



The maximal change in cardiac output should be assessed 1 minute after the end of the fluid infusion” Aya et al (2015).

Abstract:

OBJECTIVE: This study aims to describe the pharmacodynamics of a fluid challenge over a 10-minute period in postoperative patients.

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DESIGN: Prospective observational study.

SETTING: General and cardiothoracic ICU, tertiary hospital.

PATIENTS: Twenty-six postoperative patients.

INTERVENTION: Two hundred and fifty-milliliter fluid challenge performed over 5 minutes.

Data were recorded over 10 minutes after the end of fluid infusion

MEASUREMENTS AND MAIN RESULTS:: Cardiac output was measured with a calibrated LiDCOplus (LiDCO,

Cambridge, United Kingdom) and Navigator (Applied Physiology, Sydney, Australia) to obtain

the Pmsf analogue (Pmsa). Pharmacodynamics outcomes were modeled using a Bayesian

inferential approach and Markov chain Monte Carlo estimation methods. Parameter estimates

were summarized as the means of their posterior distributions, and their uncertainty was assessed by the 95% credible intervals. Bayesian probabilities for groups' effect were also derived. The predicted maximal effect on cardiac output was observed at 1.2 minutes (95% credible interval, -0.6 to 2.8 min) in responders. The probability that the estimated area under the curve of central venous pressure was smaller in nonresponders was 0.12. (estimated difference, -4.91 mm Hg·min [95% credible interval, -13.45 to 3.3 mm Hg min]). After 10 minutes, there is no evidence of a difference between groups for any hemodynamic variable.

CONCLUSIONS: The maximal change in cardiac output should be assessed 1 minute after the end of the fluid infusion. The global effect of the fluid challenge on central venous pressure is greater in nonresponders, but not the change observed 10 minutes after the fluid infusion. The effect of a fluid challenge on hemodynamics is dissipated in 10 minutes similarly in both groups.

Reference:

Aya, H.D., Ster, I.C., Fletcher, N., Grounds, R.M., Rhodes, A. and Cecconi, M. (2015) Pharmacodynamic Analysis of a Fluid Challenge. Critical Care Medicine. December 17th. .

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