

Background

- ✓ Epicardial adipose tissue (EAT) have been shown to be associated with several heart disease, including coronary artery disease, atrial fibrillation, and heart failure ¹⁾.

1) Maddalena C, Laura P, et al. Front Med (Lausanne). 2022; 9: 844266.

- ✓ We have recently reported that the quality of EAT, represented by fat attenuation determined using computed tomography (CT) imaging, can detect the histologically-assessed remodeled EAT ²⁾.

2) Ishii Y, Takahashi N, et al. Heart Rhythm O₂. 2021;2(4):311-323.

- ✓ We tested the hypothesis that quality of EAT would predict cardio- and cerebra-vascular events following transcatheter aortic valve implantation (TAVI) in patients with aortic stenosis (AS).

Methods

- ✓ A total of 125 consecutive severe AS patients(39male, mean 85.4 ± 4.0 years) who underwent TAVI were enrolled

Results

Table 1. Baseline clinical characteristics of patients with and without MACCE.

	Patients with MACCE (n=21)	Patients without MACCE (n=104)	p value
Age (y)	86 ± 2.6	85 ± 4.2	0.27
Gender (female/male)	15 / 6	71 / 33	0.77
BMI (kg/m ²)	22 ± 2.2	23 ± 4.0	0.38
Logistic EuroSCORE	19 ± 1.5	13 ± 0.7	0.0004**
NYHA (I/II/III/IV)	0 / 14 / 7 / 0	8 / 57 / 37 / 2	0.25
LVEF (%)	66 ± 7.8	66 ± 7.3	0.80
Mean AVPG (mmHg)	44 ± 17	51 ± 15	0.07
e-GFR (ml/min/1.73 m ²)	51 ± 19	50 ± 20	0.91
BNP (pg/ml)	497 ± 458 (n = 10)	921 ± 2483 (n = 33)	0.60
NT-proBNP (pg/ml)	3985 ± 3230 (n = 11)	2643 ± 2926 (n = 71)	0.17
Heart Volume (ml)	925 ± 210	833 ± 160	0.025*
EAT volume (ml)	72 ± 37	92 ± 58	0.14
EAT attenuation (HU)	-74 ± 3.7	-77 ± 5.5	0.010*

*p < 0.05, **p < 0.01

Figure 1. Comparison of EAT attenuation between With MACE and Without MACE group.

