Potential Candidates for Transcatheter Aortic Valve Implantation among Patients with Aortic Stenosis

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Background: Transcatheter aortic valve implantation (TAVI) is increasingly used in symptomatic patients (pts) with severe aortic stenosis (AS), who are at high risk for valve surgery. The objectives of our study were to determine the clinical and echocardiographic characteristics and to assess the risk of cardiac surgery in hospitalized pts with severe AS.

Methods: During a 30 months period, severe AS (aortic valve area ≤1.0 cm2) was diagnosed in 462 transthoracic echocardiographic studies performed at our institution. Non-hospitalized pts (comprehensive clinical data not available) and repeat studies were excluded (data from the most recent study in each pt were analyzed). The hospital records and echocardiography reports were reviewed and the data on cardiac and non-cardiac co-morbidity were collected.

Results: The clinical and echocardiographic findings in the total study population (224 pts) and in age subgroups (<70 yrs, 70-79 yrs, ≥80 yrs) are presented in the Table. Approximately half of the patients were very elderly (≥80 yrs old), with multiple cardiac and extra-cardiac co-morbidities, a high surgical risk (EuroSCORE >10% in 67% of pts and >20% in 37% of pts), but a relatively low frequency of contraindications for TAVI (dementia, malignancy, severe valve regurgitation, severe left ventricular dysfunction). Furthermore, a non-negligible proportion of pts in the intermediate age group (age 70-79 yrs) had significant co-morbidity with a high surgical risk (EuroSCORE >10% in 29% of pts and >20% in 12% of pts).

	All pts	<70 yrs	70-79 yrs	≥80 yrs
	(n=224)	(n=39)	(n=76)	(n=109)
Age, yrs	77±11	59±11	75±3	86±5
Male, n (%)	93 (41.5)	24 (61.5)	26 (34.2)	43 (39.4)
AS-related symptoms on admission, n (%)	196 (87.5)	36 (92.3)	69 (90.8)	91 (83.5%)
Previous myocardial infarction, n (%)	59 (26.3)	6 (15.4)	20 (26.3)	33 (30.3)
Previous coronary artery bypass surgery, n (%)	24 (10.7)	1 (2.6)	7 (9.2)	16 (14.7)
Previous stroke, n (%)	36 (16.1)	3 (7.7)	10 (13.2)	23 (21.1)
Dementia, n (%)	20 (8.9)	1 (2.6)	7 (9.2)	12 (11.0)
History of malignancy (active or past), n (%)	42 (18.8)	6 (15.4)	15 (19.7)	21 (19.3)
EuroSCORE, %, median (25-75 percentiles)	8.3 (4.2-17.6)	2.3 (1.2-3.9)	6.1 (3.8-11.9)	15.6 (8.5-27.1)
EuroSCORE >10%, n (%)	95 (42.4)	0	22 (28.9)	73 (67.0)
EuroSCORE >20%, n (%)	49 (21.9)	0	9 (11.8)	40 (36.7)
Aortic valve area, cm2	0.80±0.16	0.81±0.16	0.79±0.16	0.80±0.16
Aortic valve area <0.8 cm2, n (%)	87 (38.8)	15 (38.5)	30 (39.5)	42 (38.5)
Mean transaortic pressure gradient, mmHg	46±18	51±17	47±18	43±19
Bicuspid aortic valve, n (%)	7 (3.1)	7 (17.9)	0	0
Severe aortic regurgitation, n (%)	6 (2.7)	5 (12.8)	0	1 (0.9)
Severe mitral regurgitation, n (%)	23 (10.3)	2 (5.1)	6 (7.9)	15 (13.8)
Left ventricular ejection fraction, %	56±14	62±14	58±13	53±15
Left ventricular ejection fraction <30%, n (%)	12 (5.4)	3 (7.7)	1 (1.3)	8 (7.3)
Significant pulmonary hypertension (≥50 mmHg), n (%)	76 (33.9)	9 (23.1)	27 (35.5)	40 (36.7)

Conclusions: Co-morbidities are frequent and surgical risk is high in the majority of very elderly pts (≥80 yrs old) with AS. This finding supports the use of TAVI as the therapeutic procedure of choice in the majority of pts in this age group. Moreover, co-morbidity is also high in a significant proportion of relatively younger pts (<80 yrs old), suggesting that TAVI should be increasingly used in many pts in this relatively younger age group as well.