FP892

Body Composition, Metabolic Syndrome and Kidney Function; Consideration from Kidney Transplant Donors

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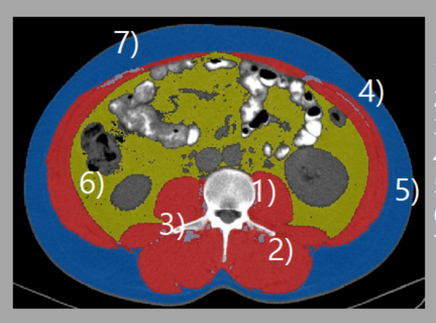
OBJECTIVES

Currently **obesity and metabolic syndrome (MetS) are risks for chronic kidney disease.** It is also suggested that **sarcopenic is the independent risk factor of hypertension.** It is unclear how much risks obesity, MetS, and body composition for kidney function and other prognosis of donors in our country. The aim of this study was to **investigate the influence of body composition, the findings of graft biopsy and 1-year after clinical outcome.**

METHODS

Study design: retrospective single center study
Patients: 60 living kidney transplant healthy donors from 2009 to 2013.
Body Composition: Sarcopenia: The degree of sarcopenia can be quantified using the skeletal muscle index (SMI) from the appearance of muscle on cross-sectional CT images (L3 SMI, 38.5cm2/m2 for women and 52.4 cm2/m2 for men)(1). **Obesity**: BMI ≧25 kg/m2 (Japanese criteria),
Central obesity: Visceral fat area (VFA) ≧100cm^2 (Japanese criteria)
MetS: Central obesity, impaired glucose tolerance, blood pressure, high serum TG (Japanese criteria)
Biopsies and Histologic Evaluation: Banff'97 scoring system.

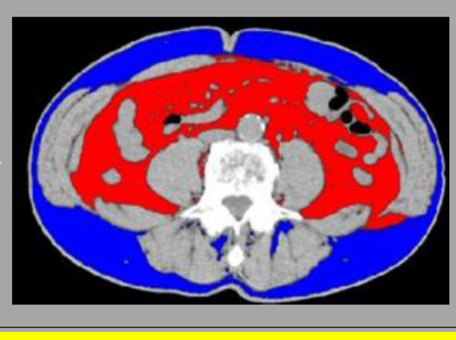
These together are optimal for estimating lean body mass.



1) m. psoas major,
2) m. erector spinae,
3) m. quadratus lumborum,
4) m. obliquus externus abdominis, m.
5) obliquus internus abdominis,
6) m. transversus abdominis,
7) m. rectus abdominis

CT: -50 to -150 HU

Measurement of VFA by CT. (2)



CT:: -30 to 150 HU

RESULTS

Table 1 Evaluation of demographics and laboratory values in donor BMI ≧ 25 group and donor BMI <25 group at donation.

	BMI≧25 (n=11)	BMI<25 (n=49)	P value
Gender (male)	2 (18.2%)	17 (34.7%)	0.476
Age (yo)	54	54	0.856
BMI (kg/m2)	28.2	21.2	0.000
BSA (m2)	1.61	1.60	0.926
Graft weight (g)	198.8	179.2	0.00
S-Cre (mg/dL)	0.65	0.70	0.159
Creatinine excretion (mg/day)	135.1	109.2	0.096
Ccr (mL/min)	135.4	118.1	0.127
Proteinuria Albminuria	2 (18.2%)	7 (14.3%)	0.664
Systolic BP (mmHg)	119.9	115.1	0.148
Diastolic BP (mmHg)	70.9	65.7	0.191
T-CHO (mg/dL)	187.4	204.7	0.119
TG (mg/dL)	134.9	116.8	0.387
Impaired glocose torelance	2 (18.2%)	2 (4.1%)	0.150
L3SMI (cm2/m2)	48.7	45.8	0.544
Sarcopenia	2 (18.2%)	22(44.9%)	0.173
Visceral fat area ≧100cm2	5 (45.5%)	5 (10.2%)	0.013
MetS	2 (18.2%)	1 (2.0%)	0.084
Metabolic risk	8 (72.7%)	15 (30.6%)	0.015

Table 2. Association of donors' baseline variables at transplantation with IF/TA, vascular intimal thickening, and granular sclerosis using multivariate analysis.. .

