Artificial neural network

Input:
data from preprocedural echocardiography and right heart catheterization

Output:
individualized cluster assignment

Preprocedural diagnostics

Cluster 1
No PH

Cluster 2
Postcapillary PH

Cluster 3
Combined PH
Atrial fibrillation and/or flutter

Cluster 4
Postcapillary PH
Atrial fibrillation and/or flutter

AVA: $0.788 \pm 0.194 \text{ cm}^2$
AVG$_{mean}$: $41.4 \pm 12.9 \text{ mmHg}$
LVEF: $57.2 \pm 6.36 \%$
mPAP: $21.2 \pm 6.54 \text{ mmHg}$
TAPSE: $21.5 \pm 4.72 \text{ mm}$

AVA: $0.776 \pm 0.226 \text{ cm}^2$
AVG$_{mean}$: $50.3 \pm 18.0 \text{ mmHg}$
LVEF: $55.9 \pm 6.47 \%$
mPAP: $34.2 \pm 7.76 \text{ mmHg}$
TAPSE: $21.3 \pm 3.52 \text{ mm}$

AVA: $0.742 \pm 0.235 \text{ cm}^2$
AVG$_{mean}$: $33.5 \pm 13.7 \text{ mmHg}$
LVEF: $42.4 \pm 15.7 \%$
mPAP: $46.9 \pm 8.54 \text{ mmHg}$
TAPSE: $16.1 \pm 4.57 \text{ mm}$

AVA: $0.785 \pm 0.204 \text{ cm}^2$
AVG$_{mean}$: $31.7 \pm 14.6 \text{ mmHg}$
LVEF: $47.3 \pm 12.2 \%$
mPAP: $27.5 \pm 9.15 \text{ mmHg}$
TAPSE: $16.8 \pm 4.46 \text{ mm}$

TAVR

Echocardiographic follow-up at day $147 \pm 75.1$ (95% CI: 138-157)

Cluster 1 and 2:
little or no persistent cardiopulmonary impairment
2-year survival:
Cluster 1: $88.3\%$ (95% CI: 83.3-93.5%)
Cluster 2: $85.5\%$ (95% CI: 77.1-94.8%)

Poor prognosis after TAVR

Cluster 3 and 4:
irreversibility of (PH and) right heart dysfunction
2-year survival:
Cluster 3: $69.2\%$ (95% CI: 56.6-84.7%)
Cluster 4: $74.6\%$ (95% CI: 65.9-84.4%)

Good prognosis after TAVR