VISCERAL ADIPOSITY INDEX IN PATIENTS WITH ISCHEMIC HEART DISEASE, OBESITY AND DIABETES MELLITUS

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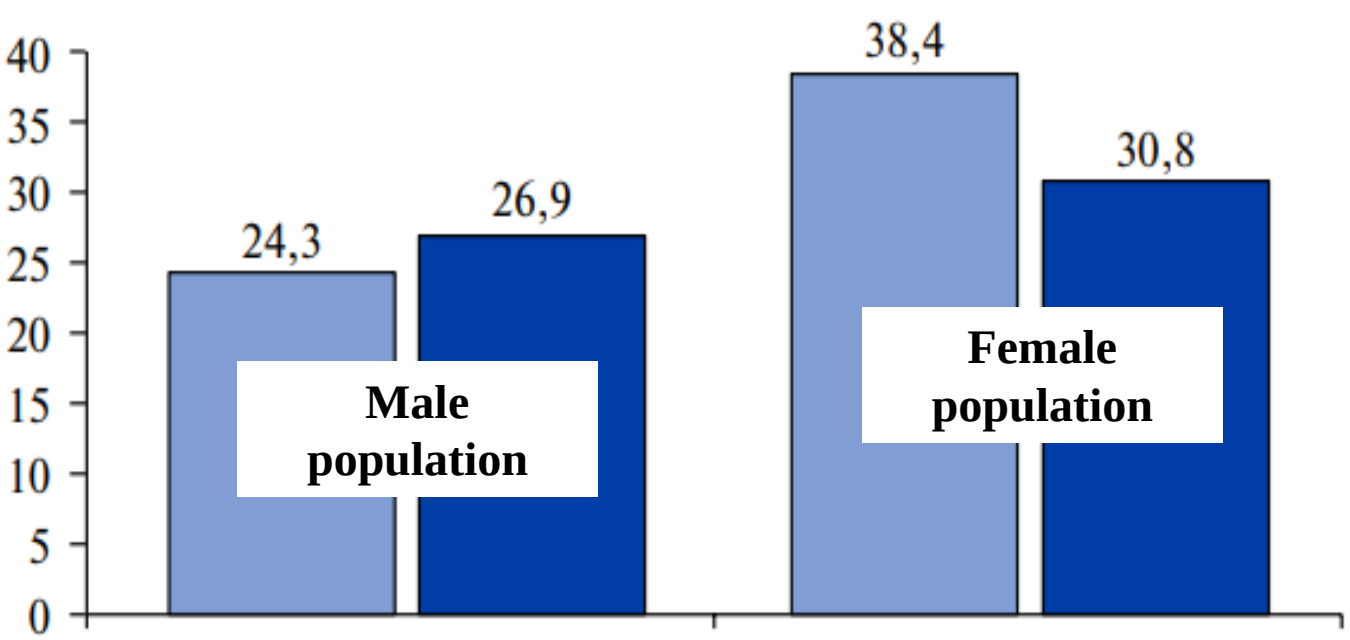
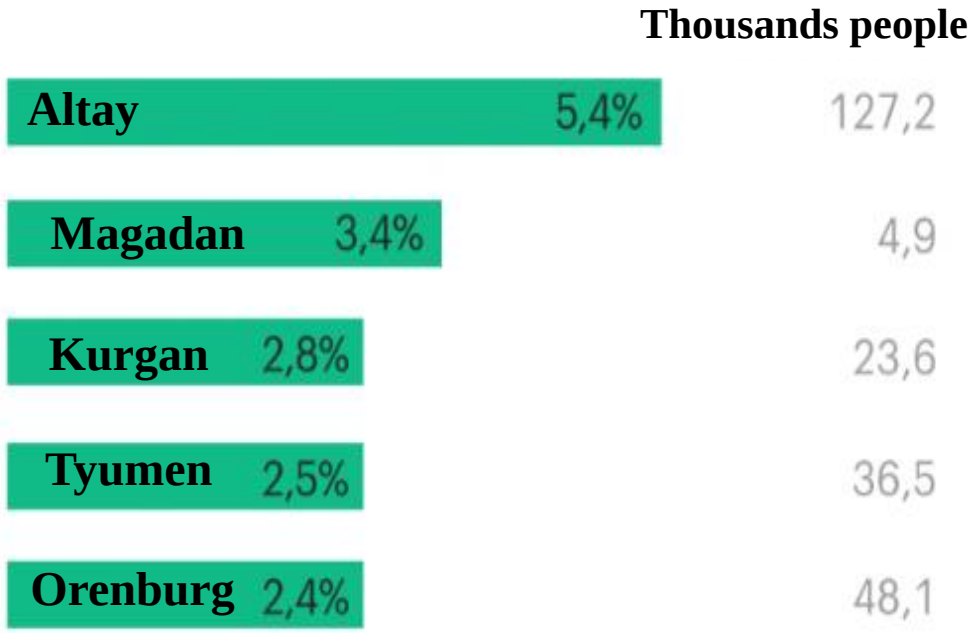
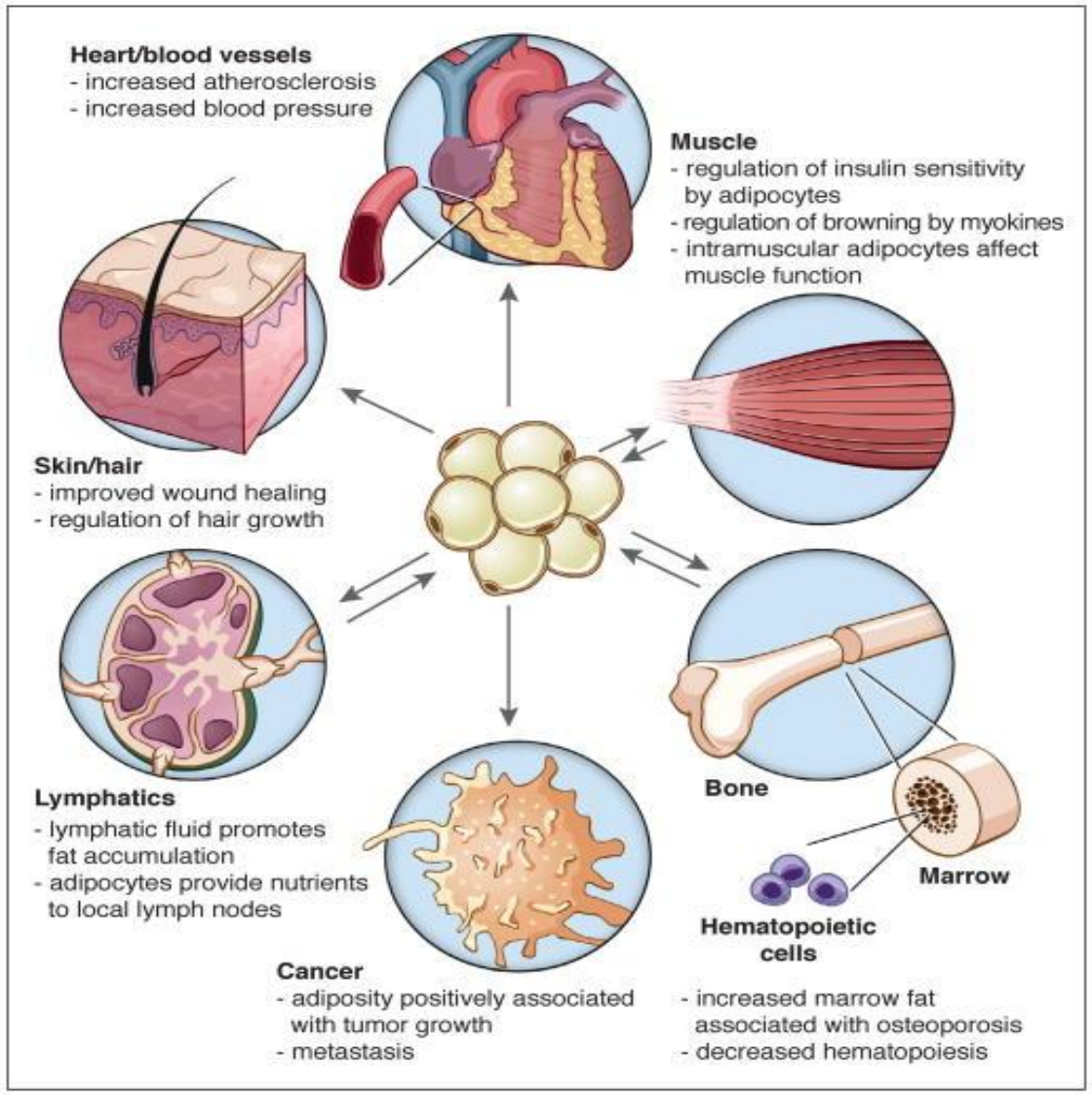
PREVALENCE OF OBESITY IN RUSSIAN FEDERATION

