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The effect of rooming-in care on the emotional stability of newborn infants

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= Abstract =

Purpose : We aimed to examine the effect of rooming-in care on newborn infants emotional stability by comparing them with those cared for in a nursery.

Methods : Forty-eight full-term newborn infants born at Cheil General Hospital between July 1 and October 31, 2007, were enrolled. Twenty-four newborn infants were roomed-in in their mothers rooms (rooming-in group), and 24 newborns were cared for in the hospital nursery (the nursery group) for the first 3 days of their lives. Those with perinatal problems that required medical treatment were excluded. By using Brazeltons neonatal behavior assessment scale, we measured irritability and self-quieting as well as the duration of crying after heel-stick puncture for the newborn metabolic screening test.

Results : The rooming-in group had a higher irritability score than the nursery group (6.8±1.7 vs. 4.2±2.1, $P<0.001$), thereby suggesting stable behavior against external irritation; the former also had a higher self-quieting activity score (5.9±0.3 vs. 4.5±1.8, $P=0.001$), thereby suggesting that stability was reached quickly from the irritated state. Time taken to stop crying after the heel-stick puncture was significantly shorter in the rooming-in group than in the nursery group (17±15.1 seconds vs. 115.3±98.5 seconds, $P<0.001$).

Conclusion : These results show that newborn infants in the rooming-in group exhibit more stable behavior against external irritation and can be stabilized from an irritated state more quickly than infants cared for in the nursery, even after a few days of rooming-in care. (Korean J Pediatr 2008;51:1315-1319)

Key Words : Rooming-in care, Affect, Newborn

Introduction

Rooming-in care is a method for the care of newborn infants in which the baby stays with the mother in the same room, the mother takes care of her baby by herself, and the nurses and doctors help her care for her baby in the room.

The World Health Organization has emphasized the importance of rooming-in, saying that the pattern of nursing for the first 3 days after birth has a significant effect on breastfeeding[1]. According to the 10 steps to successful breastfeeding by the UNICEF, it is recommended that mothers be assisted in initiating breastfeeding within half an hour of birth, and that mothers should be allowed to stay with their infants for 24 hours a day with rooming-in care[2]. The benefits of allowing mothers to stay with their babies are so impressive that professional organizations such as the American Academy of Pediatrics[3] and American College of Obstetricians and Gynecologists[4] have made recommendations promoting rooming-in and opposing routine separation of mothers and their babies after birth.

In addition to its advantage in breastfeeding, rooming-in care improves maternal attachment. Rooming-in mothers can see, contact and talk to their babies more frequently than mothers who have minimal contact with their babies[5]. Encouraging mother-infant contact from birth and rooming-in could increase breastfeeding significantly and decrease the incidence of failure to thrive, abuse, neglect, and abandonment of the infant[6]. Moreover, infants who stayed in their mothers room had significantly quieter sleep and cried lesser

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than infants who remained in the nursery[7]. Serotonin is thought to play a major role in a number of psychiatric diseases, and low cerebrospinal fluid (CSF) 5-HIAA concentrations, which reflects the central nervous system (CNS) serotonin turnover rates, have been linked to a variety of neuropsychiatric disorders[8]. Nursery-reared rhesus monkey infants exhibited lower CSF 5-HIAA concentrations than the mother-reared monkey infants. This implies that early maternal deprivation reduces the CNS serotonin turnover, and furthermore, there is a possibility of increasing the risk for serotonin-mediated psychopathologies[9]. The rooming-in system supports a greater number of maternal body contacts so there may be a positive relationship between rooming-in care and the infants emotional stability.

Thus far, there has been no study on the relationship between them. Therefore, we conducted an observational study to determine the difference in emotional stability between neonates staying in their mothers room and those cared for in the nursery.

Materials and Method

Among the full-term newborn infants who were born via uncomplicated pregnancies and deliveries at Cheil General Hospital between July 1st and October 31st 2007, 48 infants were randomly assigned and enrolled into the study. Informed consents were obtained from the parents for the observation of behavior of their babies during routine physical examinations and after heel-stick puncture for a metabolic screening test. These newborn babies were divided into 2 groups, the rooming-in group comprised those who were roomed-in with their mothers and the nursery group comprised those who were separated from their mothers and cared for in the nursery.

