

# KIDNEY DYSFUNCTION IN CENTRAL OBESITY-ASSOCIATED METABOLIC DISORDERS

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## Background and objective

Epidemiological data confirm the association of the metabolic syndrome (MS) with chronic kidney disease, causality, however, is still debated. The complex multimorbid pathology known as cardiorenal MS is characterized by interrelated and intertwined, mutually aggravating conditions, caused by shared factors with synergistic, additive, multiplicative effects. Early identification of patients at increased cardiovascular and mortality risk, associated even with mild kidney dysfunction, by simple predictive biomarkers that can be applied from the primary care setting, may optimize management and lessen the public health burden.

## Method

In a central Romanian population, 201 middle-aged control subjects and MS patients were investigated, diagnosed by the IDF-criteria, with mandatory central obesity but no microalbuminuria or hyperuricemia included in the diagnostic system. Renal dysfunction was assessed by eGFR (estimated glomerular filtration rate), regarded useful in early chronic kidney disease detection, calculated by the novel CKD-EPI creatinine formula.

## Results

eGFR was significantly reduced in cases in comparison with controls, and an increased risk for kidney dysfunction associated with the MS (OR = 2.05, p < 0.05).

In the MS patient group, the association of Dysglycemia+Hypertension+Low HDL-C, considered critical components compared to other combinations associated with an increased risk for low eGFR (OR = 1.46, p < 0.05), which presented weak-to-moderate correlation with certain etiological factors, disease components, and disease progression parameters.

## Demographic and metabolic characterization of the study groups

	MS+	MS-
Body Mass Index (kg/m <sup>2</sup> )*		
• Males	30.71±6.81	25.22±4.33
• Females	31.01±6.16	25.55±5.51
Waist Circumference (cm)*		
• Males	107.9±13	94.2±13.11
• Females	94.56±13.41	85.22±11.42
Systolic Blood Pressure (mmHg)*	145.21±22.12	125±14.31
Diastolic Blood Pressure (mmHg)*	86±12.8	78.45±12.1
Fasting Glucose (mg/dL)*	121±42.3	94.12±12
Triglyceride (mg/dL)*	214.1±130.1	136.39±77.34
HDL-Cholesterol (mg/dL)*		
• Males	47.02±15.01	50.1±12.23
• Females	49.8±16.41	61.82±14.41

\*p<0.01

## eGFR correlation with MS development - demographic and metabolic parameters

	r	p
Age	-0.496	<0.0001
Body weight	0.23	0.07
Weight-adjusted-waist index	-0.37	0.004
HOMA-B	0.31	0.025
Blood pressure	-0.24	0.04
HDL-C	0.26	0.1
TyG index	-0.48	0.08
Uric acid	-0.36	0.003

\*Pearson correlation

## eGFR correlation with MS progression – age of onset of manifestations and complications

	r	p
Dysglycemia	0.28	0.04
Hypertension	0.27	0.04
Dyslipidemia	0.53	0.001
Hyperuricemia	0.49	0.001
Cardiovascular disease	0.28	0.04

\*Pearson correlation

## Conclusion

Reduced eGFR appears related to disease development and progression in central obesity-associated MS.

Early detection of kidney dysfunction in central obesity-associated MS by its use could improve risk assessment and intervention by targeted preventive measures and novel therapeutics with multisystem impact.