STEMI and Fulminant Cardiogenic Shock

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Discussion points

1. Timing of assist devices in STEMI and shock
2. The ‘get in and out...quick’ in STEMI and shock
3. Anticoagulation choices in primary PCI and shock
Background

• 64 M, non diabetic, non-smoker and no premature CAD in family. No meds at home, swims ~ 1km thrice weekly. Appendectomy at age 55

• Chest pressure ~55mins prior to EMS call; 0815hrs Monday morning in Sept 2015

• Symptom onset – first medical contact 70mins
Background

- PCI capable center 15 mins away, decision made for primary PCI; pre-hospital ASA 162mg, Ticagrelor 180mg, Enox 1mg/kg SQ and 30mg IV

- On arrival, SBP 98 / 60mmHg, P 84 / min, Sao2 99% on 4l/min; normal S1, S2; chest – bilateral vesicular, no crackles

- Continuous retching, vomited once; ‘not feeling well’

- Diagnostic angiography: Right femoral arterial access (couldn’t really feel good radial pulse)
LVEDP = 18, No LVgram
• Post diagnostic pictures, SBP 86mmHg started levophed 0.2 mcg/kg/min

• Awake, and responsive. Moaning with pain and reports shortness of breath

• STAT CV surgical consult - OR time ~30mins, as patient in shock, team in agreement with primary PCI

• VA-ECMO considered prior to PCI (No Impella /Tandem heart option), but elected to proceed to PCI without assist device support

• 6FR JL4 guide catheter, BMW Universal wires, plan to wire LCX and then LAD (had received Enox IV ~20 mins prior)
BMW in LCX, difficulty in wiring LAD with BMW, changed to Pilot 50
3.0 x 15mm Trek 12 atm.
in LAD
3.5 x 38mm Xience LAD – LM
BMW in LCX not jailed

Rewired LCX with great difficulty
POBA into LCX ostium 2.5 x 15mm

KBD 3.5 and 2.5 x 15mm Trek, plan to stent LCX subsequently
Progress

• Post kissing balloon dilatation, no recovery of blood pressure

• Florid pulmonary edema

• CPR ~ 3 minutes and intubated, on levophed and epinephrine drips

• Re-considered mechanical support - thought at the time: re-establish LCX flow quickly; back up VA-ECMO available
3.0 x 23 mm Xience
T-stent into LCX ostium ➔ KBD in
LAD/LCX

Optimized LAD and LM stent
4.0 x 18 NC and plan to close
Clot from guide catheter embolized into LM

- Currently at ~2hr mark – Enox 0.3 mg/kg IV 1-hr, additional 0.3mg/kg IV at 1.5-hr
- With flow loss in LCX, SBP ~ 50mmHg
- Difficulty in ventilating due to frank pulmonary edema
• 2nd interventionalist on standby, initiated VA-ECMO ~110 mins into case

• Aspiration thrombectomy (Pronto®) – retrieved large amount of red clots

• GP 2b / 3a considered, concern about vascular access site bleeding with ECMO cannula
Rewired LCX, and KBD 3.0 x 15 LAD, 2.5 X 15 Trek LCX

Final result 3hrs later... LM and LCX ostium still hazy - reasonable flow in LAD, LCX; IVUS not performed
Patient progress

• Neurologically awake and responsive; AKI and LVEF <10%; transitioned to long term LVAD on day 3

• Day 28 – died from embolic strokes, HAP

• ? Hypercoagulable state (catheter thrombosis, multiple strokes)
Conclusion

• Timing of assist devices in STEMI complicated by cardiogenic shock

Thought of mechanical support at least thrice...Should have initiated VA-ECMO possibly PRIOR to PCI, or at least at time of flow loss in LAD / LCX

• ‘Get in and out ...quick’

With adequate hemodynamic support prior to PCI (upfront) – may have saved time later on; ? double barrel (7Fr) or DK crush or T- / TAP stent

• Anticoagulation choice and timing during primary PCI

Despite top-up of enox at 0.3mg/kg IV at 60mins and 90mins, clot embolization from guide catheter - ? 3 wires and multiple balloons
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