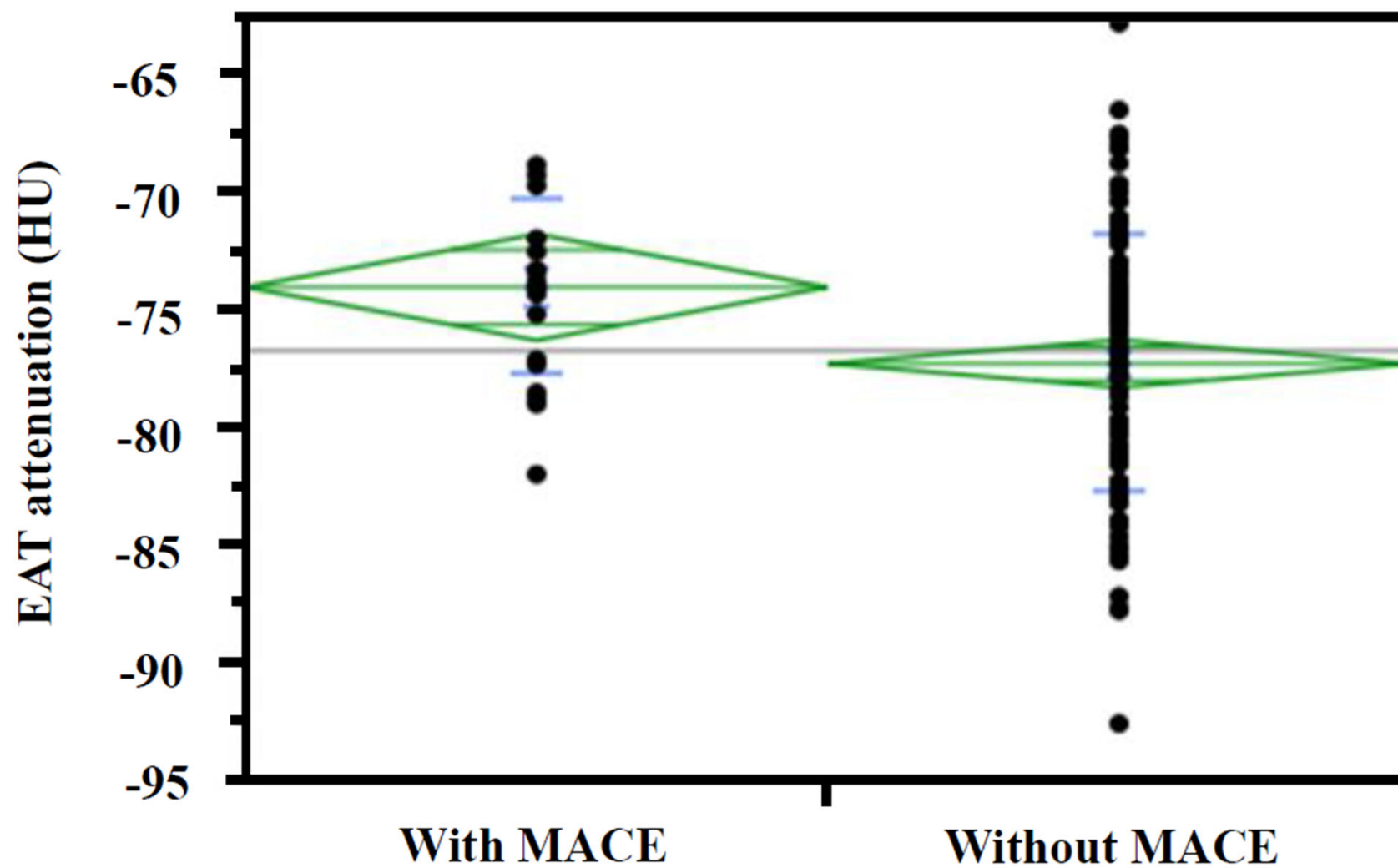


Table 2. Baseline clinical characteristics of High EAT and Low EAT group.

	High EAT attenuation (n=44)	Low EAT attenuation (n = 81)	p value
Age (y)	87 ± 3.6	85 ± 4.1	0.011*
Gender (female/male)	28/ 16	58 / 23	0.36
BMI (kg/m ²)	21 ± 2.4	23 ± 4.2	0.009**
Logistic EuroSCORE	15 ± 8.0	14 ± 7.4	0.57
NYHA (I/II/III/IV)	3 / 27 / 14 / 0	5 / 44 / 30 / 2	0.53
LVEF (%)	65 ± 8.0	67 ± 7.0	0.26
Mean AVPG (mmHg)	50 ± 18	49 ± 14	0.78
e-GFR (ml/min/1.73 m ²)	48 ± 21	52 ± 19	0.36
BNP (pg/ml)	545 ± 733 (n = 13)	942 ± 2578 (n = 30)	0.59
NT-proBNP (pg/ml)	3834 ± 3634 (n = 31)	2208 ± 2341 (n = 51)	0.016*
Heart Volume (ml)	924 ± 184	807 ± 151	0.0002**
EAT volume (ml)	62 ± 31	102 ± 61	<0.0001**
EAT attenuation (HU)	-71 ± 2.5	-80 ± 3.9	<0.0001**
MACCE (%)	31.8	8.6	0.001**

*p < 0.05, **p < 0.01

Figure 2. Receiver-operating characteristic curve for the ability of EAT attenuation to predict MACCE.

