Evidence-Based Perfusion Case Conference

Case #2

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60 year old male with a PMH of HTN and depression, EF 55%, two vessel disease, and MI > 21 days ago. Preoperative lab values included Hct 43, PLT 192, WBC 7.9, Cr. 0.7, A1C 5.5, INR/PTT 09/25.4, K+ 4.0, ALB 4.0. Preoperative medications included beta blocker, ASA, and statin. Height 152cm, weight 54 kg, and BSA 1.5m\(^2\). Patient is scheduled for an elective CABG X 3 with bilateral mammaries on CPB. After intubation patient has normal ABG with LAC 1.4 mMoles/L and GLU 111. 110 minutes later and 20 minutes after initiation of CPB LAC was 3.0 mMoles/L and GLU 154. The CPB flow rate maintained at 2.4 to 3.0 L/min/m\(^2\) (measured at the outlet of the centrifugal pump) with HGB 8.9 to 10 g/dL (after ultrafiltration) and paO\(_2\) 200 mmHg but requiring continuous neosynephrine boluses to maintain MAP > 50mmHg. Patient was cooled to 33°C bladder temperature. ABG and VBG’s normal throughout CPB with venous saturations 75 to 85%. After 50 minutes on CPB, levophed infusion started to assist with maintenance of MAP. At the termination of CPB (99 minutes) LAC had risen to 4.6 mMoles/L, GLU 201 (despite insulin bolus and infusion therapy). Post CPB LAC rose to 5.6 mMoles/L. After arriving in the ICU patient is said to have post-CPB systemic inflammatory response with high CI (≥ 4.5), high serous CT output and vasodilatory shock. Also found to have RUL collapse.

Questions

1. What circuit components would you use for this patient (oxygenator, arterial filter, tubing, reservoir)?
2. Would your circuit have a biocompatible surface coating?
3. Would you perform acute normovolemic hemodilution (ANH) and/or retrograde autologous priming (RAP)?
4. How would you evaluate the integrity of the ascending aorta?
5. What would be your glucose management strategy?
6. How would you manage shed blood (discard, return to cell saver for washing and reinfusion, or direct reinfusion to CPB circuit)?
7. What indicators do you use to evaluate adequacy of perfusion?
8. Was this patient being adequately perfused?
9. What lactate value is considered hyperlactatemia?
10. What was the calculated oxygen delivery (DO\(_2\))?
11. How would you have managed the hypotension on CPB?
12. What is the definition of post CPB systemic inflammatory response (SIRS)?
13. What is the definition of vasodilatory shock?
14. What was the mechanism of the lactic acidosis, SIRS, and vasoldilatory shock?


