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THE PRESSURE-ADJUSTED RATE (PAR)

A SIMPLE AND VALID DESCRIPTOR OF THE CARDIOVASCULAR DYSFUNCTION OF MODS

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304

Introduction: Description of altered cardiovascular function in the Multiple Organ Dysfunction Syndrome (MODS) has been unsatisfactory. By analogy to the PaO₂/FIO₂ ratio as a measure of physiologic derangement corrected for therapy, we developed a simple composite measure termed the PAR, the product of the heart rate and the ratio of the mean arterial to central venous pressure (HRxCVP/MAP). We evaluated the PAR as a measure of cardiovascular dysfunction in the ICU.

Methods: We studied patients admitted for >24 hrs to 2 tertiary level MSICU's from May-October 1996. Data were collected daily, using representative values obtained at the time of morning blood work; the worst single day's value for each variable was analyzed. A panel of candidate descriptors of cardiovascular dysfunction were studied. Intervals for each variable were established on a 0 to 4 scale where 0 is normal function and 4 indicates marked functional derangement. Variables were assessed for their correlation with ICU mortality (criterion validity) and with a therapy-dependent variable, the number of inotropes used (construct validity).

Results: The 244 patients had a mean admission APACHE II score of 17.7 +/- 9.0. The mean ICU stay was 11.6 +/- 17.4 days; ICU mortality was 26.7%. Significant differences between worst values for non-survivors and survivors (all p<0.0001) were seen for PAR (26.2 +/- 8.8 vs 17.2 +/- 7.7), Systolic BP (88+15 vs 103+23), pH (7.2+0.1 vs 7.3+0.1), and number of inotropes (1.2+1.0 vs 0.5+0.7), but not for lactate, Delta weight, or cardiac output. The PAR showed the best graded correlation with mortality (%): [Table 1](#)

[Table 1](#)

Conclusion: The cardiovascular dysfunction of MODS is reliably reflected in the PAR, a practice independent variable that is readily calculated at the bedside and satisfies the characteristics of an ideal descriptor of organ dysfunction.

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