IF/TA	odds ratio	P-value
BMI≧25	4.145 (1.60-16.20)	0.041
Vascular intimal thickening	**odds ratio**	**P-value**
BMI≧25	5.80 (1.11-30.23)	0.037
Glomerular sclerosis	**odds ratio**	**P-value**
BMI≧25	2.772	0.096

The full model includes donor sex, age, sBP, CCr, MetS factors, sarcopenia, and BMI≧25 at transplantation, Donor BMI≧25 was significant association with chronic histological damage of baseline biopsy.

Table 3. Association of donors' baseline variables and laboratory values and at one year after transplantation

Proteinuria 1-year after Tx	odds ratio	P-value
VFA≧100cm2	21.0 (1.91-230.9)	0.013

The full model includes donor sex, age, sBP, CCr, MetS factors, sarcopenia, and BMI≧25 at transplantation, VFA≧100 was significantly correlated with proteinuria at 1-year after Tx.

Table 4 . Association of donor BMI≧25 sarcopenia, and central obesity at transplantation with IF/TA, vascular intimal thickening, granular sclerosis, proteinuria, hypertension, and impaired glucose intolerance at1-year after in univariate analysis.

BMI≧25 kg/m2	Odds ratio	P-value
IFTA	4.415 (1.060 – 16.207)	0.059
Vascular intimal thickening	5.800 (1.113 -30.227)	0.036
Glomerular sclerosis	3.088 (0.789- 12.092)	0.172
1 yr after proteinuria	1.533 (0.144 – 16.308)	0.567
1 yr after hypertension	5.750 (0.982 -33.679)	0.069
1 yr after impaired glucose tolerance		---

sarcopenia	Odds ratio	P-value
IFTA	1.071 (0.341 – 3.358)	1.00
Vascular intimal thickening	0.896 (0.316 -2.538)	1.00
Glomerular sclerosis	1.551 (0.533- 4.511)	0.586
1 yr after proteinuria	1.071 (0.341 – 3.358)	
1 yr after hypertension	9.211 (1.002 -84.676)	0.033
1 yr after impaired glucose tolerance	1.522 (0.091- 25.563)	1.00

VFA≧100cm2	Odds ratio	P-value
IFTA	1.102 (0.249 – 4.874)	1.00
Vascular intimal thickening	0.867 (0.208 -3.611)	1.00
Glomerular sclerosis	0.933 (0.233- 3.744)	1.00
1 yr after proteinuria	21.00 (1.909 – 230.96)	0.013
1 yr after hypertension	6.714 (1.125 -40.073)	0.052
1 yr after impaired glucose tolerance	5.444 (0.311- 95.21)	0.308

Discussion

This study
BMI≧25 ⇒latently progressed histological damages including IF/TA and intimal thickening.
Central Obesity (MetS) and Sarcopenia ⇒worse clinical outcome such as proteinuria and hypertension.

Hypothesis
High BMI : independent risk factor for both CKD and ESRD (3).

Sarcopenia: independent risk factor of **hypertension and MetS**.
Central obesity : greater risk of **vascular damage**(4).

Muscle wasting and Visceral adiposity may cause and accelerate the kidney injury due to obesity(5).

CONCLUSIONS

These results indicate that obese donors have a higher risk for deteriorating graft renal function. One of the reasons is latently progressed histological damages due to obesity. In addition, MetS and sarcopenia were further exacerbation factors. The management of donor's obesity is an essential factor to deal with post-transplant chronic kidney disease in our country.

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I have no conflict interest to declaim have no conflict interest to declare for this presentation.re for this presentation.

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