

JOINT EVENT

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## Use of venous blood gases for management of acid-base status in patients with septic shock

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Arterial punctures are painful and may be difficult to obtain in many patient populations. Generally, venous punctures are significantly easier to obtain and less painful to perform. The objective of this report is to determine the relationship between venous and arterial blood gases in patients with severe septic shock. This retrospective report reviews 11 adult patients (eight male and three female) who were diagnosed with septic shock. Statistical analysis was performed using the paired, two sample t-test or Wilcoxon signed-rank test wherever appropriate. The adjusted venous blood gas values were compared to arterial blood gas values. This report collected data from 11 patients (six male, five female) within the age range of 64 to 86 years (mean 75.3±6.9). There was a statistically significant difference between the venous pCO<sub>2</sub> (43.7±9.0 mmHg) and the arterial pCO<sub>2</sub> (30.4±10.1 mmHg) with a mean difference of 13.3(±4.1) mmHg (Figure 1). The mean values for the arterial and venous pH also differed significantly (P<0.05), with the arterial (7.32±0.07) being higher than the venous (7.22±0.05), and a mean difference of 0.10 (±0.039) (Figure 2). For the HCO<sub>3</sub><sup>-</sup> there was also a statistically significant difference. The venous HCO<sub>3</sub><sup>-</sup> (17.2±2.4 mEq/L) was slightly higher than the arterial (15.6±3.4 mEq/L), with a mean difference of 1.7 (±1.5 mEq/L). The results of this report confirm appear to demonstrate the unreliability of venous blood gases alone for evaluating acid base status in this patient population. Future studies may focus on the use of veno-arterial CO<sub>2</sub> gradients in estimating cardiac output, evaluating this phenomenon in different stages of septic shock, as well as prognostic value on clinical usefulness of simultaneous venous and arterial blood gas samples in this patient population.

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