Correlation among arm circumference index, 25 OH vitamin D3 concentration and lipid profile in patients over 65 years -*preliminary study*

Authors: [1]Justyna Nowak, [2]Joanna Przybylska-Just, [3]Aneta Koszowska, [4]Anna Brończyk - Puzoń, [5]Anna Dittfeld, [6]Paweł Jagielski, [7]Agata Kulpok, [8,9]Barbara Zubelewicz-Szkodzińska

[1,3] Doctoral study in the School of Pharmacy with the Division of Laboratory Medicine in Sosnowiec (Medical University of Silesia in Katowice)

[2] Dept of Geriatrics, County Hospital Piekary Sląskie

[4] Doctoral study in the School of Health Care in Katowice (Medical University of Silesia in Katowice)

[5] Doctoral study in the School of Medicine with the Division of Dentistry in Zabrze (Medical University of Silesia in Katowice)

[6] Insitute of Genetic Diagnostics and Nutrigenomics, Faculty of Clinical Biochemistry. Collegium Medicum of Jagiellonian University, Malopolska, Poland

[7,8] Dept of Endocrinology, County Hospital Piekary Sląskie

[9] Dept of Nutrition-Associated Disease Prevention; Faculty of Public Health

ECE2014
3-7 May 2014
Wrocław, Poland

Introduction

Anthropometric parameters such as: waist circumference, hips circumference, or arm circumference allow to find a correlation between the obesity and the risk of some metabolic disturbances (for example arm circumference index of upper part indicates the level of protein storage in the body).

Aim

The aim of the study was to assess the correlation among the arm circumference index, concentration of 25 OH vitamin D3 and lipid profile parameters in patients over 65.

Materials and methods

94 patients over 65 year of age hospitalized in the Department of Geriatrics were enrolled to the study. Results of biochemical parameters were red from the patients' medical recods. Arm circumference was measured in accordance with generally accepted method. Spearman rank correlation between total cholesterol, triglycerides, HDL cholesterol, and LDL cholesterol was performed for 82 patients* **Table 2.** The obtained data were statistically analyzed using STATISTICA with α = 0,05.

