intramuscular oxytocin only (%)	23	8		23	8	
Oxytocin cumulative dose (IU)	30 (10-35)	30 (10-50)	0.15**	30 (10-35)	30 (10-50)	0.19**
Duration of administration (hours)	6.5 (1-18)	12 (2-27)	0.38**	6.5 (1-18)	10 (2-27)	0.49**

*Chi-square; **Mann-Whitney

DISCUSSION

In this study, we found that the prevalence of depression at admission, 1 day and 14 days after delivery in patients who received intrapartum oxytocin were 29.5%, 31.3% and 32.1%; respectively. The prevalence of postpartum depression in the general population in other countries was varied from 10 to 34%. The prevalence of postpartum depression in Asia was between 11% and 60.8%.⁹ Alfiben et al. found that postpartum depression prevalence in Dr. Cipto Mangunkusumo hospital was 33%.¹⁰

In this study, the assessment was carried out on the first and fourteenth day of postpartum. In a previous study conducted by Alfiben et al. in RSCM, they found that the EPDS evaluation at 48 hours postpartum and 2 weeks postpartum were not statistically significantly, so they suggested to perform only one assessment only.⁹ The aim of assessment using EPDS at two weeks postpartum in this study was to exclude the postpartum blues which usually happened and lasted until the two weeks after delivery.

There were no association among the mode of oxytocin administration, cumulative dose and length of administration with postpartum anxiety. These findings differed from the results by Jonas, et al. which showed that women who got exogenous oxytocin during labor either IM or IV had the lower risk to be anxiety and aggression; as well as, they stated that exogenous oxytocin was related to the increased socialization, including maternal behavior.⁷ Apart from that, there were two studies finding a negative correlation between plasma levels of oxytocin and anxiolytic effects; meanwhile it described a positive relationship between plasma oxytocin level and positive feelings in non-pregnant women.^{11,12} Other studies also found a negative correlation between the incidence of postpartum depression and oxytocin. Women with low level of oxytocin level during pregnancy had increased risk of postpartum depression. Increased incidence of depression at 2 weeks after delivery occurred in individuals with lower plasma oxytocin concentration.¹³

Whether plasma oxytocin level can be used as a prediction for central oxytocin level, activity level in the brain, and its relationship with the social and emotional behavior is still unclear. One study mentioned that plasma oxytocin level did not reflect the

availability of oxytocin in the central. Central oxytocin release was not necessarily related to the release of oxytocin into the peripheral; therefore, the relationship among psychological variables should be interpreted cautiously.^{3,14}

Neurohypophysis is a major contributor to the plasma oxytocin level, especially during childbirth and breastfeeding. This release is not affected by the blood-brain barrier; this hormone is released directly from the circuit magnocellular into the capillary. Either endogenous or exogenous oxytocin has a poor penetration to the blood-brain barrier. In physiological condition, there are differences in plasma oxytocin concentration and cerebrospinal fluid. Level of oxytocin shows circadian cycle in the cerebrospinal fluid, but not in the other way around. The difference in oxytocin concentration or release pattern in body fluid, including cerebrospinal fluid versus plasma, is influenced by various peptides. In addition, oxytocin also has a short half-life in the blood, between 3 and 9 minutes.¹⁴

Study about antidepressants or anxiolytic effect of exogenous oxytocin is still limited. The recent study showed that there was a negative effect from exogenous oxytocin on depression postpartum.^{15,16} However, the role of exogenous oxytocin on maternal behavior is quite clear, although recent evidence states that the effect may still be confounded by endogenous oxytocin level produced during the mother-baby bonding time. In addition, individual factors, such as variation of the oxytocin receptor function, production of endogenous oxytocin, bonding between mother and baby should be considered. These factors affect individual responsiveness to exogenous oxytocin. Gonadal hormone, especially estrogen also affects the regulation of endogenous and exogenous oxytocin.¹⁷ It is still unknown whether the administration of exogenous oxytocin can interact with the level of endogenous hormone oxytocin or other endogenous hormone.¹⁸

CONCLUSION

The patients who received intrapartum oxytocin are more prevalent to have mild anxiety. The prevalence of depression before delivery day, on the first and fourteenth day of postpartum are similar. In statistic, there is no relationship between intrapartum oxytocin administration and postpartum anxiety or depression.

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