SINPE
Società Italiana di Nutrizione Artificiale e Metabolismo

26-28 ottobre 2023

INCREASE MALNUTRITION AWARENESS:
CHALLENGE FOR THE FUTURE

CONGRESSO
NAZIONALE

PROGNOSTIC ROLE OF VISCERAL ADIPOSE TISSUE IN PATIENTS UNDERGOING TRANSCATHETER AORTIC VALVE IMPLANTATION

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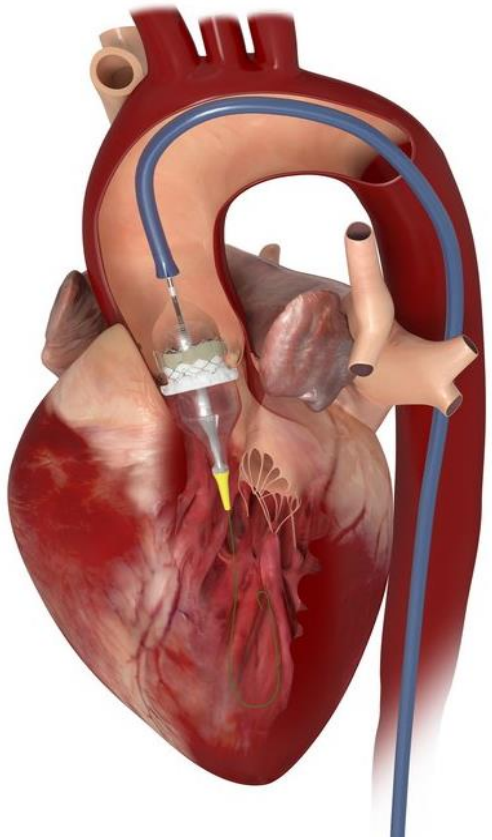
Background



- **Transcatheter Aortic Valve Implantation (TAVI)**, also known as Transcatheter Aortic Valve Replacement, is a minimally invasive medical procedure to treat **severe aortic valve stenosis**, a condition in which the aortic valve in the heart becomes narrowed and obstructed.
- Compared to traditional open-heart surgery (aortic valve replacement), TAVI is performed through a small incisions in the groin (transfemoral approach) **introducing a bioprosthetic heart valve through a catheter, which is placed within the diseased aortic valve**.
- TAVI is recommended in older patients (**≥75 years**), or in those who are at high risk (**STS/Euroscore II**) or **unsuitable for surgery.**

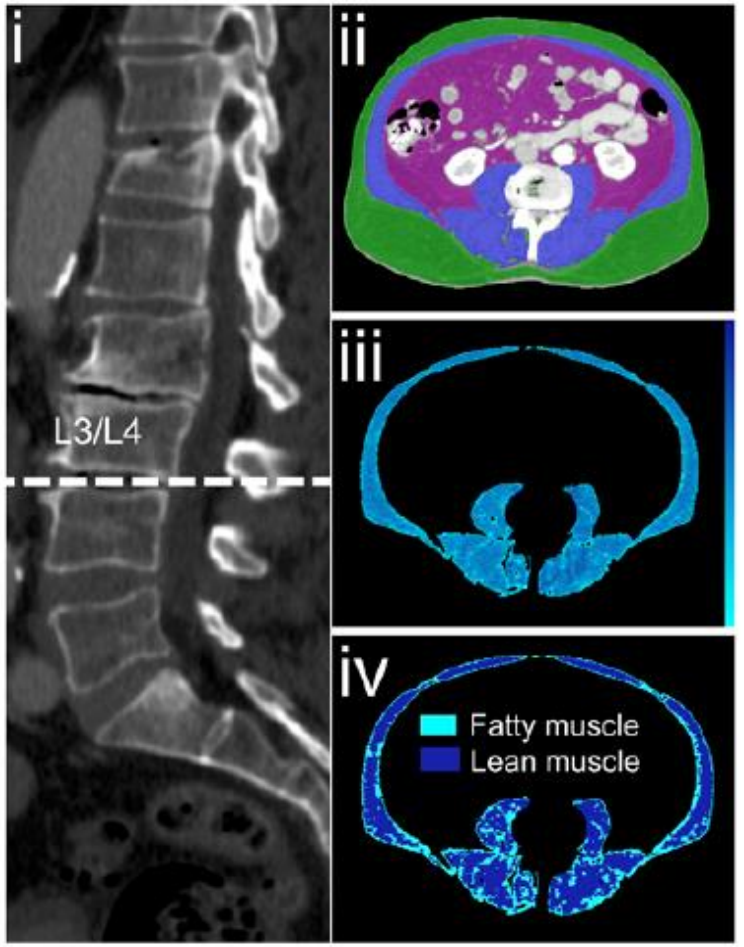
Class 1 Level A, 2021 ESC/EACTS Guidelines for the management of valvular heart disease