To evaluate the neonates emotional stability, we adapted 2 scales from Brazeltons neonatal behavioral assessment scales, irritability and self-quieting activity[10] and measured the duration of crying after the heel-stick puncture.

The irritability scale is for evaluating the stability of newborn babies. There are 8 stimulies (uncover, undress, pull-to-sit, prone, pin-prick, tonic neck reflex, Moro reflex, and defensive reaction). In the aforementioned order, clinicians give stimuli to the baby and count the number of stmuli to which the baby responds with audible fussing or crying for longer than 3 seconds. If a baby is stable, it would not be upset easily. So, a higher number of stimuli to make him or her irritable represents a more stable state.

The second scale, self-quieting activity, is a measurement of the activities that the baby initiates as an observable effort to quiet him or herself in a crying state. The activities that can be counted are: (a) hand-to-mouth effort; (b) sucking on fist or tongue; (c) using visual or auditory stimulus from the environment to quiet him or herself. To evaluate self-quieting activity, clinicians count the number and duration of his or her effort to go back to stable state (To evaluate self-quieting activity, the pattern in which a baby in an irritable state tries to restore the stable state by him or herself is observed. The success of the activity is measured by an observable state change to state 4 or below and maintenance of the state for at least 5 seconds). A higher score is given for more frequent trials and a longer duration of success. Scorings were as follows; (1) Makes no attempt to quiet self, intervention always necessary, (2) A brief attempt to quiet self (less than 5 seconds) but with no success, (3) Several attempts to quiet self, but with no success, (4) One brief success in quieting self for period of 5 seconds or more, (5) Several brief successes (5 seconds) in quieting self, (6) An attempt to quiet self which results in a sustained successful quieting for one or more 15 seconds. The duration of crying was measured by using a stopwatch from the time at which blood sampling via heel-stick puncture for metabolic screening test was finished to the time when the baby stops crying.

The behavior assessment scales described were performed on the 3rd day of life at the same place under identical conditions without any intervention, for reducing the environmental differences between the 2 groups. Statistical analysis was performed by the independent sample t test using SPSS version 12.0. A P-value below 0.05 was considered statistically significant.

Results

The characteristics of the newborn babies were comparable between the rooming-in group and nursery group (Table 1). The average age of the mothers was 32.4 years, the mean gestational age was 38.1 weeks, mean birth weight was 3,249 g, and the Apgar scores at 1 and 5 minutes were 8.2 and 9.2 respectively.

1. Irritability

When 8 kinds of stimuli were applied to the infants of the 2 groups in the stable state, the mean score of those in the

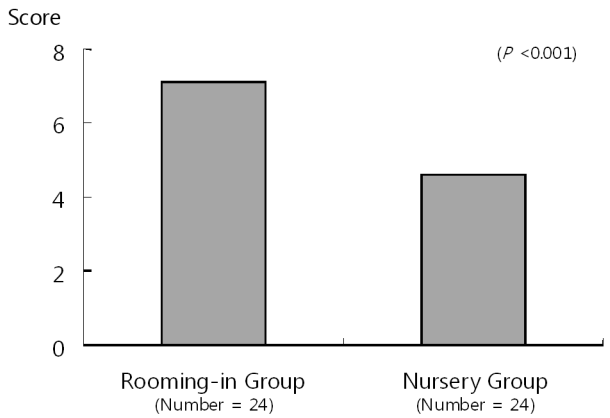

Fig. 1. Irritability score in the nursery group is higher than that in the rooming-in group (P<0.001).