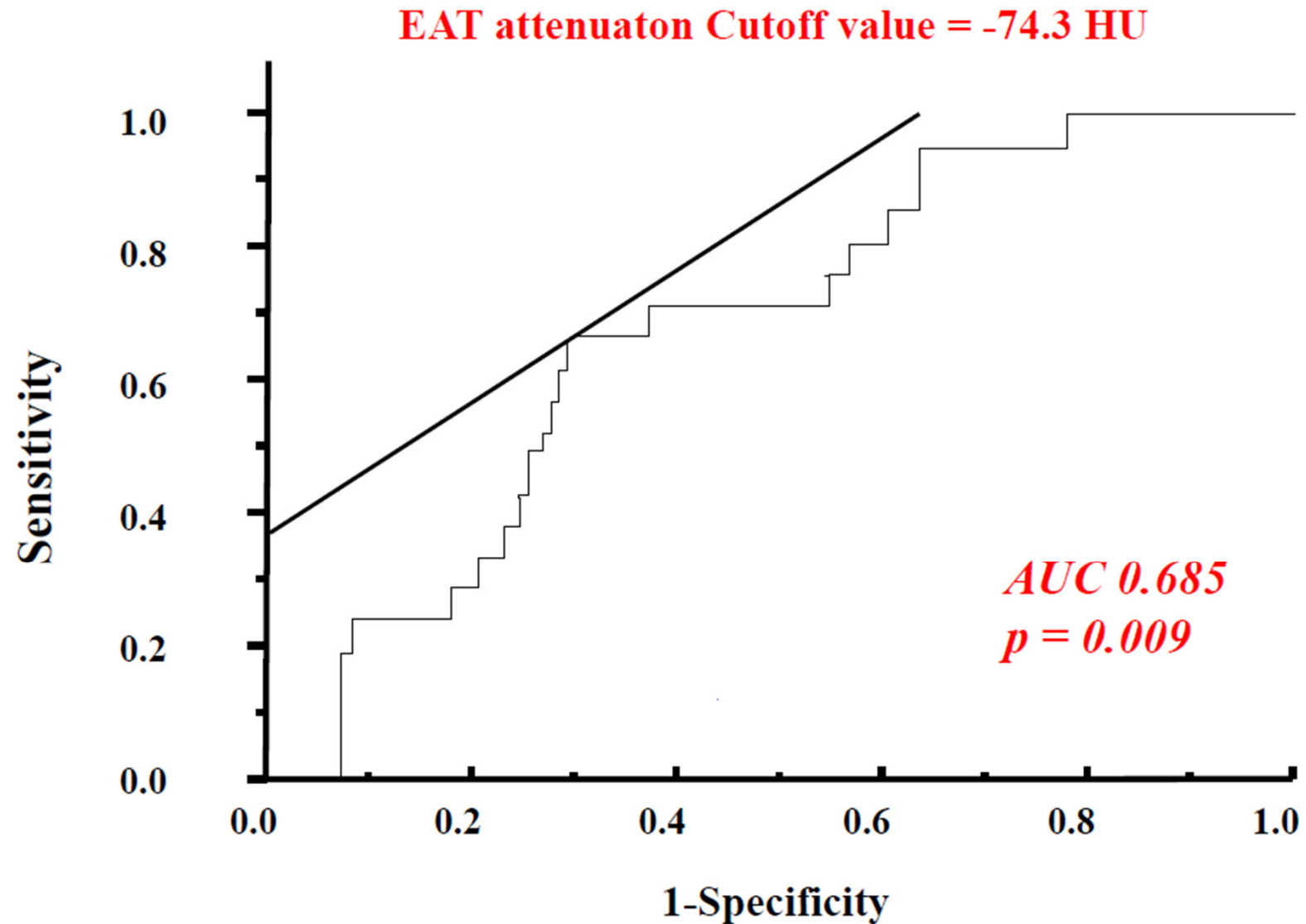


Figure 3. Kaplan-Meier events-free curves for MACCE between High EAT attenuation and Low EAT attenuation group.

