Predictors of metabolic disease in non-obese postmenopausal women

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Introduction:

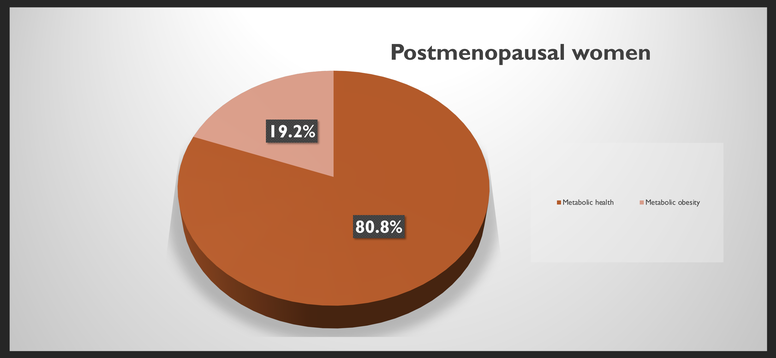
Menopause is a state of physiological relative androgen excess. A number of metabolic changes take place during the transition to menopause in parallel with the decline of estrogen concentrations.

Aim:

To evaluate predictors of metabolic disease in non-obese postmenopausal women.

Materials and Methods:

- ♦ Cross-sectional study
- ♦ 457 postmenopausal women
- ♦ BMI <30 kg/m^2
- ♦ Classification according to presence of metabolic syndrome criteria (IDF)
  - MONW if ≥ 3 criteria for definition of Metabolic Syndrome
  - MHNW if <2 criteria for definition of Metabolic Syndrome



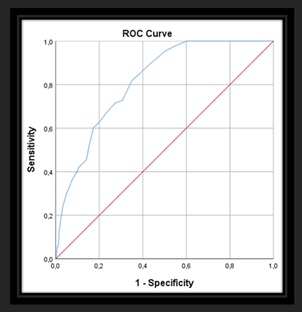
	MHNW N=370	MONW N=87	ANOVA p-value
Anthropometric parameters			
Age (years)	54.3±6.6	58.9±7.9	<0.001
YSM (years)	7.09±6.24	12.38±0.90	0.003
Waist (cm)	82.3±8.4	92.1±6.6	<0.001
WHR	0.81±0.08	0.87±0.06	<0.001
Weight (kg)	63.7±7.9	69.7±6.6	<0.001
BMI (kg/m^2)	24.2±2.8	26.6±2.1	<0.001
Subcutaneous fat (cm)	1.44±0.52	1.79±0.55	<0.001
Preperitoneal fat (cm)	1.19±0.48	1.57±0.50	<0.001
SBP (mmHg)	112.7±15.7	131.3±12.9	<0.001
DBP (mmHg)	70.5±8.7	78.9±8.6	<0.001

✓ Compared to the MHNW phenotype, MONW was positively associated with:

- chronological age (58.9±7.9 years vs 54.3±6.6 years, p<0.001)
- years since menopause (YSM, 12.4±8.5years vs 7.1±6.2years, p<0.001)
- waist circumference (WC, 92.1±6.6cm vs 82.3±8.4cm, p<0.001)
- waist to hip ratio (WHR, 0.87±0.06 vs 0.81±0.08, p<0.001)

	MHNW N=370	MONW N=87	ANOVA p-value
Hormonal parameters			
FSH	**71.9±33.3**	**60.4±22.9**	**0.003**
E2	**27.8±44.4**	**17.9±13.7**	**0.047**
Testosterone	0.53±1.43	0.98±4.40	0.151
FAI	**2.29±1.54**	**3.13±1.82**	**<0.001**
FEI	**0.11±0.13**	**0.16±0.15**	**0.036**
SHBG	**76.7±32.8**	**55.8±30.4**	**<0.001**
TSH	1.36±1.21	1.44±1.28	0.570

✓ MONW is predicted by higher levels of free testosterone and lower levels of SHBG.



✓ ROC curve analysis showed that WC represents a superior predictor of MONW compared with WHR (WC, AUC 0.815, 95% CI 0.773-0.858).

✓ Accordingly, WC of at least 86.5cm predicted the MONW phenotype with sensitivity 72.7% and specificity 69.4%.

Mediation model	O.R.	P-value
Waist circumference	1.142	<0.001
BMI	1.080	0.258

Conclusions:

- ♦ MONW women have increased chronological age and YSM compared with MHNW women.
- ♦ Metabolic disease can be predicted by a WC greater than 86.5cm, irrespectively of age and YSM.

References:

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