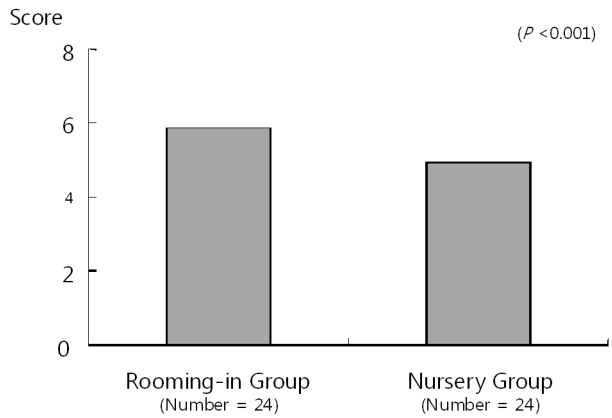

Fig. 2. Self-quieting activity score in the nursery group is higher than that in the rooming-in group (P<0.001).

Table 1. Characteristics of Newborn Babies

Number of newborn	Rooming-in (N=24)	Nursery (N=24)	P-value NS
Mothers age (years)	31.9±2.7	32.9±3.8	NS
Gestational age (weeks)	38.9±1.1	37.2±4.1	NS
Birth weight (g)	3282.7±728.0	3214.5±485.4	NS
Apgar score 1 min	8.1±0.4	8.3±0.6	NS
5 min	9.1±0.4	9.3±0.4	NS

Values are presented as mean±standard deviation.
NS, Not significant (P≥0.05)

rooming-in group was 7.1 (±1.6 S.D.), whereas that in the nursery group was 4.6 (±2.4 S.D.). The number of irritating stimuli that induced crying or fussiness was significantly larger in the rooming-in group than in the nursery group (Fig. 1). This implies that those in the nursery group could be easily upset even in response to milder stimuli than those in the rooming-in group.

2. Self quieting activity

Shortly after collecting blood via the heel-stick puncture for the metabolic screening test, all the babies became very irritable. The babies were observed without any intervention those in the rooming-in group scored 5.8±0.4 scores whereas the babies in the nursery group scored 4.4±1.9 (Fig. 2). This implies that the babies in the rooming-in group put in significantly more effort to restore stability from the irritable state by themselves and were more successful than those in the nursery group.

3. Duration of crying

On puncturing their heels with lancets, almost all the babies started crying and usually continued to cry until the blood collection was completed. We observed the babies from the time of completion of the blood sampling until they became quiet. The total duration of crying from the time the babies started crying to the quiet state was 16.1±14.6 seconds in the rooming-in group and 97.7±98.2 seconds in the nursery group (Fig. 3). The duration was significantly shorter in the rooming-in group than in the nursery group (After blood collection, babies in the nursery group cried longer duration but, those in rooming-in group cried shorter).

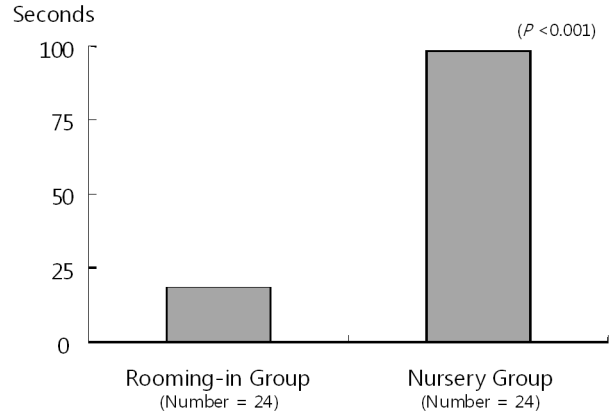

Fig. 3. Duration of crying in the nursery group is longer than that in the rooming-in group (P<0.001).

Discussion

If a newborn baby is placed on the mothers abdomen, it can crawl up to her breast by itself, finds the nipples, and begins to suckle. The odor of the nipple appears to guide the baby. Early contact and opportunity for sucking in the first

hour of life is very important for successful breastfeeding[11]. Moreover, after birth, babies who were placed in close body contact with their mothers did not cry during the first 90 minutes postpartum. However, in contrast, babies who were placed in a cot cried in short pulses[12]. Physical separation distresses babies and causes them to cry. From such a viewpoint maternal early body contact is one of the most important factors for increasing mother-infant emotional attachment and decreasing the distress of newborn babies. Rooming-in care provides many chances for bodily contact and eases the breastfeeding process. Infants who stayed in their mothers room had significantly quieter, sleep and cried lesser than infants who remained in the nursery[7].

