Araştırma Makalesi
Research Article

The Effect Of Skin To Skin Contact On The Expulsion Time Of The Placenta And Delivery Hormones

TEN TENE TEMASIN PLASENTA AYRILMA SÜRESİ ÜZERİNE ETKİSİ

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ABSTRACT

Introduction: Skin to skin contact is applied in vaginal and cesarean section and many of its positive effects are already known. In this study we aimed to investigate the effects of skin to skin contact on birth hormones and expulsion time of the placenta in spontaneous vaginal deliveries.

Methods: The study comprised 40 women who applied to the Department of Obstetrics and Gynecology of Manisa Celal Bayar University. The study group experienced continuous SSC and the control group received standart care with separation of the newborn. Expulsion time of the placenta was noted and blood samples pre- and postpartum were withdrawn for levels of oxytocin, β-endorphine and catecholamine.

Results: The mean age of mothers in the case group was 28.55±5.97, the mean age of mothers in the control group was 26.75±6.58. The seperation time of the placenta was statistically significant shorter in the study group when compared to the control group. Levels of oxytocin and catecholamine were similar both pre-and postpartum between study and control groups. β-endorphine levels were similar postpartum but significantly higher in the prepartum period in the study group.

Discussion and Conclusion: Skin to skin contact at birth is a factor affecting the separation time of the placenta without disturbing the balance between birth hormones. Health professionals should be informed and awareness about skin to skin contact should be increased in the early postpartum period. Health care providers working in the delivery room, namely midwives, nurses and doctors should be aware of the many advantages of skin to skin contact immediately after birth in low risk deliveries. Additional advantage of rapid detachment of the placenta without changing equilibrium of birth hormones should be kept in mind as well.

Keywors: Skin to skin,oksitosin, β-endorfin, katekolmain, plasenta

ÖZ

Amaç: Ten tene temas vajinal ve sezaryen doğumlarda tercih edilen ve pek çok olumlu etkisi bilinen bir uygulamadır.

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Bu çalışmada vajinal doğum sonrasında ten tene temasın plasenta ayrılma süresi ve doğum hormonları üzerine olan etkisini araştırnayı planladık.

Gereç ve Yöntem: Çalışmaya Manisa Celal Bayar Üniversitesi Tıp Fakültesi Kadın Hastalıkları ve Doğum kliniğine başvuran 40 gebe dahil edildi. Çalışma grubunda doğum sonrası kesintisiz ten tene temas uygulandı, kontrol grubunda anne ve bebek ayrıldı. Plasentanın ayrılma süresi not edildi ve doğum öncesi doğum sonrası kan örneklerinde oksitosin, β-endorfin ve katekolamin düzeyleri ölçüldü.

Bulgular: Kadınların ortalama yaşı çalışma grubunda 28,55±5,97, kontrol grubunda 26,75±6,58 idi. Plasentanın ayrılma süresi çalışma grubunda istatistiksel olarak anlamlı biçimde daha kısa bulundu. Oksitosin ve katekolamin seviyeleri hem çalışma hem kontrol grubunda pre ve postpartum dönemde benzerdi. β-endorfin seviyeleri postpartum dönemde iki grup arasında benzerdi ancak prepartum dönemde çalışma grubunda istatistiksel olarak anlamlı biçimde daha yüksektir.
Sonuç: Doğum sonrası uygulanan ten tene temas doğum hormonları arasındaki dengeyi bozmadan plasenta ayrılma süresini kısaltmaktadır. Sağlık çalışanları ten tene temasın önemi hakkında bilgilendirilmeli ve uygulama erken postpartum dönemde yaygınlaştırılmalıdır. Doğum salonunda çalışanlar yani ebe, hemşire ve doktorlar ten tene temasın pek çok avantajının yanı sıra plasenta yarılma süresini kısaltması ve doğum hormonlarına etki etmemesi konusunda da bilgilendirilmelidir.

Anahtar Kelimeler: Ten tene temas, oksitosin, β-endorfin, katekolmain, plasenta

The initiation of kangaroo care dates back to 1978 in Colombia when restricted resources in neonatal intensive care units were a cause of high morbidity and mortality. Uninterrupted skin to skin contact (SSC) between mother and newborn and exclusive breastfeeding led to early home discharge (1).

