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Original Article

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Obstetric Factors Associated With Exclusive Breastfeeding in Japanese Women Who Expected Exclusive Breastfeeding Before Delivery at Term

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Abstract

Background: We examined the obstetric factors associated with exclusive breastfeeding at 1 month after singleton delivery at term in Japanese women who expected exclusive breastfeeding before delivery.

Methods: We reviewed the obstetric records associated with exclusive breastfeeding at 1 month after singleton delivery at 37 - 41 weeks' gestation in 600 women who expected exclusive breastfeeding before delivery. Obstetric factors associated with exclusive breastfeeding were selected as follows: maternal age, parity, hypertensive disorders, oxytocin use during labor, delivery mode, neonatal birth weight, neonatal asphyxia, neonatal respiratory disorders requiring supplemental oxygen therapy ≥ 1 hour, early skin-to-skin contact (SSC) after vaginal delivery, neonatal care unit admission and maternal blood loss at delivery.

Results: Of the 600 women, 347 women (57.8%) resulted in exclusive breastfeeding for their babies at 1 month after delivery. Using logistic multivariable regression analysis, exclusive breastfeeding was significantly associated with neonatal birth weight ≥ 3,500 g (adjusted OR 0.59, 95% CI 0.37 - 0.94, P = 0.03) and early SSC in cases of vaginal delivery (adjusted OR 1.54, 95% CI 1.0 - 2.6, P = 0.046). In this study, exclusive breastfeeding at 1 month after delivery did not seem to be associated with other obstetric outcomes.

Conclusions: There were not any significant obstetric factors associated with exclusive breastfeeding at 1 month after delivery at term. Early SSC in cases of vaginal delivery under safety management seemed to contribute to the increased prevalence of exclusive breastfeeding in Japanese women.

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Introduction

Exclusive breastfeeding for the first 6 months of life has been recommended because of important healthy, medical, social and developmental benefits to both mothers and babies [1]. There have been some examinations concerning factors associated with exclusive breastfeeding in several countries [1-9]. In 2006, for example, some medical and social factors such as advanced maternal age, preterm births, multiple births, tobacco smoking and mothers without partners or grandparents have been reported to be associated with low prevalence of exclusive breastfeeding in Japanese women [7]. In this study, we examined the obstetric factors associated with exclusive breastfeeding at 1 month after singleton delivery at term in Japanese women who expected exclusive breastfeeding before delivery at Japanese Red Cross Katsushika Maternity Hospital.

Methods

The protocol for this analysis was approved by the Ethics Committee of the Japanese Red Cross Katsushika Maternity Hospital. In addition, informed consent for these analyses was obtained from each subject before birth.

Subjects

We reviewed the obstetric records of all deliveries at 37 - 41 weeks' gestation at Japanese Red Cross Katsushika Maternity Hospital from April 2011 through September 2011. During this period, a face-to-face interview was conducted to ask the pregnant women on admission for delivery at term whether or not they hope exclusive breastfeeding for their babies. In addition, we asked them about their feeding methods at 1 month (4 - 6 weeks) after deliveries. Demographic information and the characteristics of labor were extracted

Table 1. Analysis of Dichotomous Variables by the Prevalence of Exclusive Breastfeeding

