Acute heart failure is an independent risk factor for advanced frailty and poor outcome in elderly patients with severe aortic stenosis, treated by pre-TAVR multidimensional assessment and tailored therapy.

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Background

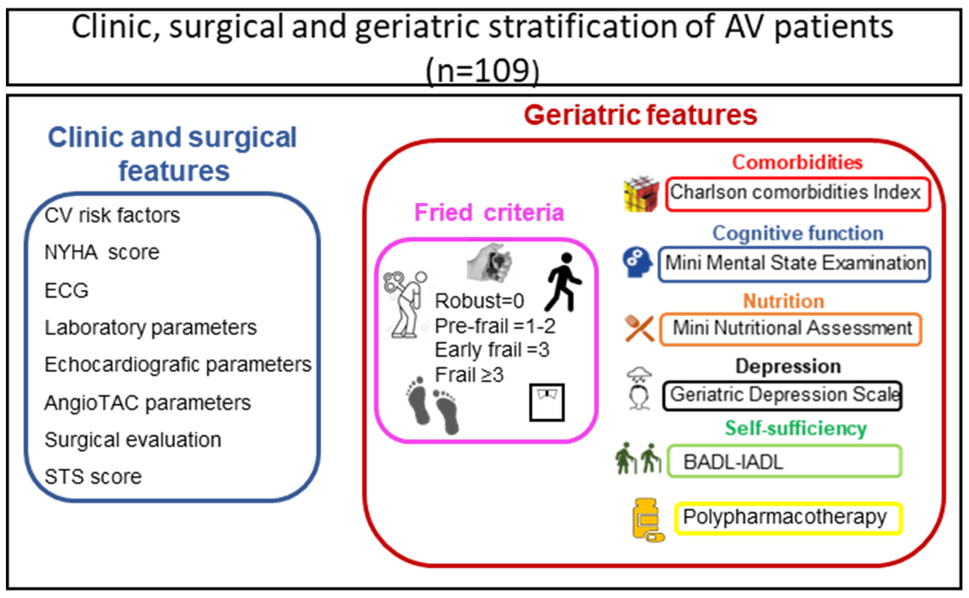
Frailty degree plays a critical role in the decision making and outcomes of elderly patients (pts) with severe aortic stenosis(AS) (1). Heart Failure is common in severe symptomatic aortic valve stenosis and Acute Heart Failure (AHF) event get severely worse clinical and haemodinamic status in this older population underwent to Transcatheter Aortic Valve Replacement (TAVR). An accurate assessment might allow a personalized treatment to prevent adverse outcomes.

Aim

to evaluate the impact of AHF on frailty degree and outcomes in older pts with AS referred to Surgical/Transcatheter Aortic Valve Replacement (SAVR/TAVR), Balloon Aortic Dilation (BAD) or Medical Therapy (MT)

Methods

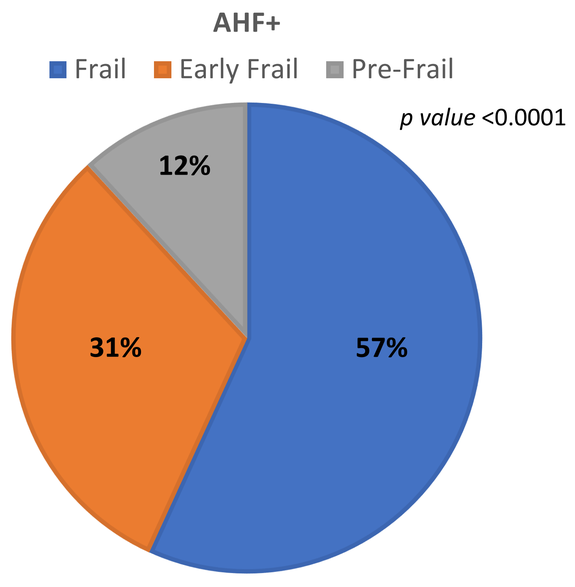
We analysed retrospectively, 109 pts (68% F; mean age 83.3±5.4) evaluated by a multidisciplinary path for a "frailty-based management"1. Fried score was used for the frailty degree (prefrail, early frail, high frail). We considered two groups with (AHF+) and without AHF(AHF-) and preserved ejection fraction (mean value EF: 57.4 ± 8.6). The AHF occurred a mean value of 55 days before geriatric, clinical, and surgical assessment. A follow up for mortality and readmission were detected at 20 months.

