

Subcutaneous Fat: Friend or Foe?

Effects of Visceral and Subcutaneous Fat on Arterial Stiffness

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Introduction

- Visceral fat is thought to be more harmful than subcutaneous fat.^{1,2}
- In fact, subcutaneous fat has even been held as protective against cardiovascular risk.
- African American children have much less visceral fat than children of other races.¹
- Arterial stiffness predicts cardiac events and death in adults.

Objective

- We compared the associations of visceral adipose tissue (VAT) and subcutaneous abdominal adipose tissue (SAAT) with arterial stiffness in overweight and obese children who were predominantly African American.

Methods

- Data were collected from 111 children (8-11 yrs, BMI \geq 85th percentile) of which 94% were African American and 59% were female.
- VAT and SAAT measurement were assessed from MRI images.
- Pulse wave velocity (PWV), the speed at which a BP wave travels along the artery, was measured using applanation tonometry (SphygmoCor) to evaluate arterial stiffness.
- Partial correlation and regression determined the relative influence of VAT and SAAT on PWV.

Results

- SAAT ($r=0.34$) and VAT ($r=0.26$) each correlated with PWV when age, sex, and race were adjusted.
- When additionally adjusted for VAT, SAAT was related to PWV ($r=0.23$, $P=0.01$).
- When adjusted for SAAT, VAT was no longer associated with PWV ($r= 0.02$).
- Only SAAT predicted PWV in a stepwise regression including age, sex, race and VAT.

Table 1: Associations of PWV with SAAT and VAT

	SAAT		VAT	
	r value	p value	r value	p value
Base Model ^a	0.35	< .01	0.27	< .01
Base Model + VAT	0.24	.01	-----	-----
Base Model + SAAT	-----	-----	.02	.82

^a Baseline adjusted for age, sex, and race.

Conclusions

- Rather than being protective, subcutaneous fat is more closely related than visceral fat to arteriosclerosis risk in this sample.
- Interventions that reduce subcutaneous fat but not visceral fat in African American children may be more valuable than previously thought.

Bibliography

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