

CARDIOVASCULAR RISK FACTORS AND THE RELATIONSHIP WITH METABOLIC SYNDROME AND CHRONIC KIDNEY DISEASE

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BACKGROUND

Chronic kidney disease (CKD) and metabolic syndrome (MS) are nowadays worldwide public health problems.

CKD and also MS have been associated with increased risks for cardiovascular disease and all-cause mortality.

Precise information on cardiovascular risk factors is needed in order to prevent cardiovascular disease in these populations.

PURPOSE

The aim of the study was to evaluate cardiovascular risk factors and their relationship with chronic kidney disease and metabolic syndrome in a population of patients admitted to a nephrology department.

MATERIALS AND METHODS

Patients

Cross sectional study on the patients admitted to the Nephrology Department of The County Clinic Hospital Targu Mures between January 1st, 2010 – December 31st, 2013.

Patients were evaluated with respect to their anthropometric data, clinical data, and laboratory parameters to assess the presence of cardiovascular risk factors, metabolic syndrome and chronic kidney disease.

Cardiovascular risk factors were compared for the following groups:

- A: patients with CKD and MS,
- B: patients with CKD and without MS,
- C: patients without CKD and without MS,
- D: patients with MS and without CKD.

Definitions

MS was defined as the presence of three or more of the following: hypertension, diabetes mellitus or plasma glucose >100 mg/dl, body mass index (BMI) over 30 kg/m², triglycerides higher than 150 mg/dl, HDL cholesterol under 40 mg/dl in females and under 50 mg/dl in males.

CKD was defined as an estimated glomerular filtration rate <60 ml/min/1.73m². Estimated GFR was evaluated with abbreviated MDRD equation.

Statistics

Groups were evaluated using the χ^2 test for discrete clinical variables and by one-way ANOVA for continuous variables. Data were analyzed using Sigma Stat version 5.0 and p was considered significant if <0.05.

RESULTS

Prevalence of MS and CKD

248 patients were studied.

The prevalence of MS and CKD was 60.08% and 58.06% respectively.

Interrelation between MS and CKD

CKD was more common in subjects with MS compared with those without (p=0.01).