	Exclusive breastfeeding			
	Yes	No	P-value	Crude OR (95% CI)
Total	347	253		
Maternal age at delivery (years)				
- 34	211 (61)	163 (65)	-	1.0 (reference)
35 -	136 (39)	90 (35)	0.36	1.17 (0.83 - 1.6)
Parity				
0	154 (44)	136 (54)	-	1.0 (reference)
1 -	193 (56)	117 (46)	0.02	1.46 (1.1 - 2.0)
Hypertensive disorders				
No	331 (95)	246 (97)	-	1.0 (reference)
Yes	16 (5)	7 (3)	0.25	1.70 (0.69 - 4.2)
Oxytocin use				
No	241 (69)	161 (64)	-	1.0 (reference)
Yes	106 (31)	98 (36)	0.06	0.72 (0.51 - 1.0)
Delivery mode				
Normal vaginal delivery	223 (65)	181 (72)	-	1.0 (reference)
Vacuum/forceps/breech delivery	23 (6)	21 (8)	0.71	0.89 (0.48 - 1.1)
Cesarean delivery	101 (29)	51 (20)	0.02	1.61 (1.1 - 2.4)
Neonatal birth weight (g)				
- 2,499	23 (7)	24 (9)	0.11	0.61 (0.33 - 1.1)
2,500 - 3,499	293 (84)	186 (74)	-	1.0 (reference)
3,500 -	31 (9)	43 (17)	< 0.01	0.46 (0.28 - 0.75)
Neonatal asphyxia				
No	344 (99)	245 (97)	-	1.0 (reference)
Yes	3 (1)	8 (3)	0.04	0.27 (0.07 - 1.0)
Neonatal respitratory disorders				
No	340 (98)	242 (96)	-	1.0 (reference)
Yes	7 (2)	11 (4)	0.09	0.45 (0.17 - 1.2)
Early skin-to-skin contact				
(total)				
No	154 (44)	116 (46)	-	1.0 (reference)
Yes	193 (56)	137 (54)	0.72	1.06 (0.77 - 1.5)
(vaginal deliveries only)				
No	53 (22)	65 (31)	-	1.0 (reference)
Yes	193 (78)	137 (69)	0.01	1.73 (1.1 - 2.6)
Neonatal care unit admission				
No	332 (96)	233 (92)	-	1.0 (reference)
Yes	15 (4)	20 (8)	0.37	0.72 (0.35 - 1.5)
Maternal blood loss				
< 1,000 mL	288 (83)	224 (89)	-	1.0 (reference)
≥ 1,000 mL	59 (17)	29 (11)	0.06	1.58 (0.98 - 2.6)

Data are presented as number (%). OR, odds ratio; 95% CI, 95% confidence interval.

Table 2. Adjusted Odds Ratios and 95% Confidence Intervals for the Prevalence of Exclusive Breastfeeding Using Logistic Multivariable Regression Analysis

	P-value	Adjusted OR (95% CI)
Parity		
0	-	1.0 (reference)
1 -	0.11	1.31 (0.94 - 1.8)
Delivery mode		
Normal vaginal delivery	-	1.0 (reference)
Cesarean delivery	0.21	1.29 (0.86 - 1.93)
Birth weight (g)		
2,500 - 3,499	-	1.0 (reference)
3,500 -	0.03	0.59 (0.37 - 0.94)
Neonatal asphyxia		
No	-	1.0 (reference)
Yes	0.08	0.36 (0.11 - 1.2)
Early skin-to-skin contact		
(vaginal deliveries only)		
No	-	1.0 (reference)
Yes	0.046	1.54 (1.0 - 2.4)

OR, odds ratio; 95% CI, 95% confidence interval.

from patient charts. In this study, exclusive breastfeeding was defined as that baby having received only breast milk from the mother (either directly from the breast or expressed). Obstetric factors associated with exclusive breastfeeding were selected according to previous studies [1-11]: maternal age, parity, hypertensive disorders (blood pressure ≥ 140/ and/ or /90 mmHg), oxytocin use during labor, delivery mode, neonatal birth weight, neonatal asphyxia (Apgar score at 1 or 5 minutes < 7), neonatal respiratory disorders requiring supplemental oxygen therapy ≥ 1 hour, early skin-to-skin contact (SSC) after vaginal delivery, neonatal care unit admission and maternal blood loss at delivery. In our institute, prolonged SSC of the mother and her healthy newborn since 1 - 5 minutes after vaginal delivery is initiated according to the mother's request.

Statistical analyses

Obstetric factors in women with and without exclusive breastfeeding (= women with mixed feeding or infant-formula supplementation only) were compared by x^2 test for categorical variables. Crude odds ratios (ORs) and 95% confidence intervals (CIs) were also calculated. Variables used in the multivariate model were those that on univariate analysis had shown statistically significance ($P < 0.05$) toward increased association with exclusive breastfeeding.

Results

During this period, there were total 842 Japanese deliveries (834 singleton and 8 twin deliveries) at term in our hospital. In this study, we excluded 8 cases of twin delivery because no patient of these (0%) has resulted in exclusive breastfeeding for 2 babies as reported previously [7]. Of the 834 singleton deliveries, the inquiry about feeding methods was failed to conduct in 120 women at delivery or/and 1 month after delivery (14.3%; missing data). Of the rest 714 women, 600 women (84.1%) expected exclusive breastfeeding for their babies. We excluded the rest 114 women (15.9%) who

did not expect exclusive breastfeeding before singleton delivery at term from this study. Therefore, we examined the obstetric factors associated with exclusive breastfeeding at 1 month after singleton delivery at 37 - 41 weeks' gestation in 600 women who expected exclusive breastfeeding before delivery. In the 600 women, there were no tobacco smokers, drinkers or those without partners by chance.