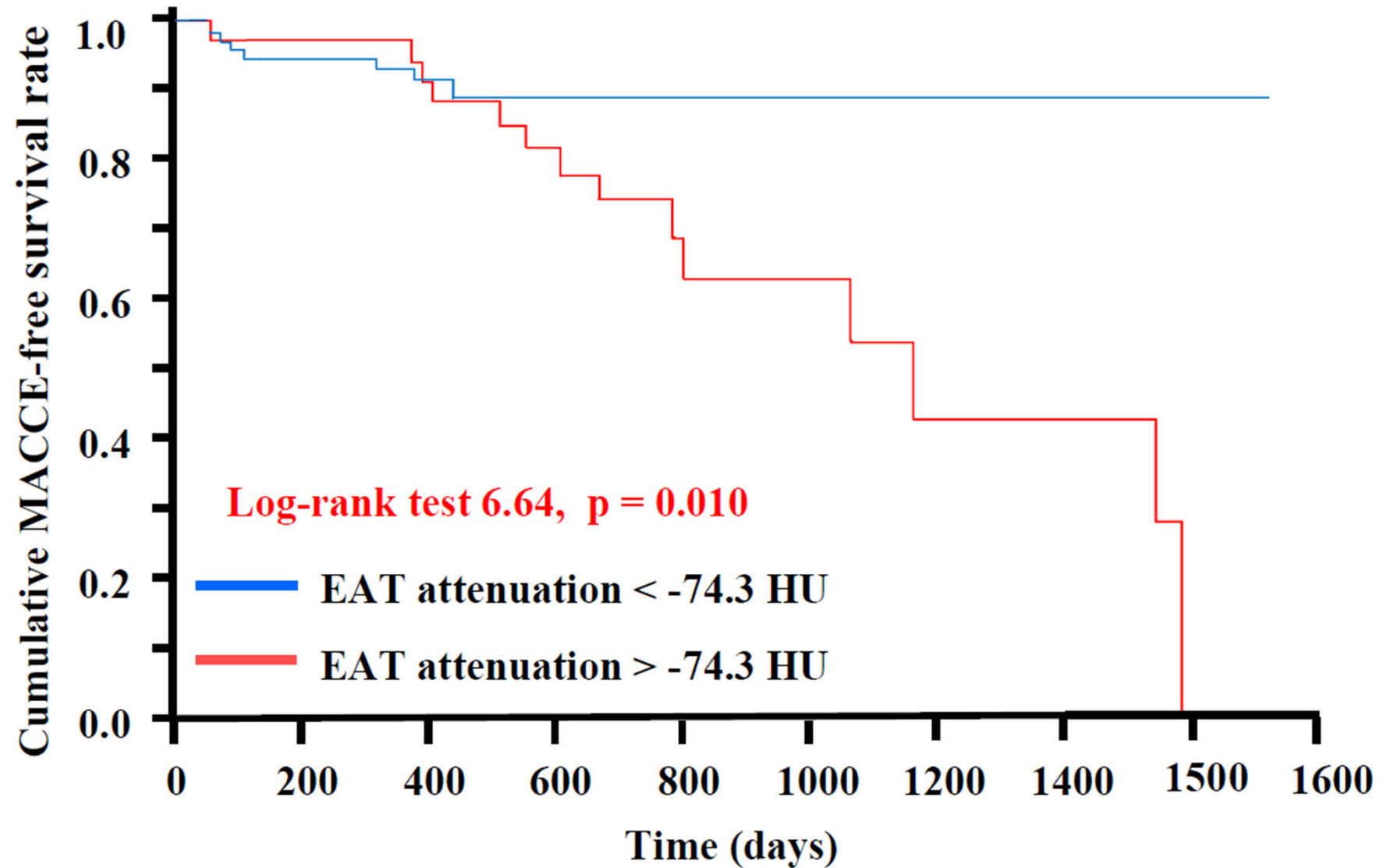


Table 3. Univariate Cox proportional hazards regression analysis of MACCE.

	<u>Univariate</u> p value	Hazard ratio	95% CI
Age (y)	0.29	1.07	0.95-1.21
Gender (female/male)	0.80	0.64	0.28-2.00
BMI (kg/m ²)	0.14	0.07	0.002-2.24
Logistic EuroSCORE	0.0009**	1.09	1.04-1.14
NYHA (I/II/III/IV)	0.84	0.92	0.41-1.99
e-GFR (ml/min/1.73 m ²)	0.60	0.99	0.97-1.02
BNP (pg/ml)	0.86	1.00	0.99-1.00
NT-proBNP (pg/ml)	0.08	1.00	0.99-1.00
EAT attenuation (HU)	0.011*	3.12	1.29-8.28

*p < 0.05, **p < 0.01

Table 4. Multivariate Cox proportional hazards regression analysis of MACCE.

Valuable	<u>Multivariate</u> p value	Hazard ratio	95%CI
Logistic EuroSCORE	0.041*	1.08	1.03-1.12
EAT attenuation	0.003**	2.58	1.04-6.96

Conclusions

- ✓ Our results suggest that quality of EAT, assessed by EAT attenuation by CT imaging, can predict the cardio- and cerebro-vascular events after TAVI in patients with AS.