Skin to skin contact has been adapted to full term deliveries after sponatenous and/or cesarean delivery. Many studies have shown that SSC regulates stress, anxiety and psychological distress of both mother and newborn (2). The Cochrane report released in 2016 supports SSC for the promotion of breastfeeding. Uninterrupted SSC after birth allows the newborn to self-attach to the nipple and more effective nursing is possible which in turn leads to increased milk production and better infant weight gain (3-4).

Oxytocin is released by vagal stimulus which is affected by touch, warmth and odor all of which are stimulated by SSC (5-6). Oxytocin is known to increase the mother's temperature providing the newborn with warmth (5), increases milk productiona and is the best uterotonic hormone. There is a rise in β-endorphin levels during pregnancy and reaches its peak during delivery. This is a natural response in a physiological birth in order to minimise the perception of pain. Breastmilk contains β-endorphin and there is a precise balance between oxytocin and β-endorphin levels (7). As parturition commences and levels of catecholamines increases, β-endorphin levels also show an increase (7).

In this study we aimed to investigate the effect of immediate SSC on the expulsion time of the placenta and the effect of SSC on key point hormones namely oxytocin, β-endorphin and catecholamine in the mother's blood.

MATERIAL AND METHODS

This research was conducted at Manisa Celal Bayar University Medical Faculty Gynecology and Obstetrics Department, a tertiary care teaching hospital in

the western region of Turkey. It is a teaching hospital for medical and nursing students and residents. Each delivery is attended by nurses and resident doctors in obstetrics&gynecology. A resident doctor in pediatrics is also present and radiant warmers with resuscitation equipment are available in the delivery room. Skin to skin contact is not applied routinely. Adult, healthy pregnant women who were willing to participate in the study were included after being informed on the procedure and signing an informed consent. The study consisted of 20 treatment and 20 control subjects with term, singleton, otherwise known as healthy pregnancies.

Socio-demographic data, time and date of birth, gender, weight of sibling, and separation time of placenta were recorded. At admission to the delivery room and postpartum within 6 hours, 1 cc venous blood was drawn from all patients routinely. Collected blood samples were kept at –800 until biochemical analysis. In the study group newborn babies were placed skin to skin on the mother's chest, control subjects were separated as done routinely. If the newborn was in need of medical care or a complication arised in the mother, the subject was not included in the study.

Oxytocin, β-endorphin and catecholamine levels were measured in the blood samples by using enzyme linked immunosorbent assay Data collected from the experiments were evaluated using SPSS 15.00. Significant differences between groups were evaluated by Mann-Whitney U test and limit of significance was accepted as $p<0.05$

RESULTS

The mean age of women in both study and control group was 28±5 (Min:19, max:41) with statistically no significant difference ($p>0.05$). All pregnant women who participated in the study were married and none of the participants had any chronic illness. Participants in the study group had social security by as high as 80%, whereas 55% of the control group had a social security. Participants in the study group were nonsmokers, in the control group, only 1 participant (%5) had a smoking habit. None of the women were alcohol consumers. Women were housewives in the majority of study and control groups, 90% and 95%, respectively. The majority of women were living in the city center in both groups, only one woman was illiterate in both groups (%5). The family budget was defined as balanced in 65% and 75% of study and control groups, respectively. Gender and birth weight of the newborn are shown in Table 1.

Table 1: Data of Newborn

	Gender	**n**	**%**	**Weight (gr.)**	**n**	**%**
Control	Girl	10	50,0	**(min:2490,max: 3900)**	1	5,0
	Boy	10	50,0	2,5 kg below	19	95,0
				2,5-4,0 kg	0	0
				4 kg above		
Study	Girl	11	55,0	**(min:2520,max: 4510)**	0	0
	Boy	9	45,0	2,5 kg below	19	95,0
				2,5-4,0 kg	1	5,0
				4 kg above		

The separation time of placenta was found to be significantly shorter in the study group ($p<0.05$). The results are shown in Table 2.

Table 2: Separation time of placenta (minutes)

	mean	Min-max
Control (n:20)	24,48	3-40
Study (n:20)	16,53	3-15

***p<0.05**

Serum levels of oxytocin, β-endorphin and catecholamine are shown in Table 3.

