

ASSOCIATION BETWEEN URINARY ABNORMALITIES AND ANTHROPOMETRIC INDICATORS IN ITALIAN YOUNG PEOPLE

Yuri Battaglia(1), Silvia Forcellini(1), Elena Cojoaru(1), Fulvio Fiorini(2), Antonio Granata(3), Luigi Morrone (4), Biagio DI Iorio (5), Luigi Russo (6) Alda Storari (1), Domenico Russo (6)

1 University-Hospital St. Anna, Nephrology, Ferrara, Italy; 2 ULSS18 Hospital, Nephrology, Rovigo, Italy; 3 "San Giovanni di Dio" Hospital, Nephrology, Agrigento, Italy; 4 G. Rummo Hospital, Nephrology, Benevento, Italy; 5 Landolfi Hospital, Nephrology, Avellino, Italy; 6 University Federico II, Nephrology, Napoli, Italy

INTRODUCTION AND AIMS

Over-weight and obesity have markedly increased as a worldwide epidemic over the past three decades. They have been associated with higher prevalence of kidney disease, hypertension and diabetes in adults. Urinary abnormalities may precede the onset of many kidney diseases and be related to masked hypertension (HTN). A relationship between over-weight/obesity, urinary abnormalities and HTN has been rarely evaluated in young adults.

The aim of the study was to evaluate in a teenage population whether an association between anthropometric indicators, urinary abnormalities and blood pressure levels exists.

METHODS

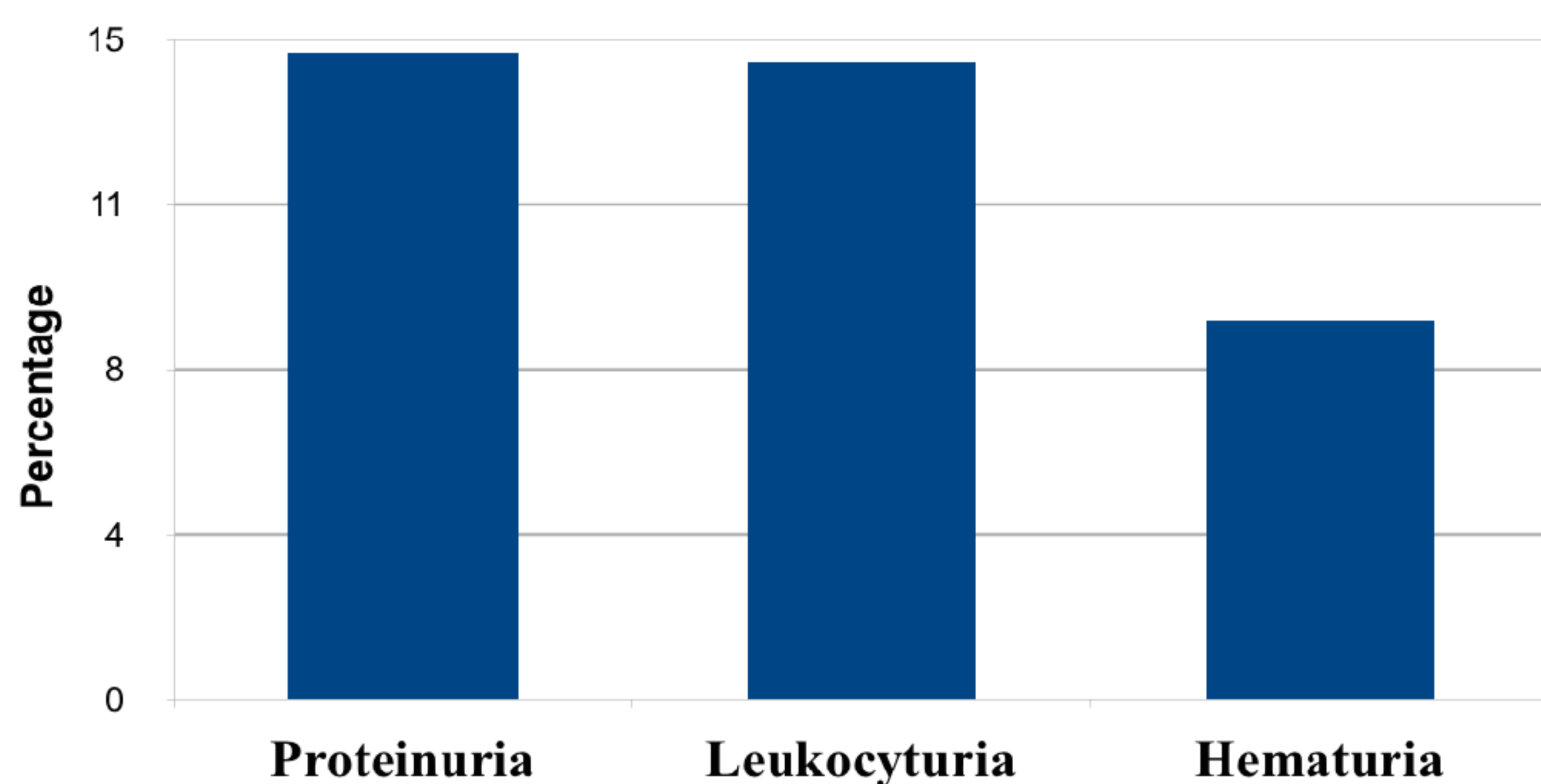
17 to 25 year-old students attending Italian high schools participated the Italian Kidney Day in 2010 and 2011. Blood pressure (BP), weight, height, waist circumference (WC) were measured. BMI, Ci and WHt-ratio were calculated. HTN was defined as systolic blood pressure (SBp) \geq 140 mmHg and/or diastolic blood pressure (DBP) \geq 90 mmHg. Isolated systolic hypertension (ISH) as SBP \geq 140 mmHg and DBP \leq 90 mmHg.

