24h-UCr was 978-3984 mg, m 1808; BCM was 25-74 kg (m 49.3 kg men, 31.6 kg women). A strict linear correlation was found between 24h-UCr and BCM (r=0.79), closer than between 24h-UCr and BW (r=0.65). 24h-UCr and CCr were predicted from the individual values of BCM (BCM-CCr) (Donadio C, et al. Kidney International 63: S166-S168, 1997).
In severely obese patients urinary creatinine excretion and creatinine clearance can be accurately predicted from the measurement of body cell mass combined with serum creatinine.
The results of the various measures (Table) indicate that the difference between BCM-CCr and m-CCr is insignificant, while quite relevant differences were found with the other prediction formulas. Furthermore, BCM-CCr values showed a good correlation with m-CCr (r=0.760, p<0.0001).

THE MEASUREMENT OF BODY CELL MASS ALLOWS TO PREDICT 24-HOUR URINARY CREATININE AND CREATININE CLEARANCE IN SEVERELY OBESE PATIENTS

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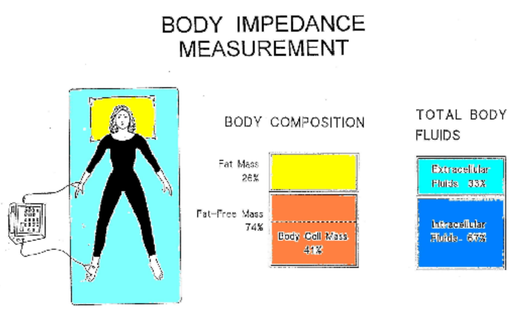
OBJECTIVES

Background

In obese patients the accuracy of prediction of renal function by means of formulas based on serum creatinine (PCr) and anthropometric data is quite low.

Aim of the Study

The aim of this study was to evaluate if the value of body cell mass (BCM) allows to predict urinary creatinine (Ucr) and then creatinine clearance (CCr)



METHODS

Patients and methods

Seventy-four patients (39 women),
20-66 years (mean 47.5),
BW 92-205 kg, m 127.7;
BMI 35.4-73.4 kg/m^2, m 45.7;
BSA 1.83-3.19 m^2, m 2.30),
PCr (0.58-1.06 mg/dl, m 0.77).
All patients were scheduled for bariatric surgery.

Parameters

Serum creatinine (PCr); urinary creatinine (Ucr) (urine collection 2 hrs);
Creatinine clearance (CCr): standard formula UCr x V / PCr;
CCr was also predicted by means of CG formula (CG-CCr) and Salazar and Corcoran formula (S&C-CCr).
GFR was predicted using simplified MDRD formula (IDMS) and CKD-EPI formula.

BCM was measured using a single frequency tetrapolar impedance analyzer.

24h-UCr and CCr were predicted from the individual values of BCM (BCM-CCr) (Donadio C, et al. Kidney International 63: S166-S168, 1997).

RESULTS

A strict linear correlation was found between 24h-UCr and BCM (r=0.79.) Fig1.

The results of the various measures (Table) indicate that the difference between BCM-CCr and m-CCr is insignificant, while quite relevant differences were found with the other prediction formulas.

