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THE VOIDING OBSERVATION OF PREMATURE INFANT WITH PIVH

Hypothesis / aims of study

Periventricular intraventricular haemorrhages (PIVH) is a common abnormality of premature infant. The voiding feature of premature infant with PIVH and the difference in voiding pattern compared with the premature infant without PIVH has rarely investigated. The aim of present study is to explore the effect of PIVH on the voiding function of premature infant.

Study design, materials and methods

The present study included 36 infants aged from 11 to 20 days in the NICU of the First Affiliated Hospital of Zhengzhou University from February to May of 2010. The infants were divided into two groups. The group with PIVH included 15 infants (graded one or two PIVH) and the group without PIVH include 21 ones. The pregnant period, body weight and age are (34.1±1.6) week, (16±3) d, (2.4±0.4) kg in group 1 and (34.4±1.2) week, (15±2) d, (2.5±0.4) kg in group 2, respectively. Voiding time, volume, residual urine volume (RUV), the conscious voiding and the intermittent voiding in the continuous eight-hours voiding observation from 9am to 5pm as well as the milk and liquid intake were recorded. The quantity of milk and liquid were given to infants according to the standard protocol. The voiding volume is calculated by diaper weight after voiding subtracts the diaper weight before voiding. The RUV was measured by ultrasound with the capacity of measuring RUV precisely to 0.1 ml. All voiding parameter of infants from two groups were analyzed and compared by using SPSS.

Results

The 105 times of voiding from the group with PIVH and 135 times of voiding from the group without PIVH were recorded. Compared to newborn without PIVH, the RUV was significant increased and conscious voiding rate was significant decreased in group with PIVH ((2±0.8) ml vs. (1.7±0.9) ml, P<0.05 and (41±13) % vs. (51±14) %, P<0.05). No significant difference between the 2 group regarding the voiding times (7±1.8 vs. 6.4±1.7), voiding volume ((16.3±7.9) ml vs. (17.6±8.5) ml) and intermittent voiding rate ((49±13) % vs. (43±12) %) (P>0.05).

Interpretation of results

It has been reported that many structures related to voiding control in the brain are located near the ventricle such as interbrain, alba near the ventricle, etc. PIVH is a type of cerebral hemorrhage of premature infant which possibly affect the domain near the ventricle. The main mechanisms may include brain edema, the destruction by the thrombin and hemoglobin, and inflammation. The results of present study has shown a significant differences of RUV and conscious voiding rate of the two groups with PIVH and without PIVH indicating that the PIVH may affect above structure near the ventricle participating in voiding control.

Concluding message

The positive effect of PIVH on the voiding function indicating the nerve center (voiding center) has participated the voiding control in some degree in premature infant.

References

1. Tsuji M, Saul JP, du Plessis A, et al. Cerebral intravascular oxygenation correlates with mean arterial pressure in critically ill premature infants, *Pediatrics*, 2000, 106:625-632.
2. Matsuura S, Downie JW, Allen GV. Micturition evoked by glutamate microinjection in the ventrolateral periaqueductal gray is mediated through Barrington's nucleus in the rat. *J. Neuroscience*, 2000, 101(9):1053-1061.
3. Nour S, Svarer C, Kristensen JK, et al. Cerebral activation during micturition in normal men. *J. Brain*, 2000, 123(pt4):89.

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Is this a clinical trial?	Yes
Is this study registered in a public clinical trials registry?	No
Is this a Randomised Controlled Trial (RCT)?	Yes
What were the subjects in the study?	HUMAN
Was this study approved by an ethics committee?	Yes
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Was the Declaration of Helsinki followed?	Yes
Was informed consent obtained from the patients?	Yes