Results

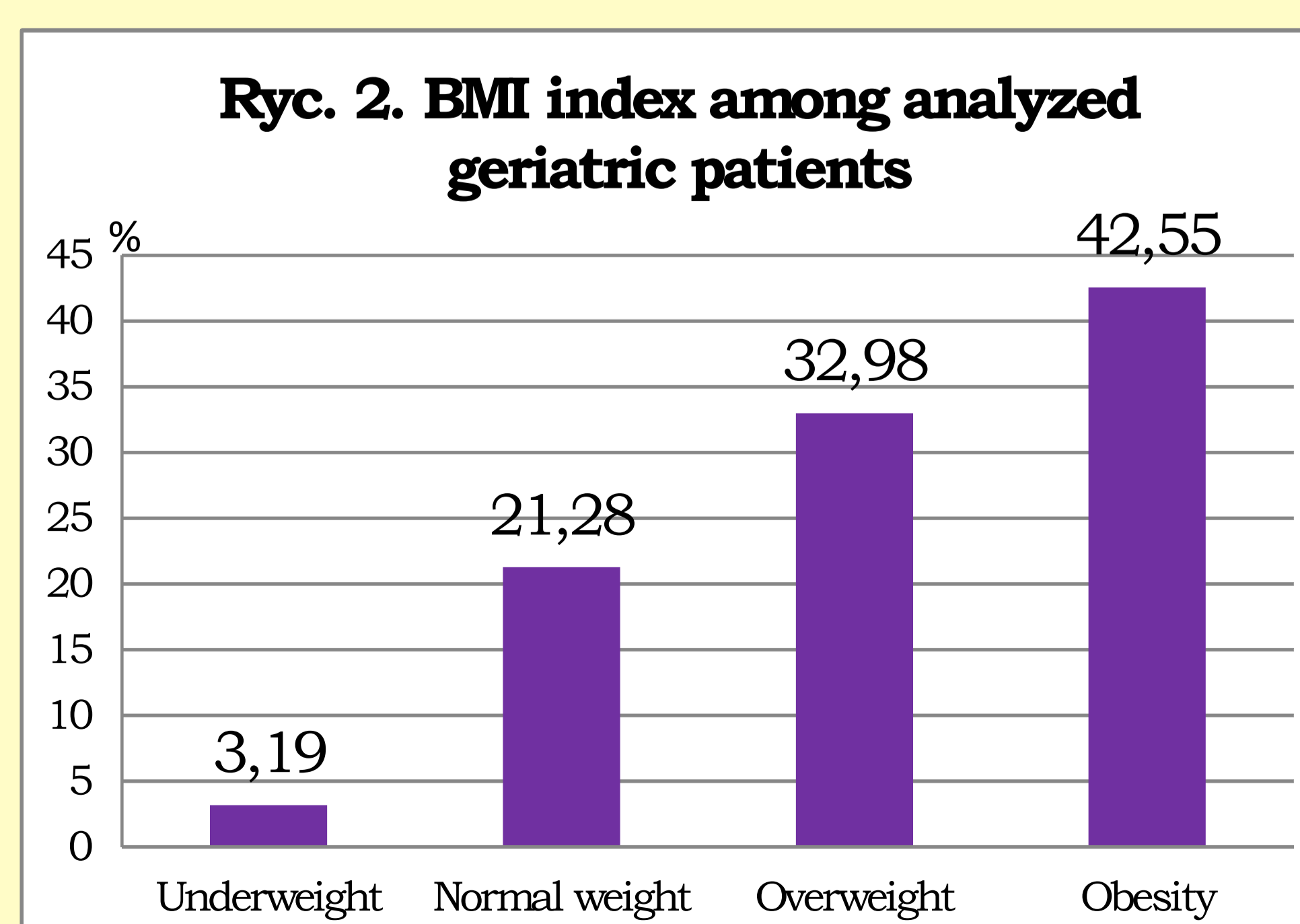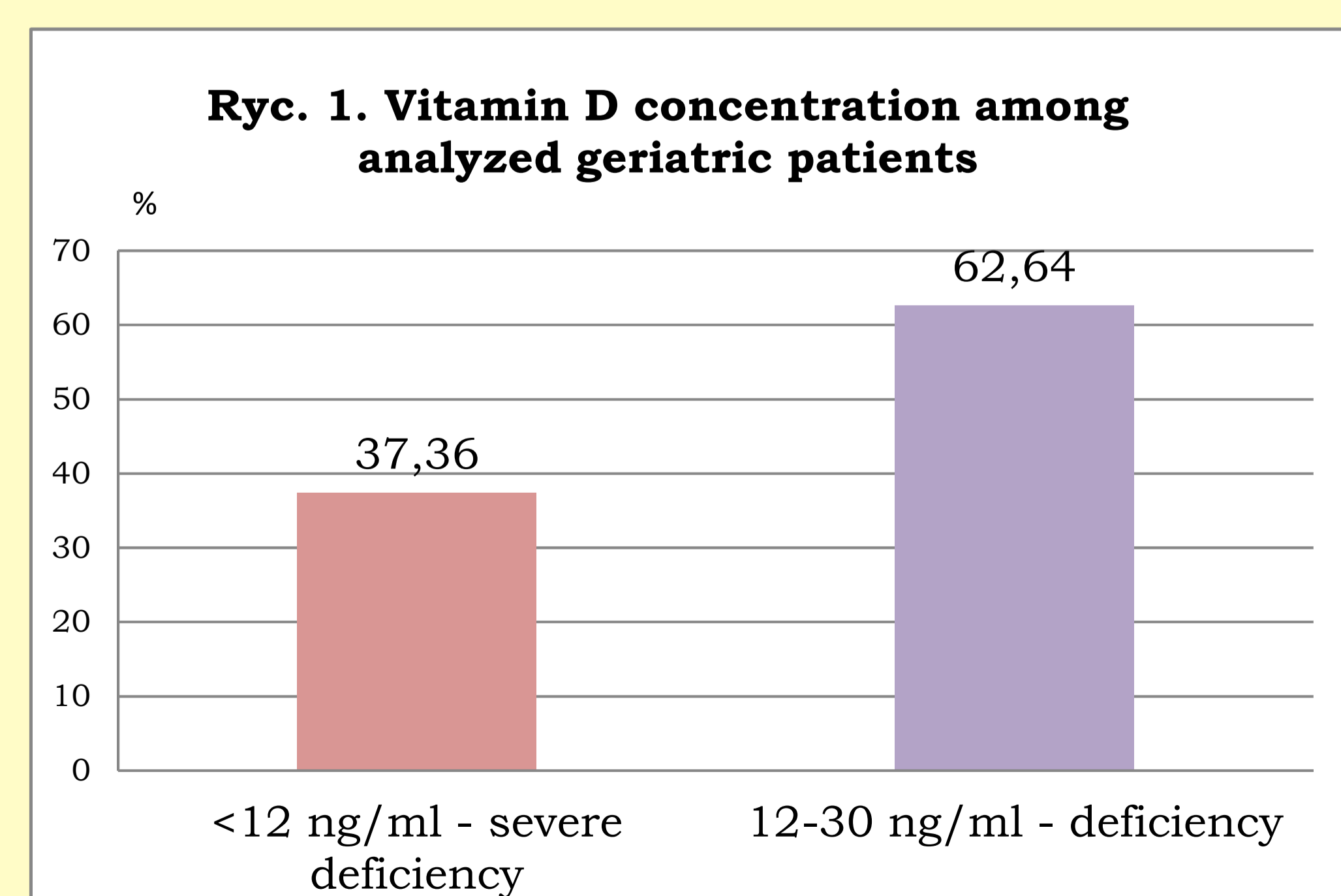Characteristic of the group **Table 1, Ryc. 1, and Ryc. 2.**