In 1973, Neonatal Behavioral Assessment Scale was designed by Brazelton to evaluate a babys behavioral repertoire and use of states to manage his or her responsiveness to outside stimuli. This is a test of the infants capacities to manage his or her physiologic system in response to external manipulation[10]. In this study, we used 2 scales from Brazeltons neonatal behavioral assessment scales. Among the 28 items, we adapted irritability and self-quieting activity as tools for evaluating the emotional stability of newborn infants. These items were originally designed to evaluate newborn infant behavior and state of alertness.

The irritability score of the nursery group is significantly lower than the rooming-in group. It implies that those in the nursery group could be easily upset even in response to milder stimuli than those in the rooming-in group. And the self-quieting score is higher in the rooming-in group than in the nursery group. This means that the babies in the rooming-in group put in significantly more effort to restore stability from the irritable state by themselves and were more successful than those in the nursery group. In conclusion, rooming-in neonates maintained a stable state on receiving external irritating stimuli, put in more efforts to restore stability from the irritable state, and were more successful in restoring stability than those in the nursery. On the basis of these results, it was proven that rooming-in newborn infants are emotionally more stable than those in the nursery.

Despite the limitation of the small sample size, the present study identified the differences in the behavior of newborn babies according to where they were cared for. We studied the neonate behavior only after 2 days of neonatal care. Nevertheless, significant differences were observed in neonatal behavior.

Because most Korean mothers do not favor rooming-in care and are resistant to changing their mindset due to their physical fatigue during the immediate postpartum period, healthcare providers find it difficult to persuade them to adopt rooming-in care. The result of this study shows that the positive effect on neonatal behavior can persuade mothers who do not recognize the importance of rooming-in care.

Moreover, many Korean mothers stay in a unique Korean-style postpartum care center for 2 or 3 weeks after discharge from the hospitals. Here, the newborn babies are separated from their mothers for 24 hours a day in two-thirds of the postpartum care centers, and less than 10% of the facilities adopt a rooming-in policy[13]. If we extend our study to a longer period for newborn infants in those postpartum care centers, we may find a bigger difference in neonatal behavior

We can suggest that rooming-in care has an advantage in that it improves neonatal emotional stability and also has positive effects on the maternal attachment and establishment of breastfeeding.

한 글 요 약

모자동실이 신생아의 정서적 안정에 미치는 영향

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목 적 : 신생아실에서 산모와 격리되어 관리되는 신생아와 비교해 봄으로써 모자동실이 신생아의 정서적 안정에 미치는 효과를 비교해 보고자 한다.

방 법 : 2007년 7월 1일부터 10월 31일 사이에 출생한 정상 신생아 중 첫 3일간 모자동실을시행한 신생아 24명(모자동실군), 신생아실에서 관리한 24명(신생아실군), 총 48명에 대하여 브라젤튼의 신생아행동평가척도 중 자극척도와 자기 안정화 척도를 관찰하였으며, 대사이상검사를 위해 천자침으로 발뒤꿈치를 찌른 후 울음을 그칠 때까지의 시간을 측정하였다.

결 과 : 모자동실군은 자극화척도에서 신생아실군에 비해 높은 점수를 나타내어 외부자극에대해 매우 안정되어 있었으며(6.8±1.7 대 4.2±2.1, $P<0.001$), 자기 안정화 척도도 높은 점수를 나타내어 자극된 상태에서 빨리 안정화하는 것을 관찰할 수 있었다(5.9±0.3 대 4.5±1.8, $P=0.001$). 천자침을 찌른 후 울음을 그칠 때까지의 시간도 모자동실군에서 훨씬 짧은 것을 알 수 있었다(17±15.1 초 대 115.3±98.5초, $P<0.001$).

결 론 : 모자동실을 하는 신생아는 신생아실에서 격리되어 관리하는 신생아에 비해 생후 수일동안의 기간에도 불구하고 외부 자극에 대해 안정적이며, 자극된 상태로부터 빨리 안정화되는 것으로 나타나 정서적으로 안정되어 있음을 알 수 있었다.

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