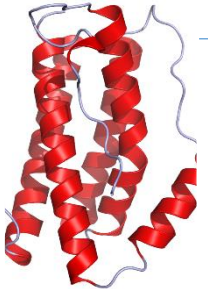




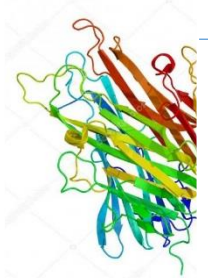
Balanova Yu.A., Shalnova S.A., Deev A. D., Imaeva A.E., Kontsevaya A. V., Muromtseva G.A., Kapustina A. V., Evstifeeva S.E., Drapkina O.M. on behalf of the ESSE-RF study workteam Russ J Cardiol. 2018;23(6):123–130 http://dx.doi.org/10.15829/1560-4071-2018-6-123-130

PATHOPHYSIOLOGY OF AN ADIPOCYTE

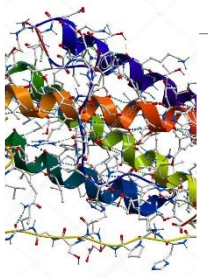




IL-6



TNF-α



Leptin

MULTISLICE COMPUTED TOMOGRAPHY (visceral fat)

Kokov A.N., Brel N.K., Gruzdeva O.V. et al. Multispiral computered tomography in estimation of obesity in patients with ischemic heart disease // RMJ. 2018. № 1(II). P. 99–103

AIM

Evaluation of VAI in patients with coronary heart disease and overweight or obesity, as well as determining the relationship of this parameter with lipid, carbohydrate metabolism and laboratory markers of inflammation, depending on the presence of carbohydrate metabolism disorders

MATERIAL AND METHOD

95 PATIENTS WITH BMI OVER 25 kg/m2

59 PATIENTS WITH T2DM

36 PATIENTS WITHOUT T2DM

ANTROPOMETRY

- BMI
- Waist and hips ratio

LAB TESTS

- Fasting plasma glucose
- Lipidogram
- Adiponectin
- C-reactive protein

INSTRUMENTAL

- Multislice CT

FORMULA FOR VISCERAL ADIPOSITY INDEX:

[WAIST/(39,68 + (1,88×BMI))×(triglycerides/1,03)×(1,31/HDL)] – for men,

[WAIST/(36,58+(1,89×BMI))×(triglycerides /0,81)×(1,52/HDL)] – for women.

Normal VAI = 1.

