

Management of Antithrombotic Therapy in Complex Valvular Disease

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Overview

- ▶ Case presentation
- ▶ Discussion of difficult issues
- ▶ Discussion of relevant guidelines
- ▶ Conclusions

Initial Presentation

- ▶ 68 year old female
 - ▶ Marfan's syndrome
 - ▶ Mechanical mitral valve replacement for mitral valve prolapse 2012 (target INR 3.5)
 - ▶ Beta thalassaemia trait
- ▶ Chest pain
 - ▶ Sudden onset, sharp, radiating to back
 - ▶ Started 2 hours previously
 - ▶ Sweating, nausea, lightheadedness

Examination Findings

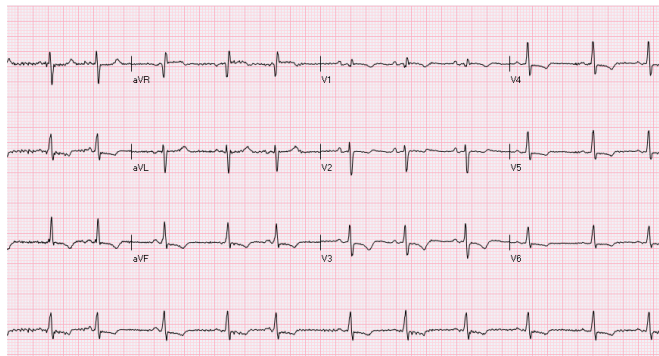
- ▶ HR 108; O₂ sats 93%; resp rate 24; temp 37.1°C
- ▶ Blood pressure
 - ▶ Left arm 84/40
 - ▶ Right arm 72/41
 - ▶ Normal femoral pulses
- ▶ Heart sounds
 - ▶ Diastolic murmur compatible with aortic regurgitation
 - ▶ Loudest at right sternal edge
- ▶ Chest auscultation
 - ▶ Bibasal fine crackles

Investigations

▶ CXR



▶ ECG



Blood Tests

▶ FBC

- ▶ **Hb** **83**
- ▶ **MCV** **85**
- ▶ **WBC** **20.6**
- ▶ **Neut** **19.1**
- ▶ Mon 0.9
- ▶ Plt 251

▶ Coag

- ▶ **INR** **4.5**
- ▶ PTTR 1.2

▶ U/E

- ▶ Na 140
- ▶ K 4.3
- ▶ U 7
- ▶ Cr 71

▶ ABG (40% O₂)

- ▶ **pH** **7.31**
- ▶ **pO₂** **18.9**
- ▶ pCO₂ 4.7
- ▶ **Bicarb** **17.3**
- ▶ **Lactate** **4.6**

▶ LFT

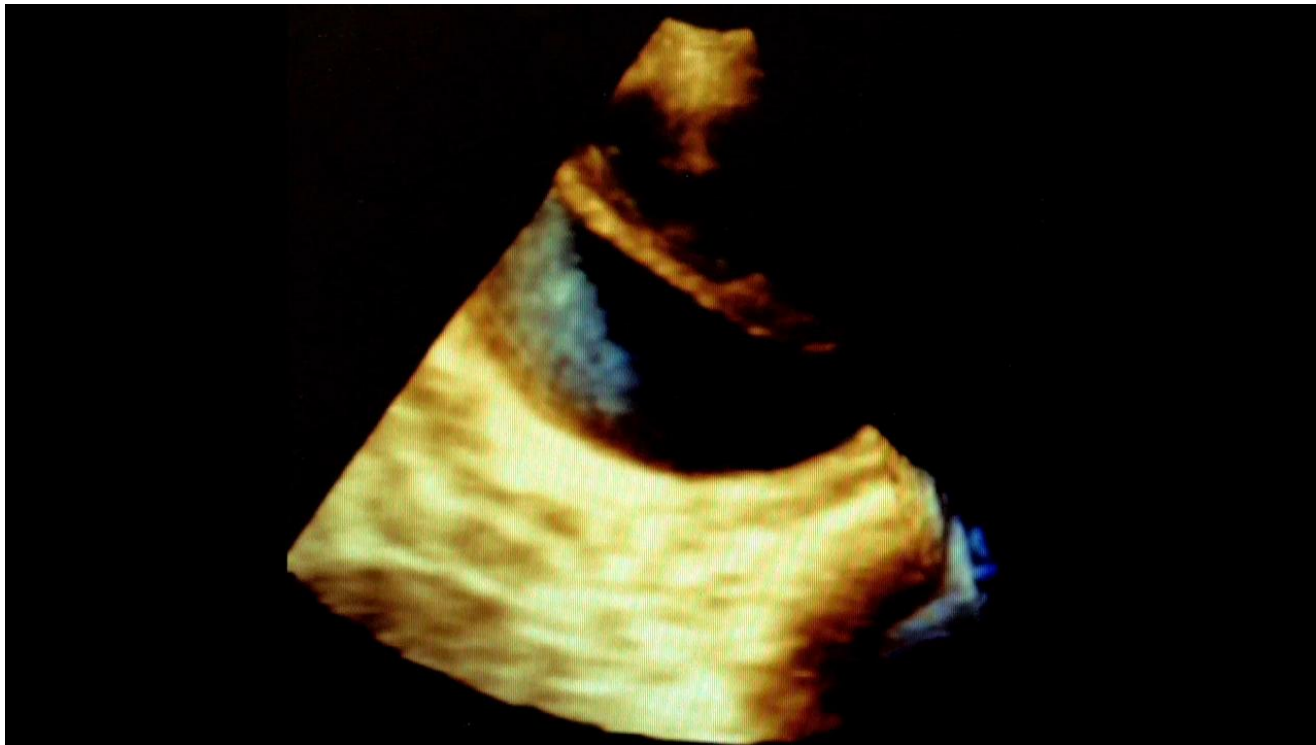
- ▶ ALT 15
- ▶ ALP 63
- ▶ Bili 7
- ▶ Alb 37

