Acta Med. Nagasaki 36 : 94－97

BEHAVIORAL PATTERN OF THE NEWBORN
Earliest timing for iniciating attachment behavior in the infants.

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Received for publication, April 4, 1991

ABSTRACT : The behavioral pattern during the first hour of life of 10 term neonate are reported by the study of minute by minute observation. The term newborn spent 65.5% of the first hour in the quiet alert state, 30.1% in the crying state and the rest 4.4% in the other states. The mean time spent in the dominant state of quiet alertness was 39.3 minutes. A sexual difference amongst the newborn was that the males spent 72.7% and the females spent 58.4% of the first hour in the quiet alert state. The predominant quiet alert state was analized for the time spent during the first 30 minutes and from 30 to 60 minutes. And it was found that 58.7% of the first 30 minutes and 76.4% of the second 30 minutes was spent in the quiet alert state. So it is suggested that during the time interval between 30 to 60 minutes after birth, the infants should be brought into physical contact with mothers for the first imprintation of the attachment-behavior in them, when they are in the state of maximum receptivity and the level of responses and reciprocation is at the optimum for promoting the attachment-behavior in the infants to be more deepening and long-lasting.

INTRODUCTION

In the recent years many studies have been undertaken in order to observe the behavioral pattern of mothers[1, 2, 3, 4] and infants[5, 6, 7, 8]. Very little is known whether there exists any racial differences in the behavioral pattern of the newborn immediately after birth. Great emphasis is given on the early hours of life, which being very important for both the mother and the newborn in the developement of the attachment-behavior. Till now there have been no report yet, on attempting to discern a more precise time period when the infants should be allowed to interact with their mothers to imprint the attachment-behavior on them. So our study was aimed to observe the behavioral pattern of the term newborn and to determine the earliest timing for iniciating the attachment-behavior in the newborn.

MATERIALS AND METHODS

The newborn included in the study were delivered in the Department of Obstetrics and Gynecology in the Nagasaki University Hospital. All the mothers were of low obstetric risk and gestational weeks of more than 38 weeks. Apart from the generally accepted pre-medication no other medication were used before or during parturition.

All the infants were born by normal vaginal delivery in the vertex presentation in the

delivery room. The cords were clamped within 1 minute after birth. The newborns were then given a warm bath. Application of Silver-nitrate, umbilical cord stump care, weighing and measuring were all withheld till the observation was completed Minimum handlings of the newborns were done except during medical intervention for recording temperature and heart-rate.

Observation of the newborn was done without taking any active part in the process of delivery by the observer. Observation was started from the first stage of labor and minute by minute observation[9] was made for the first 60 minutes of life. The predominant state in each minute was plotted in a graph. Detailed information of the labor and the newborn was recorded in a partogram.

The following six-point classification for the behavioral state by Prechtl and Beintema with modification was used for the assesment of the behavioral pattern of the newborn,

(1) quiet sleep : eyes closed, no eye movements, regular respiration

(2) active sleep : rapid eye movements observed under the closed eye-lids with random movements and startles, respiration regular and sucking movements occuring on and off

(3) quiet alert : eyes closed or open on and off, or bright look, ability to focus attention on visual or auditory stimuli, minimal motor activity

(4) active alert : eyes open, considerable motor activity, discrete action difficult

(5) interrupted crying : crying with inbetween pause, the interval of pause being more than 30 seconds

(6) continuous crying : crying with inbetween pause, the interval of pause being less than 30 seconds

RESULTS

The 10 infants born at term were of low obstetric risked pregnancy. In two of the mothers local anesthesia was used immediately before the birth of the fetus, who were excluded from the data reported in this sutdy. The infant criteria are shown in the **Table 1**. None of the mothers required medication such as sedatives, tranquilizer or anesthesia for alleviating labor pain. All the infants were born in the delivery room, smoothly per vaginum. The neonates required no resuscitation at birth and the Apgar score ranged from 8-10 at one minute and 10 at five minutes. Invariably, breast feeding was iniciated within one hour of life in all of the neonate under observation.

The newborn spent 65.5% of the first hour in the quiet alert state, 30.1% in the crying state and the rest 4.4% in the other states. The time

Table 1. Infant criteria

Patient No.	Sex	Gestational Age	Birth Weight	Apgar Score in 1 Minute.
1	♂	39 wks. 3d.	3,320 g	9
2	♂	39 wks. 6d.	4,250 g	9
3	♀	38 wks. 5d.	3,540 g	8
4	♀	39 wks. 4d.	2,960 g	10
5	♂	40 wks. 3d.	3,830 g	8
6	♀	39 wks. 1d.	3,280 g	9
7	♂	40 wks. 3d.	3,700 g	9
8	♀	39 wks. 0d.	3,180 g	10
9	♀	38 wks. 0d.	2,710 g	8
10	♂	39 wks. 2d.	2,600 g	9

Table 2. Time spent in the different states during the first hour of life

State	Range (min.)	Mean Time (min.)	%
1 quiet sleep	0 ~ 0	0	0
2 active sleep	0 ~ 17	1.7	2.9
3 quiet alert	25 ~ 49	39.3	65.5
4 active alert	0 ~ 5	0.9	1.5
5 interrupted crying	3 ~ 28	15.2	25.3
6 continuos crying	0 ~ 7	2.9	4.8

Table 3. Time spent in the quiet alert state during the first 30 minutes and from 30-60 minutes after birth