According to BMI, normal weight was considered from 18.5 to 24.9 kg/m², overweight from 25 to 29.99 kg/m², class-I obesity from 30 to 34.99 kg/m², class-II from 35-39.99 kg/m², class-III $>$ 40 kg/m². Urine test was performed with a dipstick. Proteinuria was defined as urine dipstick \geq 30 mg/dL.

RESULTS 1

Table I reports the main clinical characteristics of the examined population. Proteinuria was present in 14,7 %, leukocyturia in 14,5 %, haematuria in 8,6 % (Fig. 1). The Normal weight was reported in 73,1%, overweight in 15,7%, class-I obesity in 2,4 %, class-II obesity in 0,7 %, class-III obesity in 0,1 %. HTN and ISH was described in 1,6 % and 7,6 %, respectively.

Fig.1 : Dipstick Results in total cohort of students



Tab.I Clinical Characteristics

	Female (N. 2,486)	Male (N. 2,046)	P value
Age (Year)	18 ± 1	18 ± 1	NS
SBP mmHg	113,2 ± 13,1	120,7 ± 14,1	0,01
DBP mmHg	69,5 ± 9,1	71,1 ± 8,9	0,01
Smokers (%)	25	31	NS
Coffee drinkers (%)	49	74	0,01
Weight (kg)	58,9 ± 11,6	72,4 ± 9,9	0,01
Height (m)	1,6 ± 0,1	1,7 ± 0,1	0,01
BMI (kg/m ²)	21,8 ± 3,3	23,1 ± 3,3	0,01
WHtRatio	0,4 ± 0,05	0,4 ± 0,06	0,01
WC (cm)	79,8 ± 10,7	84,9 ± 10,5	0,01
C index	1,2 ± 0,1	1,2 ± 0,1	NS

Data are expressed as means \pm SD, or percentage.

SBP: Systolic Blood Pressure

DBP: Diastolic Blood Pressure

RESULT 2

Collected data according to the classes of BMI are shown in Table II. In univariate analysis proteinuria was positively associated (p=0.01) with SBP and pulse pressure but inversely associated with BMI; no association was found with other variables. Leukocyturia and haematuria had no significant association with any other variable. In multivariable linear regression analysis no predictive factor was found among anthropometric indicators, urinary abnormalities and BP levels.

Tab. II: Hypertension and urinary abnormalities according to BMI class

BMI	HTN	ISH	Proteinuria	Glicosuria	Leucocyturia
Normal-Weight (Mean \pm SD)	1,3	6,8	30,3 \pm 61,7	50 \pm 0,1	123,1 \pm 160,0
Overweight (Mean \pm SD)	2,2	11,8	25,0 \pm 35,7	50 \pm 0,3	127,8 \pm 156,5
Obesity Class I (Mean \pm SD)	6,5	19,4	33,2 \pm 35,7	50 \pm 0,7	122,5 \pm 157,4
Obesity Class II (Mean \pm SD)	16,1	32,3	57,5 \pm 60,1	50 \pm 0,4	25,0 \pm 0,1
P value	0,01	0,01	NS	NS	NS

Data are expressed as percentage.

HTN: Hypertension

ISH: Isolated Systolic Hypertension

CONCLUSIONS

The present study shows that there is no correlation between anthropometric indicators and urinary abnormalities in young people. This may be the fact that overweight or obesity needs more time to cause kidney injury.