▶ CRP 10

Echo



Echo



Management

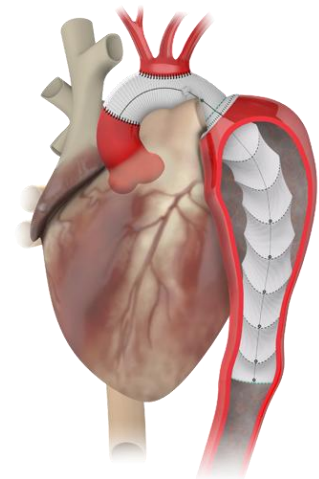
- ▶ Immediate Management
 - ▶ Haemodynamically stabilised
 - ▶ Beriplex and FFP administered (surgical instructions)
- ▶ Transferred immediately to surgical centre
 - ▶ VF arrest 1 hour after arrival
 - ▶ ROSC with 1 shock
 - ▶ Hypotensive 84/50
 - ▶ Transferred immediately to theatre

Surgery – Day 0

- ▶ Median sternotomy
- ▶ Cardiopulmonary bypass (heparinized)
- ▶ Findings
 - ▶ Circumferential type A dissection
 - ▶ Severe aortic regurgitation
 - ▶ Ascending aortic entry tear, dissection into epiaortic cervical branches, through arch and into descending aorta
 - ▶ Ostial involvement of both coronary arteries
 - ▶ MVR intact

Surgery – Day 0

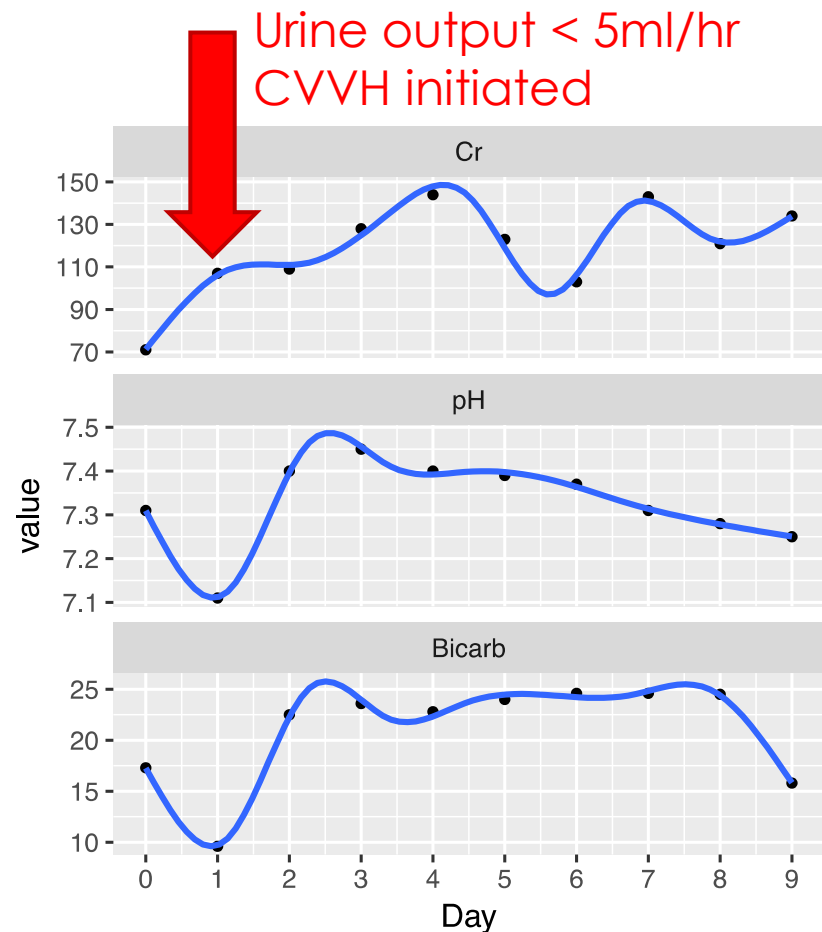
- ▶ Operation
 - ▶ 23mm Carboseal aortic graft
 - ▶ Root replacement with composite valve graft
 - ▶ Coronary reimplantation
 - ▶ Frozen elephant trunk Vascutek Thoraflex hybrid
- ▶ Bypass time 259 minutes
- ▶ Cross clamp time 207 minutes
- ▶ Surgical plan to restart warfarin at 48 hours



