Prediction Fluid Responsiveness in Laparoscopic Major Abdominal Surgery

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Background and Goal of Study

Monitoring cardiac output and/or preload parameters predicting fluid responsiveness are the basis of the concept of « Goal Directed Therapy ». Although these tools are useful for guiding fluid challenge, and also improving outcomes, there are only few data on preload parameters during ongoing laparoscopic surgery (1). The aim of our observationnal study was to compare predictive value of static and dynamic parameters for guiding fluid loading while pneumoperitoneum was established.

Materials and Methods

After approval by our local ethic committee, 28 patients were prospectively included. In these patients, six preload parameters were simultaneously recorded during major laparoscopic surgery while a fluid challenge was guided by patient's clinical status : PVI®(Masimo Radical 7®); Stroke Volume Variation (SVV) (Vigileo-Flotrac®; Edwards LifesciencesTM); Flow Time corrected (FTc), ΔSV® and ΔPV® (CardioQ®- DeltexTM Oesophageal Doppler Monitor [ODM]) and Pulse Pressure Variation (PPV). The cardiac output monitoring by ODM allowed us to define two groups given to cardiac output variation (cut off value: 15%) induced by 500 ml of Voluven® infusion: Fluid response group (FR) and No fluid response group (NR). The predictive value of each parameter was assessed by building Receiver Operating Characteristic (ROC) curves and by determining the area under ROC curves (AUCROC [CI 95%]).

Results and Discussion

Forty-three fluid challenges were performed into 28 included patients Twenty-two challenges were characterized by could be defined as responders (FR) and twenty-one as no responders (NR). The AUCROC were respectively 0,73 [0,57-0,85] for FTc; 0,66 [0,50-0,80] for SVV; 0,64 [0,48-0,78] for PPV; 0,53 [0,37-0,68] for PVI®; 0,48 [0,30-0,66] for ΔPV® and 0,43 [0,25-0,62] for ΔSV®.

Conclusion(s)

FTc as well as SVV seems to be better to discriminate patients responding to fluid challenge during laparoscopic major abdominal surgery. However, the predictive value of all parameters appear to be seriously altered by pneumoperitoneum in comparison with standard conditions.

References

1. Hoiseth L, Hoff IE, Myre K, Landsverk SA, Kirkeboen KA. Dynamic variables of fluid responsiveness during pneumoperitoneum and laparoscopic surgery. Acta Anaesthesiologica Scandinavica. 2012.