CHALLENGES IN HEART VALVE DISEASE

A High Risk Patient with Aortic Stenosis: How Far Should We Go?

Dr Bernard Prendergast DM FRCP FESC
St Thomas’ Hospital
London UK

www.eurovalvecongress.com
Faculty disclosure

Bernard Prendergast

I disclose the following financial relationships:

Paid speaker for Edwards Lifesciences
The Patient

• 81 year old male
  - HTN
  - CABGx3 1999 (LIMA-LAD, SVG-Cx, SVG-PDA)
  - Myasthaenia gravis (on pyridostigmine)
  - Recent DVT (warfarin)
  - Spinal stenosis – some limitation of mobility
  - Residential home – independent care

• Known aortic stenosis – clinic review
  - 6/12 Progressive dyspnoea (NYHA III)
  - Orthopnea, Presyncope
  - No angina
Assessment

• General    Frail, 70kg, BMI 28.4, Cr 61 (eGFR 83)
• ECG        SR, PR ~240ms, LAD, narrow QRS
• Pulmonary function  FEV1 1.3 (68%) FEV1/FEV 93%
• Carotids   Heavily calcified – no focal stenosis
• Imaging
  ➢ Echocardiography: normal LV size and good function, severe AS (PPG 57mmHg, AVA 0.6cm²), discrete heavy calcium, annulus 22x23mm (3D)
  ➢ CT: aortic calcification, confirms annular diameter 23mm
• Radial angio (INR 2.5)
  ➢ Native LMS mod; LAD occluded mid-vessel; LCx mod prox; RCA mod proximal
  ➢ Grafts LIMA-LAD patent; SVG-Cx occluded; SVG-rPDA competitive flow
• Surgical risks
  ➢ Logistic EuroSCORE 11% (carotid disease, redo surgery)
  ➢ Logistic EuroSCORE II 8%
  ➢ CT surgeon review Frail, prohibitively high risk for surgery, consider TAVI
How Do We Assess Risk?
Operative Risk Assessment

The Logistic Euroscore

www.euroscore.org.
The Problem with Scores

- 79yr old lady. Frail. Moderate LV function
  - Logistic Euroscoere 10.9%
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Creatinine 189umol/L          LES 10.9%
The Problem with Scores

• 79yr old lady. Frail. Moderate LV function
  – Logistic Euroscore 10.9%

Creatinine 189umol/L
Wheelchair bound

LES 10.9%
The Problem with Scores

- 79yr old lady. Frail. Moderate LV function
  - Logistic Euroscore 10.9%

Creatinine 189umol/L  LES 10.9%
Wheelchair bound  LES 10.9%
Weight 42Kg  LES 10.9%
The Problem with Scores

- 79yr old lady. Frail. Moderate LV function
  - Logistic Euroscore 10.9%

Creatinine 189umol/L  LES 10.9%
Wheelchair bound  LES 10.9%
Weight 42Kg  LES 10.9%
Chronic venous leg ulcers  LES 10.9%
The Problem with Scores

- 79yr old lady. Frail. Moderate LV function
  - Logistic Euroscore 10.9%

Creatinine 189umol/L     LES 10.9%
Wheelchair bound        LES 10.9%
Weight 42Kg              LES 10.9%
Chronic venous leg ulcers LES 10.9%
Primary biliary cirrhosis, plt 46, INR 1.6 LES 10.9%
ESC Working Group on Valvular Heart Disease Position Paper: assessing the risk of interventions in patients with valvular heart disease

Raphael Rosenhek¹*, Bernard Iung², Pilar Tornos³, Manuel J. Antunes⁴, Bernard D. Prendergast⁵, Catherine M. Otto⁶, Arie Pieter Kappetein⁷, Janina Stepinska⁸, Jens J. Kaden⁹, Christoph K. Naber¹⁰, Esmeray Acartürk¹¹, and Christa Gohlke-Bärwolf¹²
Risk Assessment

The High-Risk Patient

Timing and Choice of Procedure

- Patient Preferences
- Natural Disease History
- Risk of Intervention
- Individualized Risk Assessment
- Life Expectancy
- Long-term postprocedural outcome
- Risk Scores?
- Team Approach

Difficult Decisions for the Heart Team
Strategic Considerations

- Renal Failure
- Aortic Stenosis
- COPD
- LV Failure
- Frailty

Risk

- Renal Failure
- COPD
- LV Failure
- Frailty
Strategic Considerations

Aortic Stenosis

Risk

Frailty

Frailty
• First 88 patients undergoing Sapien Edwards TAVI
• Death within 30 days excluded
• Incorporated:
  ➢ Procedural learning curve
  ➢ Early attempts at best case selection
• Moderate prosthetic valve dysfunction in 3/88 (3.5%)
  ➢ AS, AR, mixed AS/AR (all n=1)
• Median survival 3.4 (2.6-4.3) yrs
VALVE FUNCTION  PREDICTORS OF ADVERSE OUTCOME

Oxygen Dependent COPD

2+/4 Paravalvular AR
Three- and Five-Year Outcomes After Transcatheter Aortic Valve Implantation in High-Risk Patients With Severe Aortic Stenosis

The U.K. TAVI (United Kingdom Transcatheter Aortic Valve Implantation) Registry

Alison Duncan¹, Peter Ludman², Winston Banya¹, David Cunningham³, Damien Marlee³, Simon Davies¹, Jan Kovac⁴, Thomas Spyt⁴, Neil Moat¹

¹: Royal Brompton Hospital, London, ²: Queen Elizabeth Hospital, Birmingham
³: University College Hospital, London, ⁴: University Hospital Leicester,
Independent Predictors of Long-Term Survival after TAVI

- Diabetes
  - No Diabetes
  - Diabetes
  - $p$ (Logrank test) = 0.019

- Atrial Fibrillation
  - No Atrial Fibrillation
  - Atrial Fibrillation
  - $p$ (Logrank test) = 0.0029

- COPD
  - No COPD
  - COPD
  - $p$ (Logrank test) = 0.0082

- Creatinine
  - Creatinine $\leq$ 200
  - Creatinine $> 200$
  - $p$ (Logrank test) < 0.0001
Personal Conclusions

- TAVI is no longer an experimental, new wave procedure
- TAVI should be actively considered in all high risk patients with AS
- Risk too high
  - Euroscore >40
  - Severe LV impairment (especially if TF not feasible)
  - Severe RV impairment
  - Severe respiratory disease
  - Severe immobility – eg. stroke, arthritis, Parkinsons Disease
  - Co-morbidity with life expectancy < 1 year
- Risk too low
  - Euroscore <10-15 (?), certainly <10
  - Especially if selection of TAVI driven by patient choice alone
- Comprehensive assessment by the Heart Team is essential