Thoraflex™ hybrid Proximal facilitates configuration facilitates the island technique

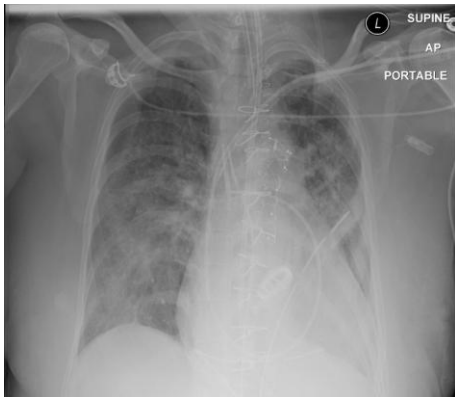
Acute Kidney Injury

- ▶ Day 1 Acute Kidney Injury
- ▶ Anuric, rise in Cr, fall in pH
- ▶ Continuous veno-venous haemofiltration started

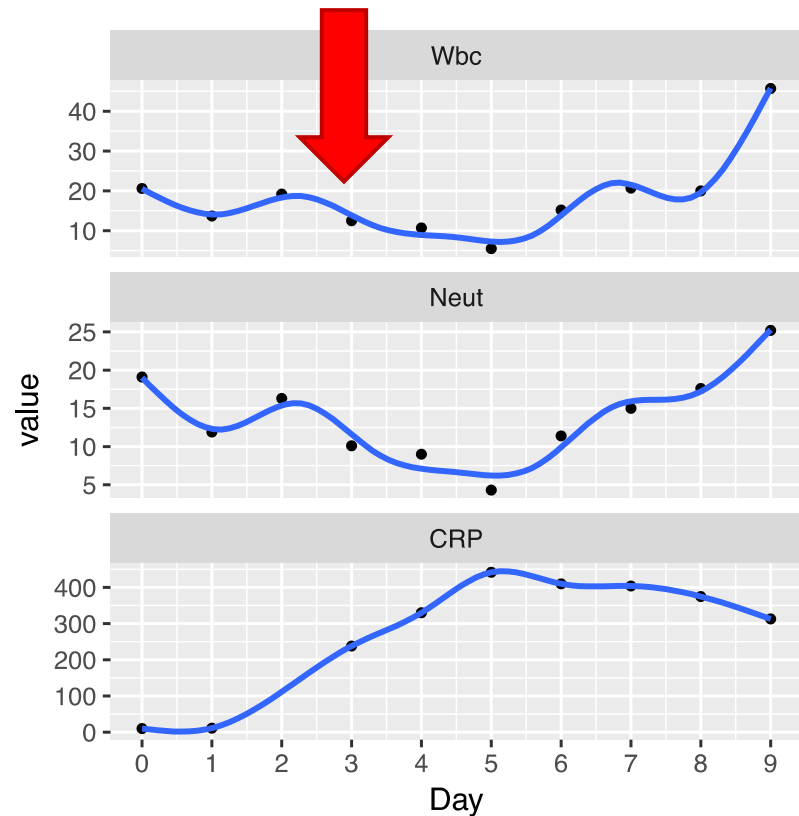


Hospital Acquired Pneumonia

- ▶ Blood cultures
 - ▶ E.coli Day 3
 - ▶ Sensitive to vancomycin and meropenem
- ▶ CXR and CT
 - ▶ Showed bibasal consolidation

