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FOUR, EIGHT AND TWELVE HOURS VOIDING PATTERN OBSERVATION IN 32 EARLY PREMATURE NEWBORN.

Hypothesis / aims of study

In order to explore the possibility of using 4 hours voiding observation to evaluate the bladder function in early neonates, we performed present study. The present study has shown that bladder voiding function in premature newborns has not been fully developed, but improves quickly after birth. Central nervous system may involve in the mechanism of urination in premature new born.

Study design, materials and methods

1. Newborn, observation times and parameters

The premature early newborns is divided into seven groups (the first day group, the second day group, the third day group, the fourth day group, the fifth day group, the sixth day group, the seventh day group) according to the age. Every one was observed and recorded the free voiding pattern in 12 hours (9:00Am-21:00Pm) including 3 continuous periods of observation times were 4 hours (9:00Am-13:00pm; 13:00pm-17:00pm; 17:00pm-21:00pm).

The parameters are voiding time (VT), voiding volumes (VV), post-void residual volumes (PRV), state of consciousness at voiding, voiding frequency (VF) per hour, and meanwhile, the quantity of intake milk, liquid within the same time schedule for 12 hours from 9AM to 9PM were recorded. The liquid intake was given according to standards protocol. The diaper weight difference before and after voiding was defined as VV. The PRV was determined by ultrasound within 3 minutes after voiding.

(1) Voiding volumes (VV) measurement

The urine mat was weighted by an electronic balances (Shenyang Longteng, LD1102) (accurate to 0.1 g.), and then applied to collect urine on newborns. After voiding taking place, the urine pad was weighted and recorded immediately.

(2) Residual urine volume measurement

After each voiding we used ultrasound detector (GE, LOGIQ400) to detect the residual urine output immediately. Measured length-diameter, thick bladder diameter and residual urine = length-diameter x thick diameter x width size x 0.5.

(3) Judgment of sleep and waking status

Sleep refers to shut his eyes, breathing rules and no movement; Sober refers to open eyes, limb move and torso motion, or more powerful.

2. Statistical analysis

Data are analyzed using the Statistical Package for Social Sciences software (SPSS, version 13.0). Analysis of variance (ANOVA) was used. The significance level was set at $P < 0.05$ with two tails.

Results

This research is composed of different day-old observation, recorded voiding 617 times.

First, the results of the various parameters of voiding by the observation of 12 hours in all groups were satisfied as follows:

1. The results of average voiding volume were compared each other:

There is a significant difference between the first day and the sixth day ($P < 0.001$);

2. The results of the average residual urine was compared each other: there is not statistically significant among seven groups ($P > 0.05$).

3. The results of the VF per hour were compared:

There is a significant difference between the first day and the third day ($P < 0.01$);
There is a significant difference between the first day and the fourth day ($P < 0.01$);
There is a significant difference between the first day and the fifth day ($P < 0.001$);
There is a significant difference between the second day and the fourth day ($P < 0.001$);
There is a significant difference between the second day and the fifth day ($P < 0.001$);
There is a significant difference between the third day and the sixth day ($P < 0.05$);
There is a significant difference between the third day and the seventh day ($P < 0.05$);
There is a significant difference between the sixth day and the seventh day ($P < 0.05$);

4. Seven days micturition awake rate, respectively 37.18% 33.33%, the percentage 24.03%, 26.92%, 35%, 30.69%, 22.54%

Second, The result of the various parameters of voiding by the observation of 8 hours all groups was satisfied as following:

1. The results of the average voiding volume were compared each other: There is a significant difference between the first day and the sixth day ($P < 0.001$);

2. The results of the average PRV were compared each other: there is no statistically significant among seven groups ($P > 0.05$).

3. The results of VF per hour were compared:

There is a significant difference between the first day and the fifth day ($P < 0.001$);
There is a significant difference between the first day and the seventh day ($P < 0.05$);
There is a significant difference between the second day and the fifth day ($P < 0.01$);
There is a significant difference between the third day and the fifth day ($P < 0.05$);
There is a significant difference between the fourth day and the fifth day ($P < 0.01$);
There is a significant difference between the sixth day and the seventh day ($P < 0.05$);

4. Seven days micturition awake rate, respectively 29.41%、40.67%、21.875%、35.71%、26.92%、25.4%、20.75%。

Third, the results of the various parameters of voiding by the observation of 4 hours all groups were satisfied as following.

1. The results of the average voiding volume were compared each other:
There is no significant difference among seven groups.
2. The results of the average PRV were compared each other:
There is no statistically significant among seven groups.
3. The results of the VF per hour were compared:
There is a significant difference between the first day and the fifth day ($P < 0.001$);
There is a significant difference between the first day and the fifth day ($P < 0.05$);
There is a significant difference between the fourth day and the fifth day ($P < 0.01$);
4. Seven days micturition awake, respectively 31.57%、33.33%、22.86%、32%、33.87、%25.64、22.22%。

Fourth , we got the result of voiding parameters by 3 periods of 4h、8h、12h: statistical result shown as follows.

1. The results of average VV were compared each other: comparison of three periods in every group: there is no statistically significant among three periods.
2. The results of average PRV were compared with each other: comparison of three periods in every group: there is no statistically significant among three periods.
3. The results of the VF per hour were compared:
There is a significant difference between 4h and 12h in the fourth day ($P <0.01$);
There is a significant difference between 8h and 12h in the fourth day ($P < 0.05$); There is a significant difference between 4h and 12h in the fifth day ($P < 0.01$);
There is a significant difference between 4h and 12h in the sixth day ($P < 0.01$).

Interpretation of results

In the first day 11 patients were observed in the period from 0.5 to 12.5h after birth, 4 cases have no voiding within 12h. From the third day we discovered that a phenomenon that these newborn's arms or their legs budges or crying before voiding.

Concluding message

A big variation of parameter of the average VV、 PRV and VF is founded. There are no significant changes on the PRV in seven days observation. Four hours observation can be used to determine the average VV, average with same results as 12 hours observation. For VF the observation of 4h and 8h does not show inconsistence with that of 12 hours observation.

Disclosures

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