

## **Effects of Umbilical Venous Catheters on Arrhythmia and Heart Rate Variability in Premature Newborns**

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Introduction: Cardiac rhythm abnormalities associated with umbilical venous catheters in newborns are

limited to anecdotal case reports. The present study intended to evaluate true incidence and association, if there is any, between umbilical venous catheter, arrhythmic potential, and changes in heart rate variability.

Methods: The study consisted of two groups; 26 preterm newborns with a umbilical venous catheter (group 1), and 26 control group without (group 2). In all babies the following parameters were recorded prospectively: gender, gestation at birth, birth weight, working diagnosis for admission, medications, complete blood count, serum electrolytes, calcium, glucose, liver and kidney function tests, and clinical assessment scores (SNAP-II and SNAPPE- II). Holter recordings were fitted on day 2 of life in all newborns. The heart rate variability study was performed over a 24-h period by utilizing time-domain and frequency-domain analyses.

Results: There was no statistical difference between the two groups for gestational age, birth weight, SNAP-II and SNAPPE- II scores, hemoglobin, mean calcium, potassium, and sodium levels. In spite of any type of arrhythmia ratio appeared to be higher in infants with catheter (65%) than the control subjects (42%), this difference did not reach statistical significance ( $p=0.095$ ). Life-threatening cardiac arrhythmias were not found in any patients on Holter recordings. None of the heart rate variability parameters were found to be statistically different between the two groups.

Conclusions: Our study reassuringly demonstrated that umbilical venous catheter does not have any significant effect on arrhythmia or heart rate variability in preterm newborns.