Introduction:
In protective ventilation strategy tidal volume of 6 mL/kg IBW, PEEP to prevent tidal derecruitment, driving pressure <15 cm H2O, plato pressure <28 cm H2O and FiO2 <0.6 is used. While PEEP can be set individually using techniques like quasi static pressure-volume (PV) curve, expiratory transpulmonary pressure (PtPEEP) and electrical impedance tomography (EIT), real time visual bed-side techniques to determine overdystension is possible by EIT only. We compared different strategies for PEEP optimization during protective ventilation approach in comatose patients admited after cardiac arrest with no previous known pulmonary diseases and screened for inspiratory overdystension

Methods:
20 consecutive comatose post cardiac arrest patients were ventilated with volume assist ventilation (6 mL/kg IBW, PEEP 5 cm H2O) using Elisa 800EIT (wenstein Medical, GE). Orogastric tube (NutriVent, Sidam, IT) was inserted, and EIT vest (swisstom AG, CH) was applied in all patients. Measurements were performed 60 min after admission and after 3 hrs (Figure 1). Optimal PEEP was defined as lower inflection point using PV curve (PV), positive PtPEEP (Ptp) and optimal Regional Stretch/Silent Spaces (EIT)

Results:
Methods to determine PEEP using PV, Ptp and EIT were comparable in non obese patients (p=NS). Measures after 180 min were consistent with the first measures. PEEP set initially was too low in 7 patients and too high in 5 patients. When highest PEEP (Ptp, EIT, PV) was selected, anterior hyperinflation was present in 3 patients. In 2 obese patients (BMI 34 and 36) PV suggested lower PEEP, while EIT and Ptp measures suggested higher PEEP (6 vs 12 and 14 respectively), p=0.02

Conclusion:
Using protective ventilation strategy in comatose post cardiac arrest patients with no previous known lung disease does not prevent from anterior hyperinflation in some non-obese patients. PV, EIT and Ptp are comparable methods in determining PEEP in non obese patients, while in obese patients EIT was superior

References:
CritCare 2017;21:183