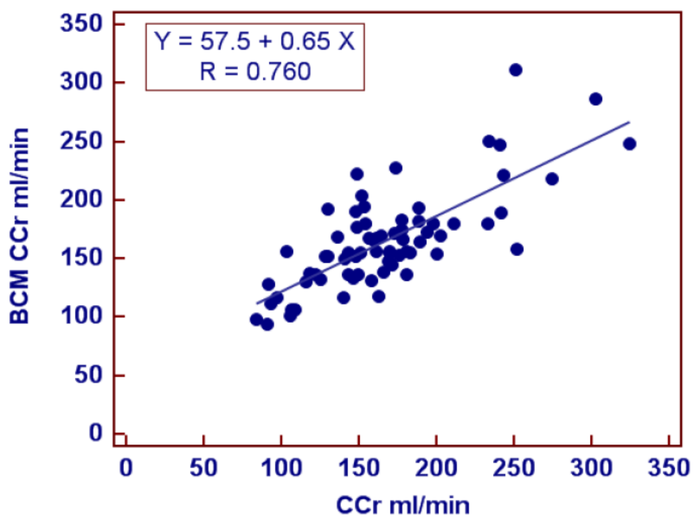
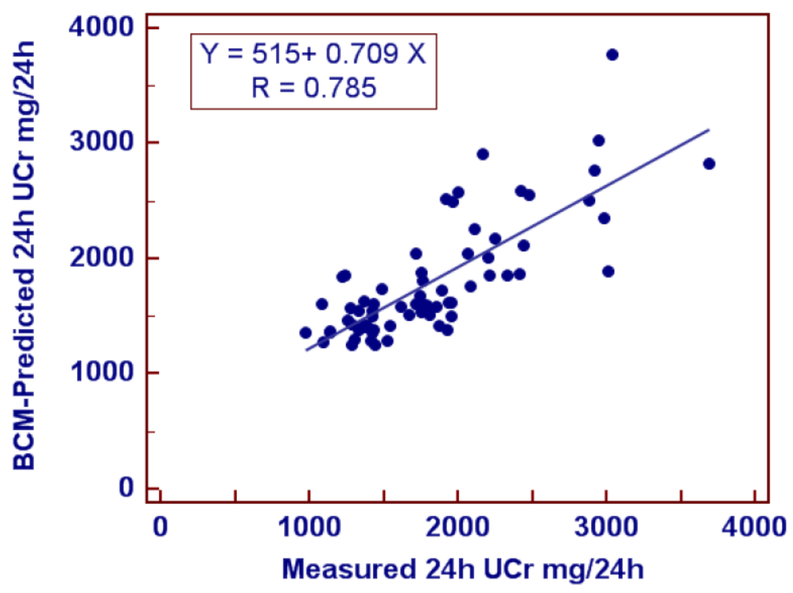
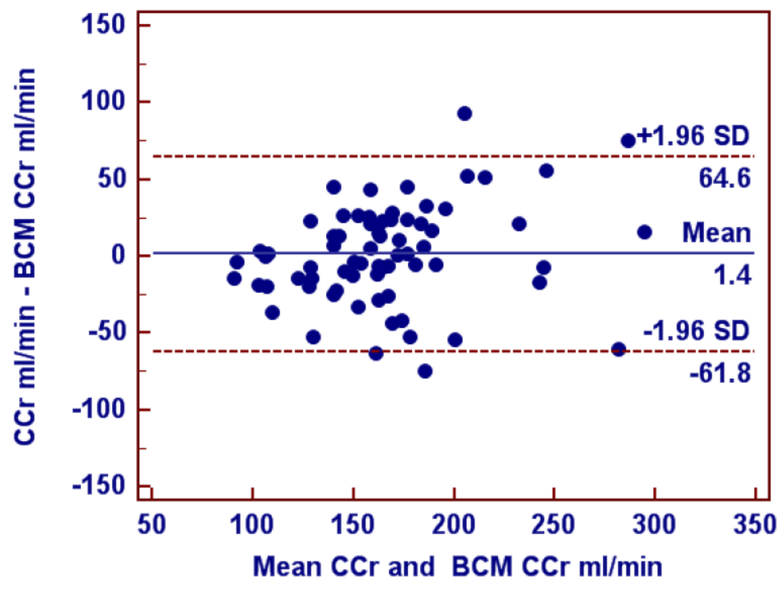


Table 1. Measured and Predicted Renal Function

mL/min	m CCr	BCM CCr	C&G CCr	S&C CCr	MDRD GFR	CKD-EPI GFR
mean ± SD	167±49	**166±41**	200±73	150±47	122±34	132±32
mean difference	=	**+1.4**	+ 32.9	-17.2	-44.1	-34.7
statistical significance	=	**NS**	<0.0001	<0.0001	<0.0001	<0.0001





BCM-CCr values showed a good correlation with m-CCr (r=0.760, p<0.0001).
The agreement between the two measurement was satisfactory.

CONCLUSIONS

In severely obese patients urinary creatinine excretion and creatinine clearance can be accurately predicted from the measurement of body cell mass combined with serum creatinine

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