Table 3: Hormone Levels of Groups Before and After Birth

	Oxytocin (ng/L)	p	B-endorphin (pg/ml)	p	Catecholamine (ng/ml)	p
Control prepartum	46,15	0.050	90,56	0,040	38,26	0,293
Study prepartum	38,42		112,97		40,15	
Control postpartum	37,17	0,962	93,33	0,535	37,90	0,633
Study postpartum	34,82		105,27		39,03	

DISCUSSION

All uncomplicated deliveries are subject to SSC which is interpreted as placing the naked newborn on the mother's naked chest and abdomen, dry the baby and cover it with dry blankets. Unless intervention is needed, mother and baby are in this position for at least one hour, ideally until the end of the first suckling. The WHO recommends SSC in order to earn physiological, social and psychosocial benefits for both mother and newborn. Michelsson showed back in 1996 that human newborns placed in a cot cry 10 times more than those who are placed on their mothers' chest (8). Similarly maternal stress is found to be lower by the study of Handlin, who found a dose-response relationship between duration of SSC and maternal plasma cortisol (9).

Uterine atony (uterus disability for sufficient contraction) and prolongation of third stage of labor could increase the risk of postpartum hemorrhage. The third stage of labor begins immediately after the birth of fetus and ends with the exit of placenta. One of the most important purposes in this phase is avoiding postpartum hemorrhage. Uterotonic factors like Oxytocin are the most important factors for reduction of postpartum hemorrhage; because they increase uterine contractions and accelerate the third stage of labor. Benefits for the mother include shoter duration for placenta expulsion and reduced postpartum bleeding (10-11).

Oxytocin is a strong uterotonic and is stimulated by contact, heat and olfactory receptors during SSC. Oxytocin is important in controlling postpartum bleeding and has anti-anxiety effects. Maternal behaviours and nutritional behaviours of the newborn are regulated by oxytocin (12-13).

The result of our study confirms that SSC shortens expulsion time of placenta. Even though not measured, and this is a limitation of the study, shorter separation time may be considered as a positive effect on postpartum uterin contraction and decrease in blood loss. Not only the effect of oxytocin release but also the massage effect of the newborn's legs and body on the mother's uterus may have caused a rapid separation of the placenta.

The study of Nissen shows that oxytocin level in the blood increases when placenta is about to separate. Another study of him indicates that oxytocin level in the plasma rises 3 minutes after mother starts to breastfeed and this oxytocin level can help to separation of placenta (14). Our results show that there is no difference between study group and con troll group in terms of oxytocin levels either prepartum or postpartum. This point needs further investigation about whether cesarean section would have any effect. Even without SSC oxytocin was released in both groups sufficiently.

β-endorphine levels increase during pregnancy and this increase continues during delivery in order to

relieve birth pain. Breastmilk contains β-endorphine, therefore the newborn may also benefit. If β-endorphine levels are too high then oxytocine secretion may be inhibited, therefore a balance is important (7). As birth progresses and catecholamine levels increase, in turn β-endorphine levels also increase. (7). Our results showed no difference in catecholamine levels between study and control groups in either prepartum or postpartum stage. β-endorphine levels showed no difference in postpartum stage between groups. The only statistically significant difference was observed in the prepartum stage between study group and control group. We consider this difference as a result of informed consent. As stated above pregnant women are examined and delivered by residents who are on shift. There is no previous interaction and no private doctor attending the delivery. When obtaining informed consent prior to the study, women were given information about the upcoming SSC procedure and substantial time was devoted to them. This may have made the women feel more special and may have caused an increase in oxytocin levels.

In light of these results, SSC has no negative effect on birthing hormones, oxytocin, β-endorphine and catecholamine are secreted as they should be. Separation time of placenta is significantly shorter in the SSC group with a probable positive effect on postpartum bleeding amount. Even during the COVID-19 pandemic,healthcare workers are advised to apply SSC (15) therefore this study is an addition to the positive effects of SSC and all delivery room health care workers should be aware of its benefits.

Relevance to Clinical Practice:

Health care providers working in the delivery room, namely midwives, nurses and doctors should be aware of the many advantages of skin to skin contact immediately after birth in low risk deliveries. Additional advantage of rapid detachment of the placenta without changing equilibrium of birth hormones should be kept in mind as well.

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