PREDICTIVE VALUE OF ABDOMINAL FAT DEPOSITION FOR PROGRESSION, HOSPITALIZATION AND MORTALITY IN NON-DIALYSIS CKD.

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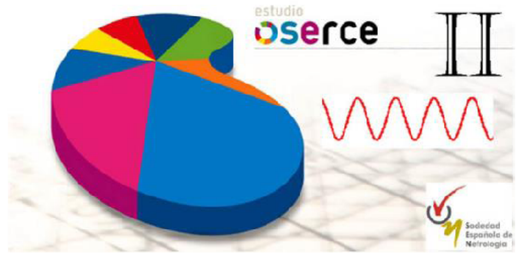
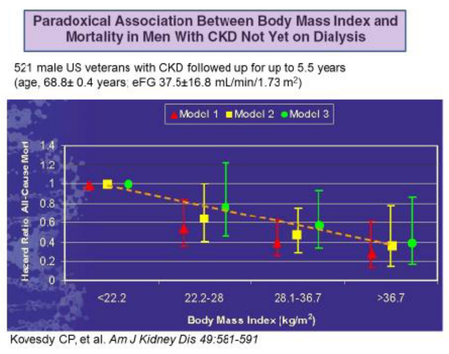


OBJECTIVES

While emerging data suggest that obesity is associated with improved survival in earlier stages of chronic kidney disease (CKD), little is known about the prognostic impact of fat distribution on this population.

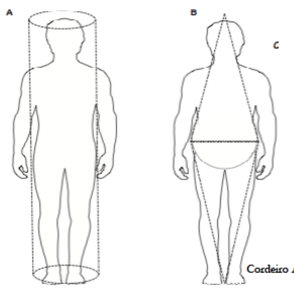


We assessed the ability of abdominal fat deposition to predict death, time to hospitalization and renal progression in non-dialysis CKD patients.

METHODS

- We studied 677 subjects participating in OSERCE-2 study, a prospective, observational, 3-year follow up study which enrolled non-dialysis CKD 3-5 patients from 39 centres in Spain.
- In this post-hoc analysis we excluded patients with BMI < 18.5 kg/m2.
- Abdominal fat deposition was assessed by means of waist circunference (WC) and a conicity index (Ci), which estimates fat accumulation in the abdomen based on WC adjusted for height and weight.

$$\text{Conicity index} = \frac{\text{Waist circumference (m)}}{0.109 * \sqrt{\frac{\text{Weight (Kg)}}{\text{Height (m)}}}}$$

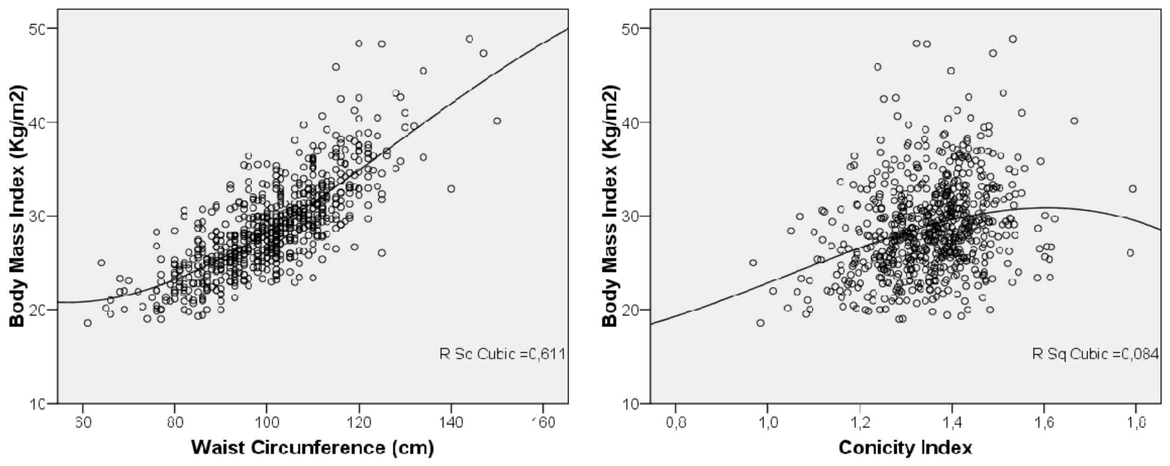


Ci estimates fat accumulation in the abdomen as the deviation of body shape from a cylindrical towards a double-cone shape (i.e. two cones with a common base at the waist level).

