

Infective endocarditis after transcatheter aortic valve implantation

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Introduction: Infective endocarditis (IE) is a potentially serious complication in patients with prosthetic heart valves. The objective of this study is to analyze and describe the incidence, baseline characteristics, risks factors and in-hospital evolution in IE after Transcatheter Aortic Valve Implantation (IE-TAVI).

Methods: All the TAVI implanted in our center since the beginning of the program have been included consecutively. Patients with a confirmed diagnosis of IE according to the "ESC Guidelines for the management of infective endocarditis" are identified and analyzed.

Results: 331 TAVI have been implanted in our center from June 2009 to February 2021. IE-TAVI incidence in our series is 2.7% (n=9 cases). In baseline analysis, we observed that insulin dependent diabetes mellitus, Barthel Score and Pulmonary systolic pressure >50mmHg are significantly associated with the appearance of IE-TAVI (TABLE 1).

The most frequently microorganism is Enterococcus faecalis (44.4%; n=4) followed by Staphylococcus aureus (22.2%; n=2), Coagulase-negative staphylococci (22.2%; n=2) and Streptococcus viridans (11.1%; n=1).

77.8% of IE-TAVI (n=7) are Nosocomial IE or non-nosocomial healthcare-associated IE. 2 of them have been related to implantation (1 Enterococcus

faecalis and 1 Coagulase-negative staphylococci) and 5 have been related to other interventions (2 after gastroscopy, 1 after percutaneous vascular intervention, 1 hemodialysis catheter infection and 2 unknown focus).

44.4% of IE-TAVI (n=4) were confirmed after performing Positron Emission Tomography (PET) scan. 3 cases (33.3%) were diagnosed with the initial Transthoracic Echocardiogram (TTE) and 2 cases (22.2%) were diagnosed after performing a Transesophageal Echocardiogram (TEE) (TABLE 2)

4 patients had an indication for surgery according to the ESC Guidelines (3 for persistent bacteremia and 1 for severe aortic regurgitation), but all were ruled out due to high surgical risk. Hospital mortality was 44.4% (n=4). The main predictor of hospital mortality was having an indication for surgery (p=0.028), which was present in 3 of the 4 deaths. The other death was due to digestive bleeding during hospitalization.

Conclusions: IE-TAVI is a serious disease with high in-hospital mortality. Insulin dependent diabetes mellitus, Barthel Score and Pulmonary systolic pressure >50mmHg are risk factors for IE-TAVI. PET-scan is the imaging test of choice when there were no echocardiographic findings. The main predictor of mortality is having an indication for surgery according to the ESC Guidelines.

TABLE 1. Baseline characteristics

	TOTAL n = 331	NO IE-TAVI n = 322	IE-TAVI n = 9	P
Age (years)	80.2 ± 7.4	80.2 ± 7.4	77.7 ± 6.2	p = 0.307
Male (n; %)	181 (54.7%)	174 (54.0%)	7 (77.8%)	p = 0.349
Body mass index	27.4 ± 5.4	27.4 ± 5.5	28.1 ± 4.2	p = 0.701
Hypertension (n; %)	263 (79.4%)	255 (79.2%)	8 (88.9%)	p = 0.906
Dyslipidemia (n; %)	198 (59.8%)	192 (59.6%)	6 (66.7%)	p = 0.896
Diabetes mellitus (n; %)	143 (43.2%)	138 (42.8%)	5 (55.6%)	p = 0.458
Diabetes mellitus insulin dependent (n; %)	29 (8.7%)	26 (8.1%)	3 (33.3%)	p = 0.009**
Tobacco (n; %)	176 (53.2%)	169 (52.5%)	7 (77.8%)	p = 0.139
Peripheral vascular disease (n; %)	100 (30.2%)	95 (29.5%)	5 (55.6%)	p = 0.242
Stroke (n; %)	51 (15.4%)	49 (15.1%)	2 (22.2%)	p = 0.828
Cancer (n; %)	17 (5.1%)	17 (5.3%)	0 (0.0%)	p = 0.755
Creatinine (mg/dl)	1.3 ± 0.8	1.3 ± 0.8	1.3 ± 0.6	p = 0.895
Creatinine clearance <30 ml/min (n; %)	60 (18.1%)	58 (18.0%)	2 (22.2%)	p = 0.754
Barthel Score (0-100)	92.4 ± 10.2	92.9 ± 9.2	75.0 ± 26.0	p = 0.002**
Euro Score log	23.8 ± 15.1	23.6 ± 14.8	29.6 ± 23.5	p = 0.237
Euro Score II	8.9 ± 8.1	8.9 ± 8.1	10.5 ± 9.1	p = 0.557
STS Score	6.7 ± 5.4	6.5 ± 5.1	10.2 ± 9.5	p = 0.057
NYHA III-IV	260 (78.5%)	253 (79.1%)	7 (77.8%)	p = 0.926
Ejection fraction (%)	55.2 ± 15.1	55.4 ± 15.5	49.1 ± 16.6	p = 0.235
Ejection fraction < 45 % (n; %)	78 (23.6%)	75 (23.3%)	3 (33.3%)	p = 0.484
Pulmonary systolic pressure > 50mmHg (n; %)	90 (27.2%)	84 (26.1%)	6 (66.7%)	p = 0.012**
Previous mitral regurgitation > II/IV	99 (29.9%)	94 (29.2%)	5 (55.6%)	p = 0.091
Implant during Heart Failure hospitalization	59 (17.8%)	57 (17.8%)	2 (22.2%)	p = 0.734
TAVI Type				
Balloon expandable	187 (56.5%)	183 (56.8%)	4 (44.4%)	p = 0.460
Self-expanding	144 (43.5%)	139 (43.2%)	5 (55.6%)	
Permanent pacemaker	67 (20.2%)	64 (19.9%)	3 (33.3%)	p = 0.497

TABLE 2

Case No.	TTE	TEE	PET-Scan	DIAGNOSTIC TEST
1	+	+		TTE
2	-	-	+	PET-Scan
3	-	+		TEE
4	-	-	+	PET-Scan
5	+	+		TTE
6	-	-	+	PET-Scan
7	-	-	+	PET-Scan
8	+	+		TTE
9	-	+		TEE

TTE: Transthoracic Echocardiogram;
TEE: Transesophageal Echocardiogram;
PET-Scan: Positron Emission Tomography (PET) scan