GROUP CHARACTERISTICS (1)

	OBESITY WITH DIABETES, n= 59	OBESITY WITHOUT DIABETES, n= 36	p
Male gender, n (%)	29 (49,2)	26 (72,2)	0,060
Age, years	61 (57; 64)	62,5 (57; 66)	0,390
Smoking, n (%)	22 (37,2)	21 (58,3)	0,111
Hypertension, n (%)	59 (100)	32 (88,8)	**0,009**
CAD, years, Me (Q25; Q75)	2,0 (1,0; 4,0)	2,0 (1,0; 6,0)	0,828
Myocardial infarction, n (%)	28 (47,5)	19 (52,8)	0,666
Stroke, n (%)	4 (6,8)	-	0,580

GROUP CHARACTERISTICS (2)

		OBESITY WITH DIABETES, n= 59	OBESITY WITHOUT DIABETES, n= 36	p
ANTROPOMETRY	BMI, kg/m^2	32,9 (29,4; 37,6)	30,29 (27,13; 32,53)	**0,007**
	Waist circumflex, sm	107 (97; 120)	104 (96,5,0; 106,5)	**0,043**
	Hips circumflex, sm	108 (100; 118)	106,5 (102,5; 113,0)	0,365
	Waist and hips ratio	0,97 (0,92; 1,04)	0,95 (0,90; 0,98)	0,055
	% fat, %	43,8 (33,6; 52,3)	33,6 (30,5; 45,6)	**0,003**
MULTISPIRAL SCAN	Visceral fat volume, sm^3	442,3 (383,5; 528,9)	328,7 (259,5; 421,4)	**0,000**
	Visceral fat square, sm^2	233,7 (208,6; 286,6)	183,6 (147,9; 230,9)	**0,000**
	Subcutaneous fat volume, sm^3	694,4 (550,4; 891,1)	520,1 (408,6; 668,3)	**0,017**
	Subcutaneous fat square sm^2	367,5 (287,4; 451,2)	290,6 (22,6; 391,6)	**0,003**

Deurenberg formula: [1.2 (BMI) + 0.23 (age) - 10.8 (gender) - 5.4], where age is the number of full years, and gender is a coefficient, equal to 1 for men and 0 for women.

GROUP CHARACTERISTICS (3)

		OBESITY WITH DIABETES, n= 59	OBESITY WITHOUT DIABETES, n= 36	p
Visceral adiposity index		2,49 (1,84; 4,29)	2,26 (1,43; 3,19)	0,109
Lipid	Total Cholesterol, mmol/l	4,4 (3,6; 5,8)	4,7 (3,8; 5,25)	0,595
	LDL, mmol/l	2,46 (2,08; 3,47)	3,16 (2,12; 3,74)	0,184
	HDL, mmol/l	1,07 (0,89; 1,24)	1,12 (0,89; 1,29)	0,548
	Triglycerides, mmol/l	1,54 (1,16; 2,37)	1,41 (1,09; 1,95)	0,228
	Adiponectin, mg/ml	7,55 (5,71; 8,85)	7,45 (5,92; 8,76)	0,842
	C-reactive protein, mg/l	4,0 (3,0; 5,0)	3,0 (3,0; 4,0)	0,106
Glycemia	Fasted plasma glucose, mmol/l	7,9 (6,9; 10,7)	5,3 (5,0; 5,8)	**0,000**
	HbA1c, %	7,0 (6,5; 8,8)	5,1 (4,9; 5,65)	**0,000**

RESULTS

VAI SIGNIFICANTLY CORRELATED WITH (r, p-value)

GROUP WITH DIABETES

- Waist circumference 0,347, p=0,007
- Visceral fat volume 0,343, p=0,008
- Total cholesterol 0,312, p=0,016
- LDL 0,363, p=0,005
- HDL -0,564, p=0,000
- HbA1C 0,261, p=0,046
- Adiponectin -0,794, p=0,000

GROUP WITHOUT DIABETES

- Waist circumference 0,0,338, p=0,044
- HDL -0,600, p=0,000
- Adiponectin -0,741, p=0,000

CONCLUSION

The obtained correlations between VAI and clinical and metabolic indicators confirm the possibility of using this indicator to determine adipose tissue dysfunction, regardless of the presence of carbohydrate metabolism disorders.

The effect of increased VAI on the development of cardiovascular complications in high-risk patients requires further study.