

DOPPLER ULTRASOUND CARDIAC OUTPUT IN EMERGENCY DEPARTMENT SEPSIS SYNDROME.

P.M. Middleton & R. Carroll

Emergency Department, Prince of Wales Hospital, Randwick, Australia

Aims:

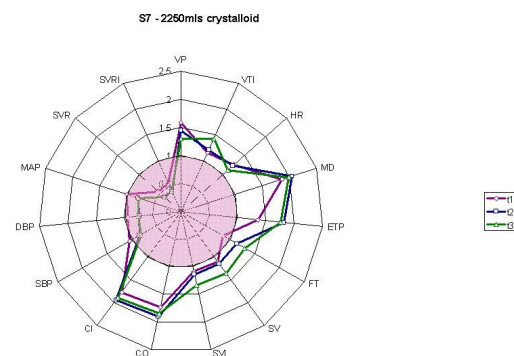
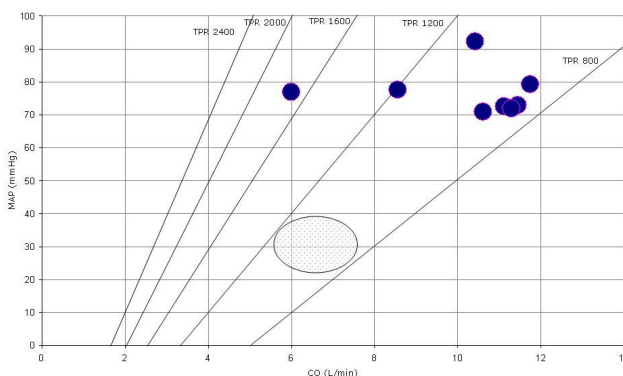
To assess the potential utility of a Doppler Ultrasound device (USCOM, Sydney NSW) in the diagnosis and management of Sepsis Syndrome in the emergency department.

Method:

16 patients diagnosed with varying degrees of Sepsis Syndrome were managed according to routine clinical practice, and had serial Doppler ultrasound estimations of central haemodynamic variables, including Stroke Volume (SV) and Cardiac Output (CO), indexed to Body Mass Index (BMI). Unique Doppler variables were also assessed, including Minute Distance (MD) and Velocity Time Integral (vti). Application of novel conceptual techniques was used to evaluate our ability to capture dynamic CVS information. The treating clinicians were blinded to the Doppler variables.

Results

SBP (Systolic Blood Pressure) was abnormal in 3 out of 16 patients, DBP (Diastolic Blood Pressure) in 10 out of 16, MAP (Mean Arterial Pressure) in 3 out of 16. Heart rate was abnormal in 11 out of 16. Doppler ultrasound variables were abnormal in 12 out of 16; Velocity Peak, Mean Pressure Gradient, VTI, Flow Time, SV (Stroke Volume) and SVRI (Systemic Vascular resistance Index) were all significantly more often abnormal than Systolic Blood Pressure and MAP. [Chi² test; P=0.01, 0.004, 0.01, 0.01, 0.01, 0.03] Abnormalities of HR and DBP were seen in similar proportions to Doppler variables, but may be less specific. When graphically displayed together, all CVS variables enabled accurate pattern recognition for assessment of the dynamic nature of pathological changes.



Conclusion:

Doppler ultrasound derived variables identified underlying patho-physiological patterns in cardiovascular dysfunction and also showed marked benefit in monitoring response to therapy. Using novel graphical concepts to display the information increases the value of this approach.