Vahanian A et al. Eur Heart J. 2022 Feb 12;43(7):561-632
Munkholm-Larsen S et al. Ann Cardiothorac Surg. 2012 Jul;1(2):263

Background and aim

- The knowledge of body composition is a key tool in evaluating patient frailty.
  - Pre-TAVI sarcopenia (21-70%) is associated with longer hospital LOS, higher resource use, in-hospital adverse outcomes, disability, readmission, and higher 30/90-days and long-term mortality.
  - Fatty muscle infiltration is an independent predictor of mortality.
- Conversely, the effect of visceral adipose tissue (VAT), a pro-inflammatory and metabolically active organ associated with unfavorable cardiovascular outcomes, is still poorly explored.

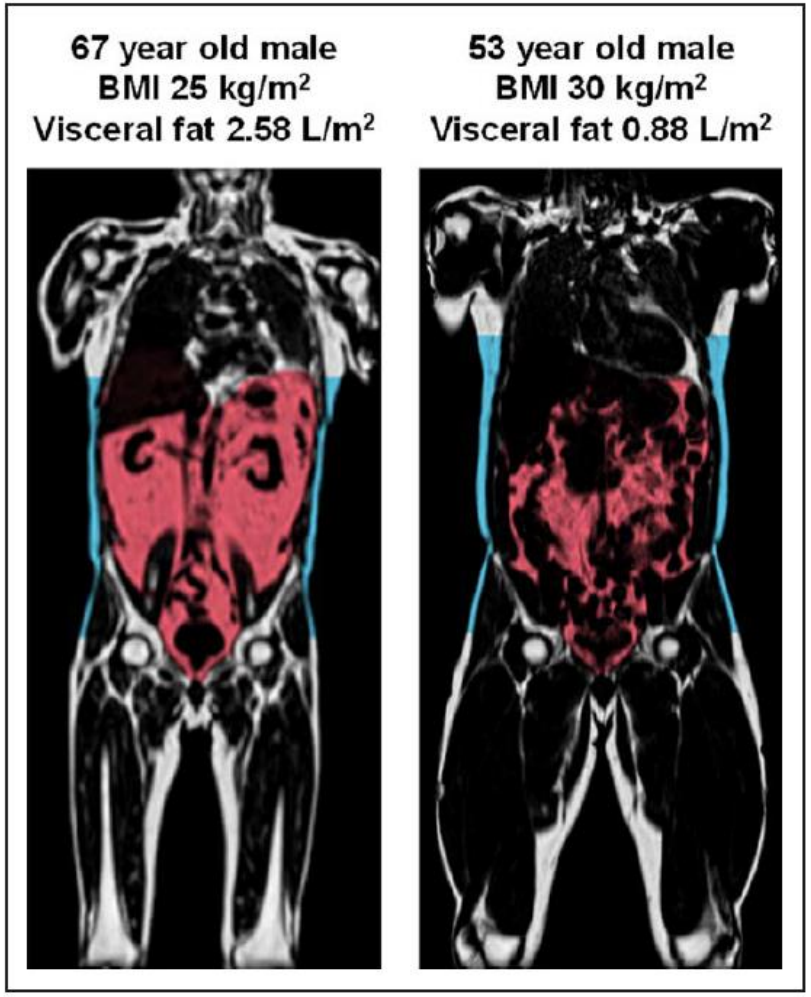
We investigated the association between preoperative VAT and 30-days and 1-year mortality in patients undergoing TAVI.