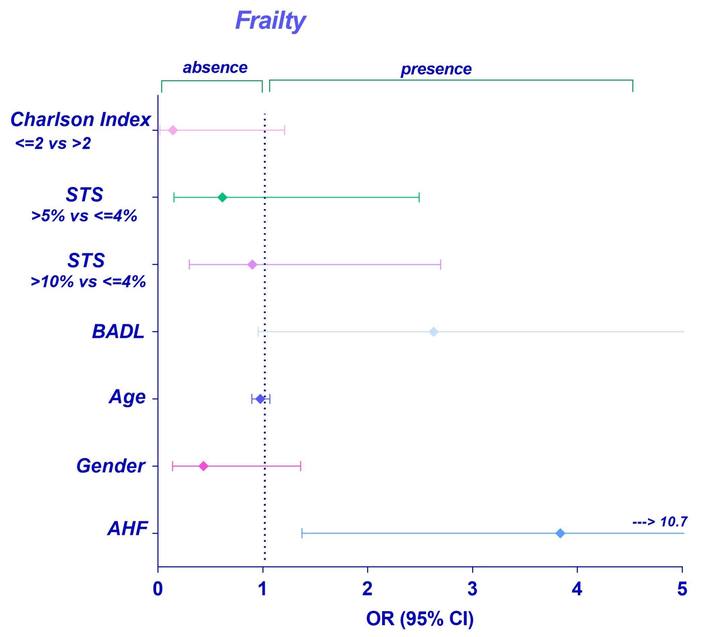


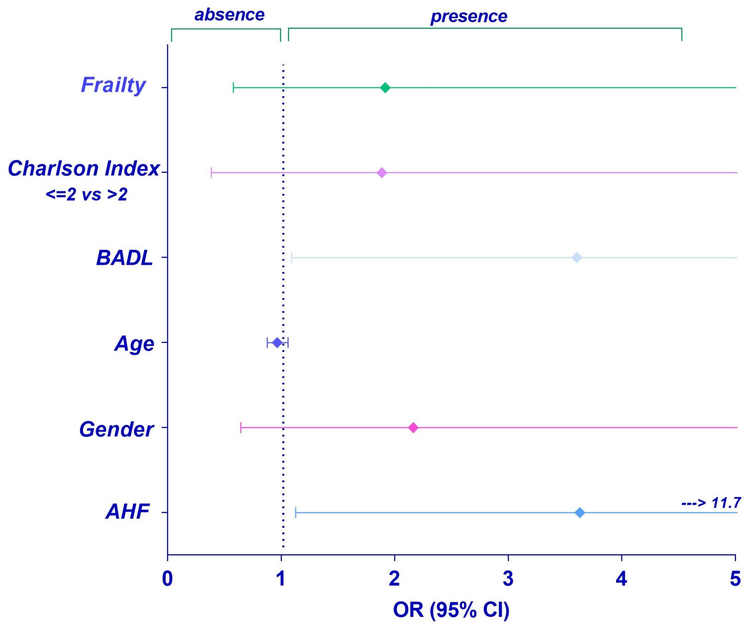
Results

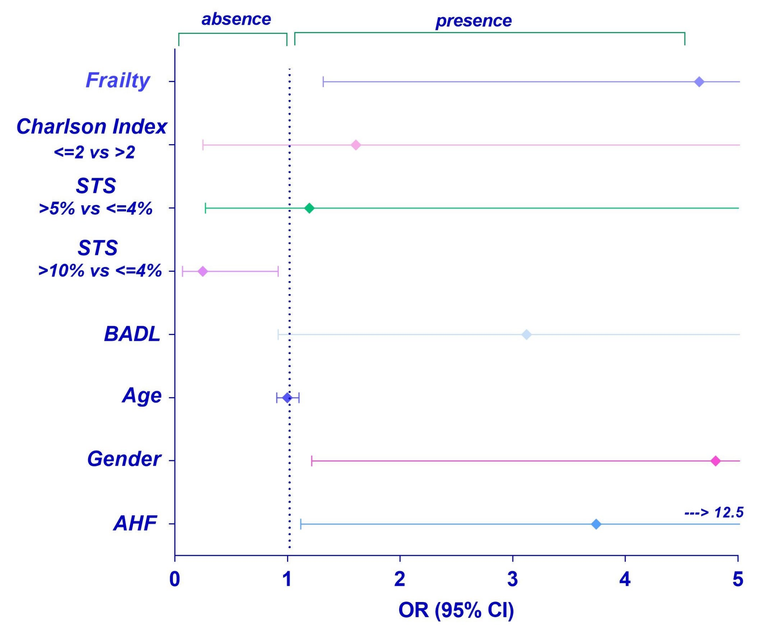
28% of pts had an acute event of HF, (72% recompensed by hospitalization). AHF+ pts had a lower EF respect to AHF- (p= 0.0001), higher NYHA class (III-IV) (p=0.0001), and BNP (p=0.0001). AHF+ pts had higher frequency of advanced frailty respect to AHF- (53.3% vs 46.7%, p=0.0001), lower frequency of pre/early frailty (11.1% vs 29.4%). 48% of AHF+ pts treated by BAD, 32 % by TAVR, 20% by MT, none by SAVR. At stepwise logistic regression analysis, adjusted for age, gender, STS score, BADL, Charlson score, AHF resulted an independent risk factor for advanced frailty(OR:3.8 C.I 1.3-10.7; p=0.01), all cause mortality (OR: 3.7 C.I 1.1-12.5; p=0.03) and rehospitalization (OR: 3.6 C.I 1.1-11.6; p=0.03)

Variable	All patients (n=109)	AHF Yes (n=31)	AHF No (n=78)	*p*-Value
Age (yrs)	83.3 ± 5.5	83.9 ± 6.3	83.1 ± 5.1	0.490
Female, n	74 (68)	23 (74.2)	51 (65.4)	0.374
Comorbidities				
Hypertension	97 (89)	28 (90.3)	69 (88.5)	0.779
Hypercholesterolemia	80 (73.4)	19 (61.3)	61 (78.2)	0.071
Diabetes	39 (35.8)	17 (54.8)	22 (28.2)	0.009
Smoking	29 (26.6)	8 (25.8)	21 (26.9)	0.655
COPD	46 (42.2)	17 (54.8)	29 (37.2)	0.092
Previous AMI	18 (16.5)	5 (16.1)	13 (16.1)	0.946
Previous stroke	15 (13.8)	4 (12.9)	11 (14.1)	0.870