There were no statistical significance observed in current study between the circumference of the arm and the concentration of 25 OH vitamin D3 in the analyzed group of patients (R=0,16;p=0,1399). We did not observed any statistical significance between arm circumference and total cholesterol (R=0,11;p=0,3452), arm circumference and LDL-cholesterol (R=0,15;p=0,1764) either. **There were observed statistically significant negative correlation between arm circumference and HDL-cholesterol (R=-0,31;p=0,0041). In addition statistical significant positive correlation was observed between arm circumference and triglyceride levels (R=0,31;p=0,0041).** **Table 2.**

Conslusions

The study indicates that the measurement of arm circumference is an easy and fast method which allow the assessment of lipid profile disorders in a group of patients over 65.

	N	Mean	Standard deviation	Median	Min	Max
Age	94	77,55	6,76	77,00	64,00	97,00
Weigh [kg]	94	72,58	15,84	72,10	38,50	135,00
High [cm]	94	158,51	9,04	158,00	143,00	182,00
BMI	94	28,76	5,98	28,00	17,50	56,90
Calf circumference [cm]	94	34,96	4,69	35,00	22,00	56,00
Arm circumference [cm]	94	28,84	4,31	28,50	18,50	44,00
Waist circumference [cm]	94	94,32	13,48	94,50	63,00	135,00
Hip circumference [cm]	94	106,92	12,26	106,00	80,00	150,00
WHR	94	0,88	0,07	0,87	0,76	1,08
WHtR	94	0,60	0,09	0,60	0,41	0,87
TSH [uIU/ml]	92	1,82	1,28	1,41	0,14	7,54
Cholesterol [mg/ml]	82	184,39	52,12	179,00	13,00	336,00
HDL mg [ml]	82	50,29	18,22	48,00	10,00	135,00
LDL [mg/ml]	82	109,93	41,31	102,10	30,80	227,00
TG [mg/ml]	82	128,87	74,02	108,50	38,00	533,00
Vitamin D3[ng/ml]	91	14,18	5,60	12,80	2,90	31,70

Table .1. **Characteristic of the whole analyzed group-** *destriptive statistics*

Ryc. 1. Vitamin D concentration among analyzed geriatric patients

Ryc. 2. BMI index among analyzed geriatric patients

	N	R	t(N-2)	p
Arm circumference [cm] & Cholesterol	82*	0,11	0,94951	0,3452
Arm circumference [cm] & HDL	82*	-0,31	-2,95614	0,0041
Arm circumference [cm] & LDL	82*	0,15	1,36404	0,1764
Arm circumference [cm] & TG	82*	0,31	2,95357	0,0041
Arm circumference [cm] & Vitamin-D3[ng/ml]	91	0,16	1,48931	0,1399

Table. 2. Spearman rank correlation between analyzed traits