Patient No.	30 minutes after birth	From 30 mins. to 60 mins. after birth
1	8 min. (26.7%)	30 min. (100 %)
2	25 min. (83.3%)	13 min. (43.3%)
3	13 min. (46.7%)	22 min. (73.4%)
4	15 min. (50.0%)	29 min. (96.3%)
5	19 min. (63.4%)	30 min. (100 %)
6	15 min. (50.0%)	10 min. (33.4%)
7	22 min. (73.4%)	26 min. (86.7%)
8	16 min. (33.4%)	21 min. (70.0%)
9	22 min. (37.4%)	23 min. (76.3%)
10	20 min. (66.7%)	25 min. (83.4%)
Mean	17.6 min. (58.7%)	22.9 min. (76.4%)

Table 4. Sexual difference in the behavioral pattern of the newborn

Male	Quiet Alert State (%)	Crying State (%)	Female	Quiet Alert State (%)	Crying State (%)
1	38 min. (63.4)	22 min. (36.7)	1	24 min. (40.0)	36 min. (60.0)
2	38 min. (63.4)	5 min. (8.4)	2	44 min. (33.4)	16 min. (26.7)
3	49 min. (81.3)	12 min. (20.0)	3	25 min. (41.3)	35 min. (38.4)
4	48 min. (80.0)	12 min. (20.0)	4	37 min. (61.7)	23 min. (38.4)
5	45 min. (75.0)	10 min. (16.7)	5	45 min. (75.0)	10 min. (16.7)
Mean	44 min. (72.3)	12 min. (20.4)	Mean	35 min. (58.4)	24 min. (40.0)

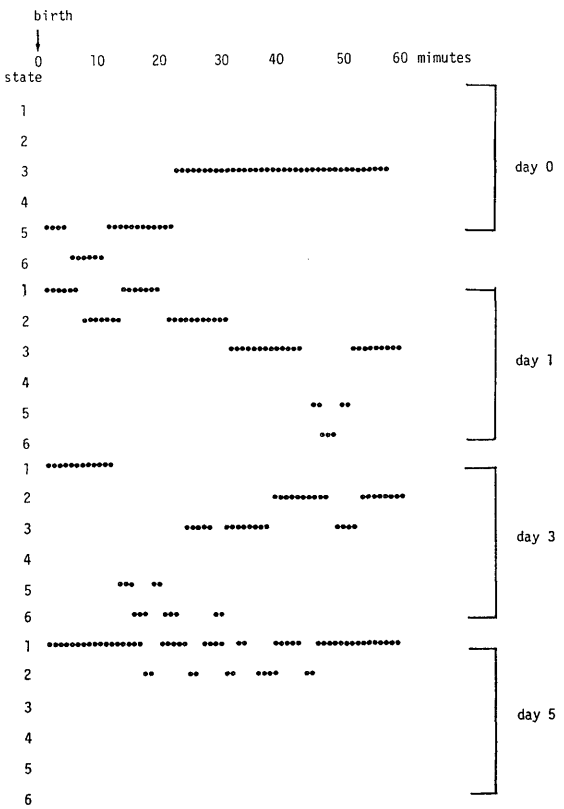

Fig 1. Behavioral pattern of a term neonate (39w3d, 3320g)

spent in the different states at the first hour is shown in **Table 2**. The mean time spent in the predominant state of quiet alertness by the newborn was 39.3 minutes. **Figure 1** expresses the behavioral pattern of the newborn. Though there were some indivisual variation, the term neonate showed a similar pattern in their behavior. All the newborns immediately after birth spent their time in crying state, This state could easily be assertained for the previously described pattern as interrupted and continuous. After crying phase, all the infants passed on to the quiet alert state. Even during bathing, most of them continued to be in the quiet alert state.

The predominant quiet alert state in the first 60 minutes of life was analyzed for the time spent in the quiet alert state during the first 30 minutes, which was 58.7%, and from 30 to 60 minutes, which was found to be 76.4%. So it is evident from the above data in the **Table 3** that the time spent in the quiet alert state from 30 to 60 minutes is greater than the first 30 minutes.

A sexual difference in the behavioral pattern could be established. The males spent more time in the quiet alert state (72.7%) than the females (20.4%) during the first 60 minutes of life. The results of this sexual difference are expressed in **Table 4**.

COMMENT

The behavior of infants in the first few days of life suggests that the newborn has a far greater range of capabilities[7, 12, 13] than previously acknowledged. Intensive interest of the mothers in their infants eyes matched with unusual ability of the infant to attend and follow, especially in the first hour of life, suggesting that the period immediately after birth is uniquely important. Data from several clinical observations and controlled studies performed on both animals and human beings[6, 13, 14] strongly supports the concept that a period shortly after birth is essential for mother-infant attachment.

Our study reveals the behavioral pattern of term neonates belonging to a different race

group, where observation was made during the time when the infants make their first communication with their mothers. The findings that newborns spent greater period of time in the quiet alert state during the first hour of life is in total agreement with the reports made previously on the similar subject[9].

The studies by Brazelton and associates already stated that during quiet alert state the infant has considerable response capabilities and that social behavior be elicited in this receptive state in the first hour of life, which is potentially useful for establishing the attachment behavior or bonding[7, 8]. It is evident from the observation of first one hour of life that the time spent in the quiet alert state from 30 to 60 minutes is greater than the first 60 minutes. So it is not the first few days or the first day, nor the early hours and neither the first hour, but to be more precise it is the time period between 30 to 60 minutes after birth, the infant be brought into physical contact with the mother for the first imprintation of attachment behavior in them. Because during this time period the newborn is in the state of highest capacity, during which the level of response capability and reciprocation is at the optimum.

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