Damluji AA et al. Circulation. 2023 May 16;147(20):1534-1553
Luetkens JA et al. Circulation. 2020 Jan 21;141(3):234-236
Mok M et al. Am J Cardiol. 2016 Mar 1;117(5):828-33

Metabolic Heterogeneity of Obesity

BMI doesn't tell the whole story

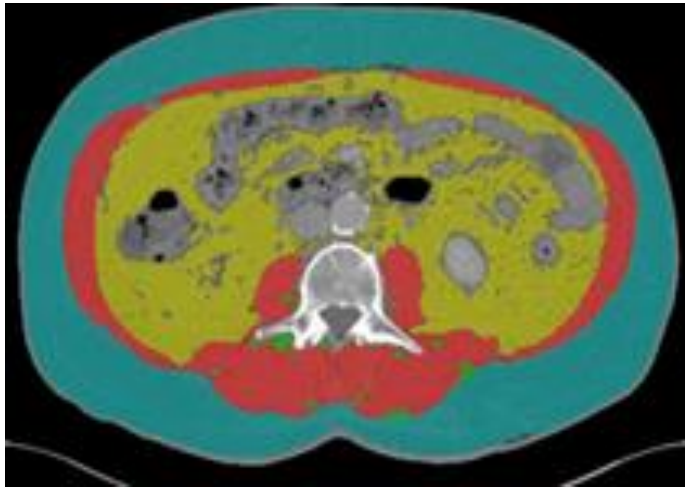


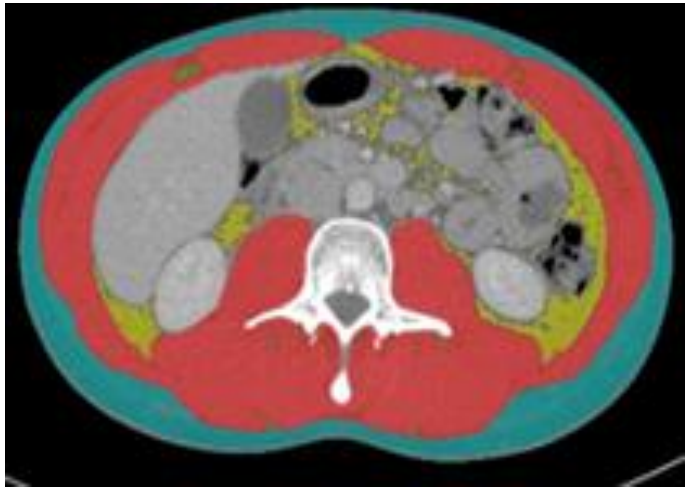
Method	Clinical Use	Surrogate for Visceral Adiposity
BMI	+++	+
Waist circumference	+++	++
Waist-height ratio	++	++
Waist-hip ratio	++	++
Hypertriglyceridemic waist	+++	++
CT	???	+++
MRI	???	+++
DXA	???	+++

Neeland IJ et al. Circulation. 2018 Mar 27;137(13):1391-1406

Methods

- Anamnestic, laboratory and clinical data of patients who underwent TAVI in 2010-2020 were collected.
- L3 scans of preoperative CT exams were analyzed to measure VAT area (yellow area), which was normalized for stature obtaining **VAT index** (**VATi**).
- The sample was classified according to VATi values into two groups: **low VATi [1st q] vs. high VATi [2nd to 4th q].**
- The 2 groups were compared by T-test and Chi-square test for continuous and categorical variables. Mortality analyses were performed through Kaplan-Meier curves with log rank test.
- To address for potential confounding factors, a propensity score based on STS mortality score and Euroscore II values was calculated and utilized to create 2 comparable groups.