Cordeiro AC, et a. *Nephrol. Dial. Transplant.* (2010) 25 (2): 562-568

- Patients were divided into groups according to BMI, WC and tertiles of Ci distribution. The primary endpoint was death. Secondary outcomes were hospital admissions and the appearance of a combined renal end-point (beginning of dialysis, or a drop of >30% in estimated glomerular filtration rate).
- The correlation analyses were carried out using Pearson's r-test.
- Survival analysis was assessed by Cox proportional models.

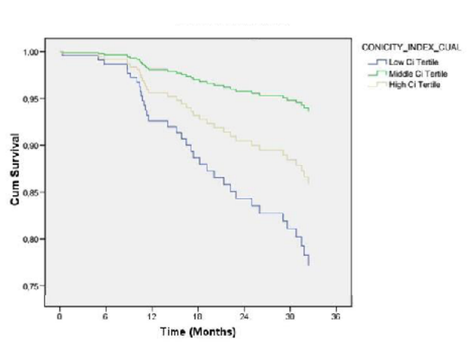
RESULTS



WC showed a stronger correlation with BMI (R2=0.602; p<0.001) than Ci (R2=0.084; p<0.001).

- After a median follow-up of 35 months (IQR:19-36) there were 66 deaths (10%), being cardiovascular (38%) and infection (20%) the most common causes of death. After multivariate adjustment, patients within the lowest (HR:3.457, 95%CI:1.616-7.394, p=0.001) and the highest (HR:2.130, 95%CI:1.083-4.189, p=0.029) tertile groups of Ci had significant higher mortality than the middle tertile group. By contrast, no differences in survival where observed between WC and BMI groups.

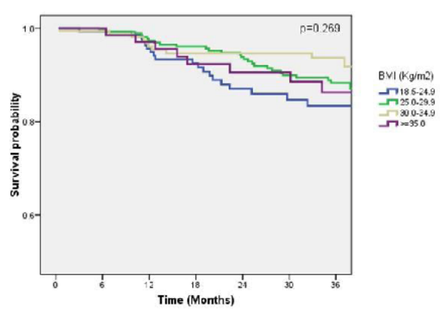
Mortality according to Conicity Index



Conicity Index	HR (95% CI)	p
Low tertile (<1.28)	3.457 (1.616-7.394)	0.001
Middle tertile(1.28-1.41)	1 (Ref)	-
High tertile (>1.41)	2.130 (1.083-4.189)	0.029

Other covariates: WC, age, comorbidity, DM, albumin and phosphorous levels.

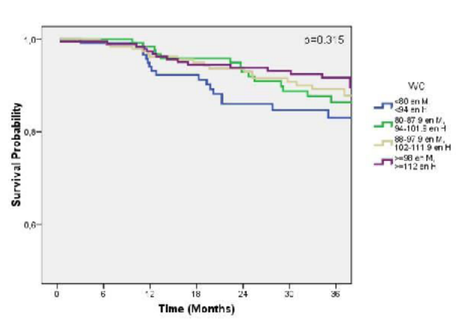
Mortality according to BMI



BMI (Kg/m²)	HR (95% CI)	p
18.5-24.9	1.000 (Ref)	-
25.0-29.9	0.640 (0.321 - 1.276)	0.205
30.0-34.9	0.561 (0.219 - 1.440)	0.230
≥35.0	0.654 (0.190 - 2.251)	0.501

Other covariates: WC, age, comorbidity, DM, albumin and phosphorous levels.

Mortality according to WC



WC (cm)	HR (95% CI)	p
♀ <80, ♂ <94	1.000 (Ref)	-
♀ 80-87.9, ♂ 94-101.9	0.835 (0.390 - 1.786)	0.643
♀ 88-97.9, ♂ 102-111.9	0.445 (0.201 - 0.989)	0.047
♀ >98cm; ♂ >112 cm	0.356 (0.126 - 1.006)	0.051

Other covariates: WC, age, comorbidity, DM, albumin and phosphorous levels.

- Ci, WC and BMI did not predict hospitalization or renal progression.

CONCLUSIONS

1. Greater abdominal fat accumulation estimated with Ci could have a negative impact on survival in non dialysis CKD patients.
2. These results support the idea that fat distribution, rather than BMI or fat mass, may have adverse implications on patient outcome, which can help to explain the obesity paradox in this population.
3. By contrast, the high correlation of WC with BMI difficults to isolate the added value of WC in the prognosis of CKD patients. Ci should be considered in conjunction with BMI when assessing mortality risk associated with obesity in adults with CKD.

Sponsored study by:
Sociedad Española de Nefrología
abbvie

DOI: 10.3252/pso.eu.52era.2015
ePosters supported by F. Hoffmann- La Roche Ltd.
52 ERA EDTA CONGRESS London 2015 UNITED KINGDOM MAY 28 '31
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