81. Upper body arterio-central venous PCO₂ gap (UBCO₂G) in monitoring sick children with cardiac disease


Objectives: To determine the validity of using UBCO₂G for monitoring sick children with cardiac disease.
Design: A prospective, observational non interventional cohort study.
Setting: King Abdul Aziz Medical City, Pediatric Cardiac ICU (PCICU), Riyadh.
Patients: Between April 2011 and May 2013, 257 patients admitted to our PCICU were recruited in the study.
Intervention: Arterial and central venous blood samples were collected as needed per patients’ conditions. Patients’ clinical and laboratory data were collected simultaneously.
Results: A total of 421 data sets with arterial, upper (SVC) and lower (FV) body central venous PCO₂ were collected spontaneously from 257 patients age 17.0 ± 25.8 months, weight 7.45 ± 5.53 kg. UBCO₂G was higher than lower (art-FV) body PCO₂ (LBPCO₂G) gap 7.80 ± 3.28 vs. 5.95 ± 3.65 mmHg (p = 0.001). In 75% of our data sets UBCO₂G was ≥9.65 and LBPCO₂ gap was ≤7.8 mmHg. Patients with UBCO₂G ≥9.65 vs. <9.65 mmHg had higher lactic acid (LA) 2.0 ± 1.4 vs. 1.6 ± 1.3 mmol/L (p = 0.014), BUN 6.1 ± 5.2 vs. 4.8 ± 2.1 mmol/L (p = 0.013), creatinine 48 ± 17 vs. 43 ± 13 μmol/L (p = 0.004), glucose 8.7 ± 4.1 vs. 7.1 ± 3.7 mmol/L (p = 0.001) and PRISM score 9 ± 6 vs. 7 ± 6 (p = 0.038) and lower urine output 5.2 ± 2.8 vs. 6.1 ± 4.3 ml/kg/3 h. However patients with UBCO₂G ≥6 vs. <6 mmHg were different in LA only 1.8 ± 1.5 vs. 1.5 ± 1.0 mmol/L respectively (p = 0.018).
Conclusion: Upper is higher than lower body PCO₂ gap. UBCO₂G ≥9.65 was associated with higher LA, BUN, creatinine, serum glucose and PRISM and lower urine output. Patients with UBCO₂G ≥9.65 were sicker. UBCO₂G can be used as a biomarker in monitoring children with cardiac disease.

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