Chronic Heart Failure	68%	28%	40%	
NYHA classes				
I-II	70 (64.2)	7 (22.6)	63 (80.8)	
III-IV	39 (35.8)	24 (77.4)	16 (19.2)	0.0001
Angina	33 (30.3)	10 (32.3)	23 (29.5)	0.776
Echo parameters				
PAPs	46.7 ± 11.3	52.5 ± 13.2	44.5 ± 9.6	0.001
EF, %	57.4 ± 8.6	50.9 ± 10.8	60.0 ± 5.9	0.0001
mAVG, mmHg	44.1 ± 12.3	39.5 ± 11.3	45.9 ± 12.2	0.013
STS score	4.45 (2.7-6.1)	5.4 (4.3-10)	4.1 (2.3-5.0)	0.023
Laboratory parameters				
BNP, pg/mL	281 (134-588.2)	528 (343-1182)	195 (120-369)	0.0001
Creatinine	1.09 (0.9-1.4)	1.4 (1.1-2.0)	0.98 (0.86-1.21)	0,0001
Albumin, g/L	4.0 ± 0.4	3.83 ± 0.59	4.10 ± 0.36	0.014
Aortic valve treatment				
SAVR	8 (7.3)	0 (0.0)	8 (10.3)	
TAVR	59 (54.1)	10 (32.3)	49 (62.8)	0.0001
BAD	27 (24.8)	15 (48.4)	12 (15.4)	
MT	15 (13.8)	6 (19.4)	9 (11.5)	









Conclusion

AHF is independently associated with advanced frailty and poor outcomes in elderly pts with severe AS. This population need a careful clinical and geriatric monitoring to implement interventional therapy of AS in the early stages of frailty, avoiding the occurrence of AHF and poor outcomes.

1. Mazzone A. et al. The Positive Impact of Early Frailty Levels on Mortality in Elderly Patients with Severe Aortic Stenosis Undergoing Transcatheter/Surgical Aortic Valve Replacement. J Cardiovasc Dev Dis. 2023 May 13;10(5):212. doi: 10.3390/jcdd10050212.