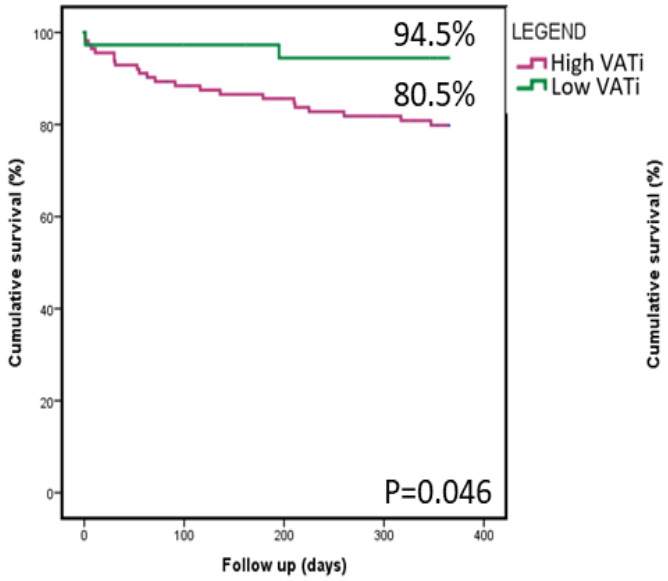
Results

- Median age 84 years [81-86]
- Mean VATi was 58.6 ± 37.2 cm^2/m^2 (range 1.7-172.3)
- **Overall, 1-year and 30-days mortality were 16.1% and 5.4%, respectively**

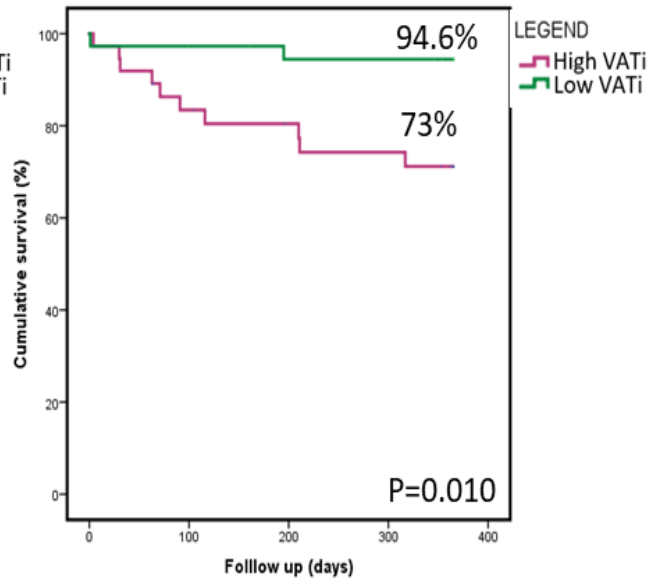
168 patients * (45.8% males)	High VATi group [25.9-172.3 cm^2/m^2]	Low VATi group [1.7-25.7 cm^2/m^2]	p value
Glycemia	124 ± 40 mg/dl	111 ± 23 mg/dl	**0.021**
HbA1c	6 ± 0.8 %	5.6 ± 0.5 %	**0.001**
Neutrophils	5.4 ± 2.7 x 10^3/µl	4.5 ± 1.8 x 10^3/µl	**0.028**
1-year mortality (A)	**19.5 %**	**5.5 %**	**0.046 (OR=4.2)**
30-days mortality	6.2 %	2.7 %	0.421
Matched population (37 pairs)			
1-year mortality (B)	**27 %**	**5.4 %**	**0.010 (OR=5)**
30-days mortality	5.4 %	2.7 %	0.572

** CT images available in 150 patients*

A *(unmatched)*



B *(matched)*



No differences were found between the two groups in terms of

- age
- CKD (GFR<30 ml/min)
- previous stroke, myocardial infarction, surgical or percutaneous revascularization
- intra-hospital complications
- presence of comorbidities (such as cancer, atrial fibrillation, diabetes, and COPD)

Conclusions

- High VATi is associated with a four-fold increased risk of 1-year mortality in patients treated by TAVI.

- Increased mortality could be mediated by enhanced inflammatory status and augmented incidence of metabolic complications related with abundant VAT.

- **Adding VATi evaluation to the scores currently used in clinical practice could implement pre-operative risk stratification. The prediction of mortality risk is crucial to avoid futile procedures, optimize clinical decision making and consider prehabilitation interventions.**

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