ACUTE RIGHT VENTRICULAR CARDIOMYOPATHY IN PATIENTS WITH SEVERE SEPSIS

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Introduction There is an increasing awareness that the cardiovascu-
lar pathophysiology of sepsis extends beyond vasodilatation and
distributive shock. Acute left ventricular systolic dysfunction is
seen in 40–60% of patients admitted to critical care who require
organ support. The exact distribution, timing and aetiology of this
phenomenon remain unclear as does the therapeutic implications.
Although often affecting the left ventricle, cases describing syn-
chronous biventricular or isolated right ventricular dysfunction
have been described. This septic cardiomyopathy appears to be
fully reversible in survivors. We describe three cases admitted to
our intensive care unit who were demonstrated to have an acute
isolated dilated right ventricular cardiomyopathy using trans thor-
acic echocardiography.

Methods and results 3 patients admitted to the Adult ICU were
echoed on admission to the ICU, all with severe sepsis and multi
organ failure. Two required invasive ventilation, all three required
inotrope and vasopressor support, with two requiring haemofiltration.
All patients had CT contrast pulmonary angiography to
exclude pulmonary embolus as a differential diagnosis. The source
of sepsis included one case of primary native septic arthritis, one
chronic tibial osteomyelitis and one bowel perforation. Two
patients required surgical debridement to attempt to control their
sepsis. Two patients died despite maximal organ support within
72 h of admission to critical care. All three patients had normal left
ventricular systolic function, with low stroke volumes unresponsive
to volume loading.

Conclusions and implications Acute ventricular cardiomyopathy is a
common complication of severe sepsis and is difficult to diagnose
using standard invasive cardiac output devices commonly used
within critical care areas. Trans thoracic echocardiography pre-
sents a point of care diagnostic modality that allows rapid, repeat-
able, reliable assessment of independent ventricular function. Low
cardiac output states seen with acute dilated right ventricular car-
diomyopathy appear to show little benefit from fluid boluses and
poor response to standard pharmacological strategies for septic
shock. In the two patients requiring invasive ventilation, death
followed within 72 h of diagnosis of right ventricular cardiomyop-
athy. Surveillance scanning for a impaired and/or dilated right
ventricle may allow earlier detection and exploration of alterna-
tive treatment strategies. Respiratory failure in severe septic shock
associated with right ventricular cardiomyopathy appears to
confer a significant increased mortality rate (66%) when com-
pared with a global population (35%) and may aid in
prognostication.