Of the 600 women, 347 women (57.8%) resulted in exclusive breastfeeding for their babies at 1 month after delivery. Obstetric factors in women with and without exclusive breastfeeding were compared as shown in Table 1. As shown in Table 2, using logistic multivariable regression analysis, exclusive breastfeeding was significantly associated with neonatal birth weight ≥ 3,500 g (adjusted OR 0.59, 95% CI 0.37 - 0.94, P = 0.03) and early SSC in cases of vaginal delivery (adjusted OR 1.54, 95% CI 1.0 - 2.6, P = 0.046). In this study, exclusive breastfeeding at 1 month after delivery did not seem to be associated with other obstetric outcomes such as delivery modes, neonatal general symptoms and maternal blood loss at delivery as shown in Table 1 and 2.

Discussion

This may be the first report to examine to identify the obstetric factors associated with exclusive breastfeeding simply in the cases who expected exclusive breastfeeding before delivery at term only. In 2006, some medical and social factors have been reported to be associated with low prevalence of exclusive breastfeeding in Japanese women [7]. In this study, therefore, we have excluded not only the cases who did not expect exclusive breastfeeding before delivery but also those of preterm births, twin (multiple) births, tobacco smokers and mothers without partners [1-9].

In this study, there were not any significant obstetric factors associated with exclusive breastfeeding in Japanese women except neonatal birth weight more than 3,500 g as a negative factor for exclusive breastfeeding. The reason leading to the results is not clear. One possible reason may be the small sample size compared with some previous studies. The other reason may be that the secretion of human milk may not be enough for babies whose birth weights more than 3,500 g because of the delicate build of Japanese women. In this study, for example, maternal height and weight at 1 month after delivery were 158 ± 5 cm and 53 ± 4 kg, respectively. During this period, the average birth weight in Japanese newborn at term (average: 39.5 ± 1.5 weeks) was 2,994 ± 387 g in our institute. Therefore, birth weight more than 3,500 g may be too heavy to perform exclusive breastfeeding from one mother like the cases of twins because of secretion of human milk from one mother not being enough for 2 babies [1-9].

In cases of vaginal delivery, early SSC seemed to be another independent factor associated with the increased prevalence of exclusive breastfeeding in Japanese women. Early SSC has not been completely adopted in the maternity wards of developing countries because of some concerns about safety; however prolonged SSC of the mother and her healthy newborn soon after birth have been recommended by many investigations because it is believed to improve mother-infant bonding and successful breastfeeding [10-12]. The current results may support these recommendations if early SSC is carried out under safety management [10, 11].

In our institute, on the other hand, early SSC did not seem to be associated with exclusive breastfeeding in the whole deliveries, because Caesarean delivery seemed to contribute to the increased prevalence of exclusive breastfeeding although the difference did not reach significance (crude OR 1.61, P = 0.01 and adjusted OR 1.29, P = 0.21). This result seemed to be contrary to some previous studies [2, 4]. One of possible reasons leading to the current results is that the women after Cesarean delivery can receive the education concerning exclusive breastfeeding by midwives more than the women after vaginal delivery, because in our institute hospitalization in the women after Cesarean delivery becomes longer than that after vaginal delivery (Cesarean delivery: 7 - 9 days vs. vaginal delivery: 3 - 5 days). During hospitalization, the midwives in our institute have taught postpartum women about breastfeeding eagerly. Therefore, the exclusive breastfeeding rate might have been increased in women after Cesarean delivery compared with those after vaginal delivery.

In this study, there were not any significant obstetric factors associated with exclusive breastfeeding at 1 month after delivery at term. Early SSC in cases of vaginal delivery under safety management may contribute to the increased prevalence of exclusive breastfeeding in Japanese women; however a further large study may be needed.

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Declaration of Interest

The authors report no conflicts of interest. The authors are responsible for the content and writing of the paper.

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