Desflurane does not decrease myocardial injury in trans-catheter aortic valve implantation with trans-femoral approach under general anaesthesia.

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		Group D N = 26	Group P N = 64	ρ
Peak CK-MB	ng/mL	9.25 [1.3 - 20.5]	8.7 [2.6 - 49.7]	0.52
Peak Troponin I	ng/ml	1.23 [0.088-6.4]	1.24 [0.036-29]	0.71
Postoperative Myocardial injury * N (%)		20 (76.9)	44 (68.8)	0.61

General anaesthesia was maintained with Desflurane in Group D and with Propofol in Group P.

CK-MB: creatine kinase myocardial band

* Postoperative myocardial injury was defined as an increase in either CK-MB > 5 times or Troponin I > 15 times the upper reference limits within postoperative 72h

	Group D (n=26)	Group P (n=64)	ρ
Age	82.3±6.2	83.6±6.2	0.29
Sex Male / Female	7 / 19	15 / 49	0.79
Height cm	150.9±8.8	150.2±8.2	0.73
Weight kg	51.4±9.2	50.0±11.2	0.29
LVEF %	65.2±13.4	63.5±12.6	0.44
Aortic Valve Area cm2	0.67±0.14	0.71±0.18	0.35
Mean Pressure Gradient mmHg	51.2±21.5	47.3±16.2	0.43
Coronary Artery Disease n (%)	8 (30.8)	25 (39.1)	0.63
COPD n (%)	2 (7.7)	5 (7.8)	1.0
Diabetes mellitus n (%)	6 (23.1)	21 (32.8)	0.45
Preoperative Hemoglobin g/dl	11.51.3	11.41.6	0.72
Preoperative Creatinine mg/dl	0.97 [0.47-12.7]	0.89 [0.52-10.7]	0.84
Devices SAPIEN XT or SAPIEN3 / Core Valve / LOTUS	37 / 21 / 6	20 / 5 / 1	0.23

LVEF: left ventricular ejection fraction COPD: chronic obstructive pulmonary disease

Background

Cardio-protective effect of volatile anaesthetics is shown in cardiac surgery, for example, on-pump CABG.
(Ref. “Cardiac troponins and volatile anaesthetics in coronary artery bypass graft surgery.” *Eur J Anaesthesiol* 2016; 33:396–407)

However, it is unclear whether volatile anaesthetics decrease the risk of postoperative myocardial injury in patients undergoing trans-catheter aortic valve implantation (TAVI).

Materials and Methods

Settings: Retrospective study in a single university hospital

Inclusion: Adult patients undergoing TAVI with femoral approach between January 2015 and September 2016 (100 cases)

Exclusion: Patients who underwent TAVI and other procedure at the same time (5 cases)
Patients who required cardio-pulmonary bypass during the procedure (5 cases)

Allocation: Group D; Patients who were maintained general anaesthesia with desflurane (n=26)

Group P; Patients who were maintained general anaesthesia with propofol (n=64)

Primary Outcome: The rate of patients who developed postoperative myocardial injury defined as increase in myocardial biomarker including CK-MB and Troponin I

Secondary Outcomes: Peak CK-MB and troponin I value within 72h

Statistical Analysis: The rate of postoperative myocardial injury was compared using Fisher’s exact test and Peak CK-MB and troponin I value were compared using Wilcoxon rank sum test between groups

Results

We could not find any difference regarding patients background (above Table) as well as the occurrence of postoperative myocardial injury and peak myocardial biomarkers (headline Table and Figures) between groups.

Limitations

First, small and asymmetric study population in Group D.
Second, we could not obtain postoperative electric cardiographies and there was no symptomatic myocardial infarction in patients included in our study, therefore we evaluated postoperative myocardial injury only using myocardial enzymes.

Conclusions

We demonstrated that desflurane does not decrease myocardial injury compared with propofol in trans-femoral TAVI under general anaesthesia.
Future randomized controlled trials are required to confirm our findings.

There is no conflict of interests and no funding source in this study.