
Background

- Both regimens will have vascular and cardiac effects. The combination treatment may allow for better fine tuning of the therapies, may be less thermogenic and may have less effects on the splanchnic vasculature.

Trial Summary

General
Small randomized controlled trial with poorly described randomization/blinding methodology.
85 patients were admitted with cardiogenic shock but only 30 could be included (others met exclusion criteria)

Patients
N=30

| Inclusion | Acute/chronic HF, EF <30%, Cardiac index <2.2, SBP <90 or MAP <60 or drop in MAP >30 despite dopamine (up to 20 ug/kg/min), urine output <0.5ml/kg/hour, lactate >2, signs of hypoperfusion, |
| Exclusion | Hypovolemia (pulmonary artery occlusion pressure of <15 mm Hg, in ventilated patients, pulse pressure variation of >13%, additional fluid associated with increase in CI), no acute cardiac ischemia. Cardiogenic shock d/t MI, arrhythmia, septic shock, poisoning. |

Interventions
Norepinephrine (initial 0.1ug/kg/min) and dobutamine 0 to 20 ug/kg/min
Epinephrine (initial 0.1ug/kg/min)

Outcomes
Primary
HR, CI, Gastric Mucosal PCO2, lactate, pyruvate

Other
Safety

Duration
24 hours

Statistics
t-tests

Results

- No significant difference with epinephrine and norepinephrine-dobutamine on outcomes such as cardiac index, MAP, wedge pressure, right atrial pressure
- Interesting that epinephrine increased lactate whereas norepinephrine did not.
- Epinephrine was associated with increased heart rate compared to norepinephrine/dobutamine.
- Oxygen consumption was increased from baseline with both treatments but there was no difference between the two groups.
- 2 arrhythmias occurred in the epinephrine group and 1 in the norepinephrine group

Figure 1 - Squares = Epinephrine, Triangles NE-DOB

Limitations

- Methodology not well described. Study was very small
- Patient had to be dopamine resistant before being started on the study drugs. We rarely use dopamine now and therefore this is less applicable to normal clinical practice.

Bottom Line

Epinephrine and combination of norepinephrine-dobutamine seem to be equally effective for the treatment of cardiogenic shock. Norepinephrine-dobutamine is reasonable to use as the first line agent.

Recent review of circulatory shock (N Engl J Med 2013; 369:1726-1734) suggests that norepinephrine should be the initial vasopressor of choice when stabilizing the patient with acute circulatory shock. Dobutamine is the inotrope of choice and would be used with or without norepinephrine depending on the clinical situation. Epinephrine is the second line agent and the authors support this by referencing studies that show there is no benefit of epinephrine in patients with septic shock and there are studies in cardiogenic shock (kind of including this one) that show there is increased arrhythmias with epinephrine.