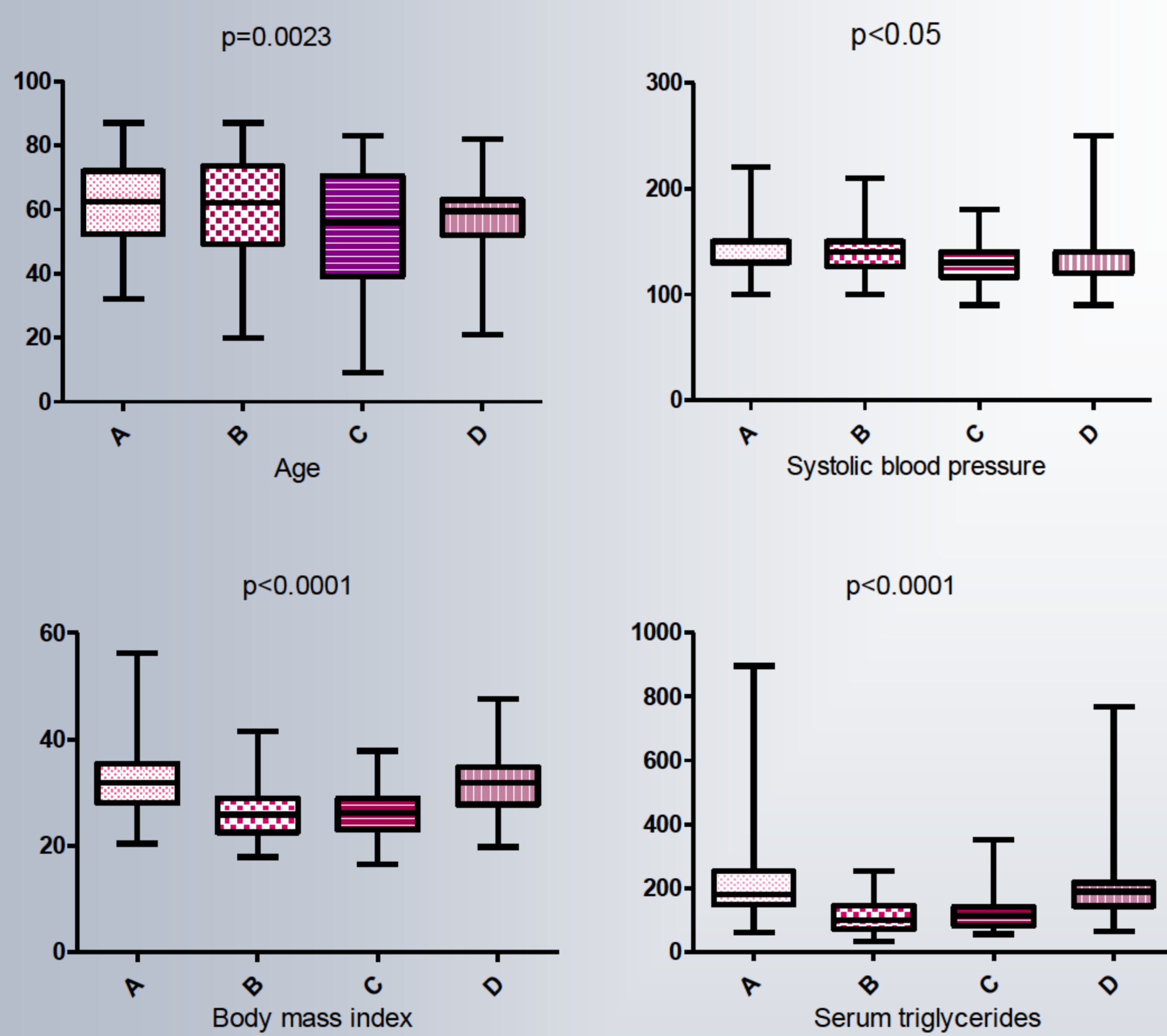
Cardiovascular risk factors

Age was significantly higher in group A vs C, with no other differences between the other groups (Figure 1).

Systolic blood pressure was significantly higher in CKD and MS compared with no CKD and no MS patients (A vs C), with no other differences between groups (Figure 2).

Triglyceride levels and BMI were significantly higher in MS versus non-MS patients (A vs B, A vs C, D vs B and D vs C) (Figure 3 and 4).

Total cholesterol showed no significant differences between groups (Table). HDL cholesterol was significantly lower in MS groups (A vs B, A vs C and D vs C) without differences between CKD groups (B vs C) (Table).



Parameter	Group A (Mean ± SD)	Group B (Mean ± SD)	Group C (Mean ± SD)	Group D (Mean ± SD)	p
Diastolic blood pressure (mmHg)	88.10± 15.10	85.00± 10.80	83.30± 11.33	83.96± 9.67	NS
Pulse pressure (mmHg)	57.28±18.71 ²	54.52±15.41	47.23±14.17	52.40±20.73	<0.05
Hemoglobin (g/dl)	12.28±1.83 ^{2,5}	11.62±2.42 ^{3,6}	13.55±1.455	13.52±1.58	<0.05
Total cholesterol (mg/dl)	191.8±59.07	181.8±57.98	207.1±52.96	199.6±43.25	NS
Serum albumins (g/l)	40.67±4.81	40.70±4.65	40.14±5.56	41.46±6.89	NS
Fibrinogen (mg/dl)	509.4±192.5	547.8±187.7	377.4±134.8	526.2±299.0	NS
Serum calcium (mg/dl)	9.43±0.96	9.00±1.12 ⁶	9.44±0.54	9.73±0.68	<0.05
Cholesterol HDL (mg/dl)	38.10± 12.19 ^{1,2}	49.65± 17.03	54.78± 19.63 ⁴	42.20± 15.72	<0.001
Diabetes mellitus (Y/N)	61 / 31	10 / 42	4 / 52	34 / 14	<0.001
Females/Males	46/46	22/30	25/12	29/19	NS

Legend: ¹ = A vs B, ² = A vs C, ³ = B vs C, ⁴ = D vs C, ⁵ = A vs D, ⁶ = B vs D

CONCLUSIONS

Patients with CKD and MS have the worst profile in terms of cardiovascular risk factors.

We found no significant difference for CKD without MS patients compared to the group without CKD and without MS in terms of cardiovascular risk factors.

Age and systolic blood pressure were significantly higher in CKD patients.

BMI and triglycerides were significantly higher and HDL cholesterol levels were significantly lower in MS patients.

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