A281 - Preload responsiveness can be detected by mini and micro fluid challenges monitored with pulse contour analysis.

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Introduction:
Preload responsiveness might be detected by the changes of cardiac index (ΔClmini) induced by a “mini-fluid challenge” (mini-FC) of 100 mL or even by the changes (ΔClmicro) in response to a “micro-fluid challenge” (micro-FC) of 50 mL. However, the smaller the fluid challenge, the larger the “grey zone” of diagnostic uncertainty. We tested whether (1) micro- and mini-FC monitored by calibrated pulse contour analysis detect preload responsiveness and (2) adding 50 mL when the result of a micro-FC is within the grey zone improves diagnostic accuracy.

Methods:
In 30 patients with circulatory failure, we infused 50 mL saline over 30s followed by 50 mL over 60s. We measured ΔClmicro and ΔClmini by the pulse contour analysis (PiCCO2). Preload responsiveness was defined by an increase in CI (ΔCIPLR) during a passive leg raising test ≥10%. Diagnostic uncertainty was described by calculating the grey zone after bootstrapping.

Results:
ΔClmicro were larger in responders than in non-responders (5.1[2.5-9.9]% vs. 0[0-0.7]%, respectively; p<0.0001). It was also the case for ΔClmini (9.7[7.0-12.6]% vs. 0.8[0-2.9]%, respectively; p<0.0001). We found a correlation between ΔClmicro and ΔClmini on the one side and ΔCIPLR on the other side (r=0.71 and r=0.82, respectively; p<0.0001 for both). For the micro-FC, the area under the receiver operating characteristic curve was 0.975±0.03 (threshold 1%), while it was 0.955±0.03 for the mini-FC (threshold 4%). For the micro-FC, the grey zone ranged from 0.82% to 3.47% and included 9 (30%) patients. For the mini-FC, it ranged from 2.8% to 6.8% and included 9 (33%) patients, among which 6 were already in the grey zone of the micro-FC.

Conclusion:
When evaluated by pulse contour analysis, micro- and mini-FC reliably detect preload responsiveness but with a large diagnostic uncertainty. It seems that adding 50mL more fluid to a micro-FC when its result is within the grey zone does not improve the diagnostic accuracy. The study is ongoing.