**Supplemental Digital Content 4: Main findings, results and conclusions of seven studies comparing two types of hemodynamic monitoring.**

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| **ARTICLES** | **RESULTS** | | | | | | | | **CONCLUSIONS** |
| MAIN FINDINGS | DCI ONSET | | | CARDIOPUMONARY COMPLICATIONS | | | FLUIDS ASSESSMENT |
| IG | CG | STAT | IG | CG | STAT |
| Performance of Bedside Transpulmonary Thermodiluition Monitoring for Goal-Directed Hemodynamic Management after Subarchnoid Hemorrhage | TPT was associated with less incidence of vasospasm(*p=*0.03) and DCI (*p*=0.03). TPCI and PCCI showed close agreement to PACI with high coefficient of correlation (r=0.85 and r=0.77 respectively). GEDVI, but not PCWP and CVP, discriminates between responders and non-responders. | 16 patients | 24 patients | *p*=0.03 | 2% | 12% | *p*=0.01 | Greater fluid administration for standard management than PiCCO (*p*=0.01).  The area No differences for fluid output or net water balance (*p*=0.05) | Early management with PiCCO offers therapeutic benefits and less cardiopulmonary complications |
| Performarnce of Thir-generation FloTrac/Vigileo system during hyperdynamic therapy for delayed cerebral ischemia after subarchnoid hemorrhage | With no-calibrated devices, CO is underestimated of 14.9% and 16.5% in relation to PiCCO and Swan-Ganz respectively. NA at high dose can yield more imprecision (27.9%) of APCO |  |  | No difference | 8% | 8% | No difference | FloTrac/Vigileo group has a greater  daily fluid intake than those guided  with transpulmonary thermodilution (*p*= 0.0001) | PiCCO resulted in less fluid intake during the hemodynamic therapy and it may be more suitable for managing severe systemic complications |
| Blood Volume measurement to guide fluid therapy after aneurysmal subarchnoid hemorrhage | In IG on average 6.7% of the BV-measurements showed severe hypovolemia as compared with 17.1% in CG (mean weighted difference 7.7%; 95% Confidence Interval: 1.4 to 13.9%). | 18 patients | 19 patients |  |  |  | PE was present more in IG but no statistically significant | fluid balance + 1.0(0.8) L/day in IG vs + 0.8(0.5) L/day in CG | Severe hypovolemia was more than halved in the intervention group, whereas the proportion of hypervolemia didn’t increase |
| Pulmonary edema and blood volume after aneurysmal subarachnoid hemorrhage: a prospective observational study. | Between patients who developed PE: blood volume was 58.2 ml/kg for IG and 52 ml/kg for CG |  |  |  | 12 patients | 5 patients | Relative Risk, 2.1; 95% Confidence Interval from 0.8 to 5.6 | Fluid balance calculated in patients with pulmonary edema: + 1.9 L/day for IG vs + 0.7 L/day for CG | Patients with PE after SAH must be considered hypovolemic and at increased risk of DCI |
| Accuracy and precision of calibrated arterial pulse contour analysis in patients with SAH requiring high-dose vasopressor therapy: a prospective observational clinical trial | CO values obtained by PCCO showed a percentage error of <20% for the agreement with TPCO measurements as the reference technique |  |  |  |  |  |  |  | Caution is warranted when basing hemodynamic management solely upon the results of the pulse-contour analysis rather than performing frequent TPCO measurements. |
| Early intensive versus minimally invasive approach to postoperative hemodynamic management after SAH. | Patients with poor WFNS grade:  1) unfavorable clinical outcome at 3 months: IG=27 patients vs CG=16 patients (*p*=0.026)  2)clinical response to hemodynamic therapy for DCI: IG=14 vs CG= 9 (*p*=0.038) | 1) 8 patients; 2) 4 patients with poor grade | 1)14 patients;  2) 11 patients with poo grade | 1) *p*= 0.17;  2) *p*= 0.036 | 1 patient | 6 patients | *p*= 0.079 |  | EGDT can reduce the incidence of DCI and improve functional outcome at 3 months compared with standard fluid management, especially in patients with poor WFNS grade. |
| High Early Fluid Input After Aneurysmal Subarachnoid Hemorrhage: Combined Report of Association With Delayed Cerebral Ischemia and Feasibility of Cardiac Output–Guided Fluid Restriction | High early daily fluid input was independently associated with DCI and poor outcome. Fluid overloading occurred in clinical practice and it could be limited by TPT management |  |  |  |  |  |  | Cohort 1: cumulative fluid input was associated with an increased risk of DCI (0-72 hours: 95% Confidence Interval 1.07-1.32  Cohort 2: using TPT fluid input could be decreased from 6.0 (+ 1.0) L before to 3.4 (+ 0.3 L) after. | Using goal-directed hemodynamic management, less fluid was infused and fewer patients had DCI than in the conventional treatment group. |

**LEGEND**

IG= intervention group (more advanced monitoring); CG= control group (basal invasive monitoring); TPT= transpulmonary thermodilution; PE= pulmonary edema; DCI= delayed cerebral ischemia; SAH= subarachnoid hemorrhage; WFNS= world federation of neurosurgical societies; EGDT= early goal directed therapy; TPCO= transpulmonary cardiac output; PDD= pulse dye densitometry; PCCI= pulse contour cardiac index; PACI=pulmonary artery cardiac index; APCO= arterial pressure cardiac output; CO= cardiac output; NA= noradrenaline; ELWI=extra lung water index; GEDVI= global end diastolic volume index; STAT= statistical evidence; LVEF= left ventricular ejection fraction; CVP= central venous pressure; CBV= circulating blood volume; PCWP= pulmonary capillary wedge pressure; PVPI= pulmonary vascular permeability index; TCM= Takotsubo cardiomyopathy; ICG= indocyanine green; CI= cardiac index; PiCCO= pulse contour continuous cardiac output.