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Fetal heart rate pattern and umbilical cord nucleated RBC count

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Abstract:

Background: Previous studies have suggested the presence of a relationship between the increase of NRBC and the duration and intensity of asphyxia. The purpose of this study was to evaluate the relationship of fetal heart rate pattern and the number of NRBC's in umbilical cord blood sample at birth.

Methods: We enrolled 322 pregnant women with healthy, term fetuses who referred to Mirza Kouchak Khan Hospital for pregnancy termination in 2005 in a case-control study. All patients underwent continuous FHR monitoring and based on their FHR pattern, they were divided into two groups with normal FHR pattern and at least one abnormality in FHR pattern (including absence of beat to beat variability; absence of proper acceleration; and early, late, variable and prolonged deceleration). Samples of umbilical cord blood were evaluated for NRBC count and pH immediately after birth. The variables were compared in these two groups.

Results: The mean NRBC count was significantly higher in patients with any kind of deceleration (late, variable, early or prolonged) in comparison with controls (respectively 11.88 ± 4.406 , 8.32 ± 4.64 , 10.58 ± 5.366 , and 4.11 ± 4.913 vs. 0.93 ± 1.790 in controls). Furthermore the mean NRBC count was significantly higher in patients with absence of acceleration or beat to beat variability (10.73 ± 5.07 and 13.73 ± 3.58 vs. 1.47 ± 2.50). There was a negative correlation between 5th minute Apgar score and umbilical cord blood sample with mean NRBC count of umbilical cord blood sample.

Conclusion: Any abnormality in FHR pattern is associated with a significant increase in mean NRBC count of umbilical cord blood sample. There is also a significant relationship between the 5th minute Apgar score and umbilical cord blood sample pH, and mean NRBC count in umbilical cord blood sample.

Keywords:

Fetal Heart Rate . normal pattern . abnormal pattern . 5th minute apgar score . score . NRBC . umbilical cord blood sample

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