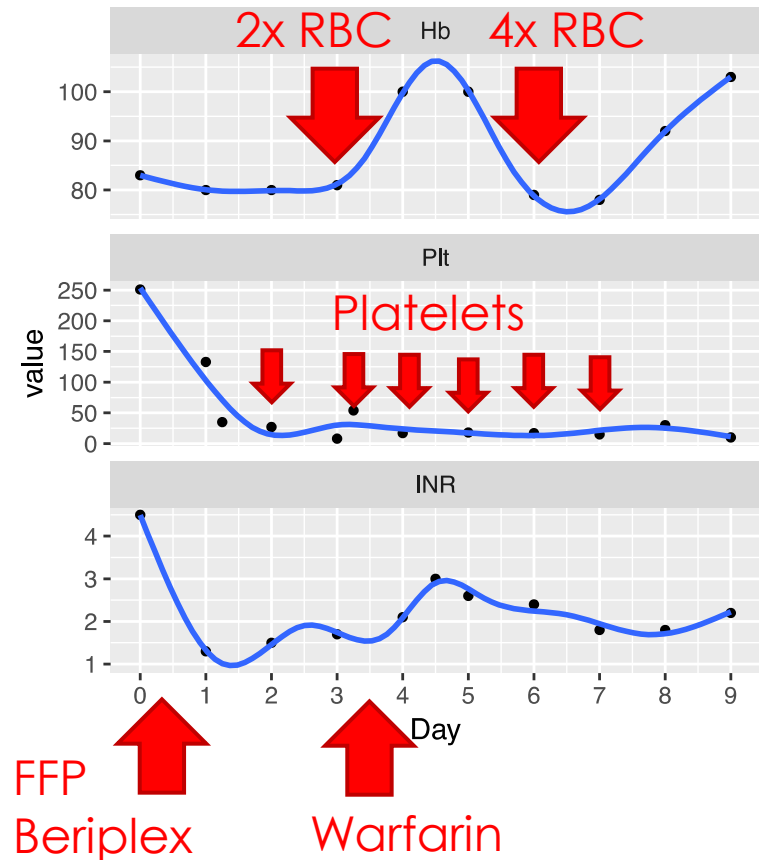


Vancomycin and meropenem administered



Haemostasis

- ▶ Anticoagulant reversed pre-op
- ▶ UFH post-op until...
- ▶ Marked thrombocytopenia/DIC
- ▶ Warfarin (5mg) single dose day 3
- ▶ GI bleed day 5
 - ▶ Endoscopy
 - ▶ Oesophagitis
 - ▶ Started on PPI
 - ▶ CT
 - ▶ ?Small bowel ischaemia



Haemodynamic Deterioration

- ▶ Progressive deterioration day 7-9
- ▶ Increasing inotrope demand
 - ▶ Adrenaline, noradrenaline, vasopressin, enoximone
 - ▶ Progressive lactic acidosis
 - ▶ Balloon pump inserted
- ▶ TOE
 - ▶ Moderate to severe LV dysfunction
 - ▶ No tamponade
 - ▶ AVR and MVR working well
- ▶ Cardiac arrest day 9

Difficult Issues

- ▶ Management of anticoagulation pre-operatively
 - ▶ Choice of reversal agents
 - ▶ Timing of reversal
- ▶ Timing of initiation of anticoagulant
 - ▶ How soon post-operatively?
- ▶ Choice of anticoagulant post-operatively
 - ▶ Complicated by thrombocytopenia

Guidelines – Pre-operative

- ▶ EACTS Guideline on antiplatelet and anticoagulant management in cardiac surgery 2008
 - ▶ Advises similar approach as non-cardiac surgery
- ▶ ESC Guideline on non-cardiac surgery 2014
 - ▶ In patients with mechanical prosthetic valves
 - ▶ If immediate reversal of anticoagulation required:
 - ▶ FFP or PCC in addition to low-dose vitamin K (2.5-5mg)

Guidelines - Post-operative

- ▶ ESC 2012 valvular heart disease guideline
 - ▶ Oral VKA started during the first postoperative days
 - ▶ IV UFH for aPTTr 1.5-2 allows rapid anticoagulation before the INR rises
- ▶ AHA/ACC 2014 Valve guidelines
 - ▶ As soon as bleeding risk acceptable:
 - ▶ IV UFH (no bolus) for aPTTr 1.5-2 until INR therapeutic

Summary

- ▶ Anticoagulation in patients with mechanical valves may be reversed only if absolutely required
- ▶ Timing of initiation of anticoagulation is a critical consideration for post-op patients
- ▶ Thrombocytopaenia complicates decision-making regarding anticoagulant choice



Questions?