



In critically ill adult patients, central VBG may be used to detect and diagnose acid-base disturbances with reasonable diagnostic accuracy, even in shock states, compared to the ABG” Schrauben et al (2018).

Abstract:

BACKGROUND: Acid-base disturbances are frequent in critically ill patients. Arterial blood gas (ABG) is the gold standard in the diagnosis of these disturbances, but it is invasive with potential hazards. For patients with a central venous catheter, venous blood gas (VBG) sampling may be an alternative, less-invasive diagnostic tool. However, the accuracy of a central VBG-based acid-base disorder diagnosis compared to an ABG is unknown. The primary objective of this study was to assess the accuracy of a central VBG-based acid-base disorder diagnosis compared to the “gold standard” ABG in critically ill patients.

METHODS: This was a study of adult patients in a medical intensive care unit that had simultaneously drawn ABG and central VBG samples. Expert acid-base diagnosticians, all nephrologists, diagnosed the acid-base disorder(s) in each blood gas sample. The central VBG diagnostic accuracy was assessed with percent agreement, sensitivity, and specificity compared to the ABG-based diagnosis.

RESULTS: The study involved 23 participants. Overall, the central VBG had 100% sensitivity for metabolic acidosis, metabolic alkalosis, and respiratory acidosis, and lower sensitivity

(71%) for respiratory alkalosis, and high percent agreement, ranging from 75 to 94%. VBG-based diagnoses in vasopressor-dependent patients (n = 13, 56.5%) performed similarly to the entire sample.

CONCLUSIONS: In critically ill adult patients, central VBG may be used to detect and diagnose acid-base disturbances with reasonable diagnostic accuracy, even in shock states, compared to the ABG. This study supports the use of central VBG for diagnosis of acid-base disturbances in critically ill patients.

Reference:

Schrauben, S.J., Negoianu, D., Costa, C., Cohen, R.M., Goldfarb, S., Fuchs, B.D. and Berns, J.S. (2018) Accuracy of Acid-Base Diagnoses Using the Central Venous Blood Gas in the Medical Intensive Care Unit. *Nephron*. April 12th. .

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